



Natural Resources Governance as a Way to Achieve Prosperity of Nations facing the 21st Century Challenges.

- LL.M. in Natural Resources Law and International Environmental Law -

Javier Muñoz Moreno-Arrones

Faculty of Law

School of Social Sciences

Supervisor: M. Elvira Méndez-Pinedo

September 2013



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Index

Index	1
1 Introduction.....	5
1.1 Context of the Project.....	7
1.2 Research Interests.....	8
1.3 Methodology: An Introduction to a General Theory about Natural Resources Governance.....	8
2 The Dimension of Environmental Justice.....	10
2.1 Environmental Justice. Its Different Uses. Is there a Legal Stagnancy?.....	11
2.2 Environmental Law and Justice. What is the Boiling Point?	11
2.3 Environmental Law and Justice: Innovations under the Natural Resource Banner.....	12
2.4 Promoting Sustainable Development due to the Green Rule of Law aiming for Economic Growth and Social Welfare.	13
2.5 Closing the Gap between Natural Resource Governance and Law and Justice. Paradigms and Discourses that bring Law to the highest Pedestal of Relevance.	15
2.6 The Influence of Politics in Environmental Law and Justice. Promoting Green Innovation into Society’s new Appealing Trends.....	18
2.7 The Importance of Distributive Justice in Natural Resource Governance. ...	19
2.7.1 Philippines: Example of Distributive Justice in Action: Ecological Planetary Deficit. Government Dimension Performance by Law Requirement.....	21
2.8 Ascertaining Environmental Law and Justice as the Cornerstone of Natural Resource Governance.....	22
2.9 Ethics and Commons	23
2.10 Complementary Discourses between Sustainable Development and the Green Rule of Law. Linking Future Dimensional Synergy.....	25
3 The Governance Dimension.....	28
3.1 Defining the Dimension of Good Governance and ascertaining its Versatility.	28
3.2 Building Tangible Synergies between Governance and Natural Resources.....	29

3.3	Natural Resources Governance in the Quest for a Sustainable Growth Pattern.....	30
3.4	Green Innovation as a Paradigm to head Towards the Long Awaited Green Revolution.....	31
3.5	The Spot of Natural Resource Governance in a Non-Green Globalized World.....	33
3.6	Green Globalization and Solutions to Public Bottlenecked Investment.....	34
3.7	Dealing with Crises that Endanger our Green Future.....	36
3.7.1	America: Example of turning Poor Water Governance into Green Innovative Governance.	36
3.7.2	Ecuador: Example of providing Genuine Solutions to Depletion Concerns.	37
3.8	Natural Resource Institutes an International Green Institutional Framework.....	39
3.9	Natural Resource and Green Innovation. The Logic of Collective Action. ..	40
3.9.1	USAID and Green Innovation. Aiding Public Actors.	40
3.10	The Positive input between Investing in Green Innovation and the General Growth's Outcome. The Victory of Green Governance.	41
4	The Human Capital and Social Welfare Dimension.	44
4.1	Education. What is the Purpose of Establishing a Green Revolution in Education?	44
4.2	Human Capital and Green Technology. Why is Natural Resource Governance Crucial for Education?	46
4.3	The Other Side of the Coin: Far-too Reaching Objectives under the Banner of Natural Resource Governance education?.....	48
4.4	Examples of Social Capital: Green Educative Collective Action heading towards Green Revolution.	49
4.5	Green Development and new Sources of Employment. Competitive Human Capital as a Comparative Advantage.....	50
4.6	Green Revolution in action: Developing Green Patterns as a Reward for Investing on Human Capital.....	52
4.7	Green Improves the Quality of Growth.....	53
5	Natural Resource Governance and the Market Dimension. Harvesting the already Grown Green Seeds.....	55

5.1	Aiming for green Patterns of Revolutionary Growth to Compete with Traditional Income Models.	55
5.2	Measuring Economic Performance in the Green Dimension Market.....	55
5.3	Disarming Capitalism Skepticism under Green Resource Market Forecasts.	56
5.4	Bringing Natural Resource Advantages into the Market Dimension.	57
5.4.1	Boosting Economic Performance in Green Market Models.	57
5.4.2	Economic Revolution towards Leading Human Capital Development. Bi-dimensional Synergy.	58
5.4.3	How to face this Two-speed Race Problematic.	60
5.4.4	Economic Performance in Nigeria: Putting Theory into Practice. ..	61
5.5	Shared Prosperity. China on the Lead after adopting Green Market Prospects.....	62
5.5.1	How Green Innovation Contributes to Economy Growth in a Capitalist Sphere.	63
6	Prosperity and Green Technology Dimension.	65
6.1	Green Growth Strategies that Follow Natural Resource Governance Models: Achieving Real Prosperity.....	65
6.2	Green Technology: Aiming for Competitiveness and Income Proliferation.	65
6.3	How to Bring the Logic of Collective Action within Green Economy Growth Paths. Testing Natural Resource Innovations.....	67
6.4	The Versatility of Green Technology to bring Solutions to the Deficiencies of Models of Governance that Lack the Natural Resource Variables.	68
6.4.1	Linking Natural Resource Governance with Technology and the Policy-Making Framework.	69
6.4.2	Mongolia and Argentina: Examples of Natural Resource Governance: Cutting Interregional Inequality by helping Developing Regions catch up with the Metropolis.	70
6.4.3	Conclusion.	74
6.5	Sectorial Benefits of Natural Resource Governance.	74
6.6	Natural Resource Governance as a Paradigm of Achieving Economic Growth High Income Improvements.....	76

6.7	Why Natural Resource Governance is appealing for Governments and its Outcome. Green Wars.	77
6.8	Examples of National Green Development Strategies.	79
6.8.1	Germany: Example of Green Energy and Market development. Natural Resource Governance.	79
6.8.2	Korea: Example of using adversity to build Growth Plan after the Crisis of 2008.	80
6.9	The Incredible Positive Results of Choosing the Green Innovation Path.	80
6.10	Development Indices: Is natural resource governance appropriate to achieve prosperity?	81
6.10.1	Bhutan: Example of using versatile indicators. Extrapolating Natural Resource Governance.	82
7	Conclusion.....	84
	Literature.	87
	Books	87
	Table of Cases	94

1 Introduction.

The quest for finding points of connection between environmental resilience and economic development have not been positively addressed yet in a century where this divergence continues to recede. As a result, progressively challenges arise and threaten to affect humanity survivability by hindering one of the two. What the common sense proposes under this adverse reality is to build a model of governance which manages *somehow* to tackle these two elements in a conciliatory manner.

The working hypothesis of this research is therefore a model of governance which brings into the same prism of action realities which are understood as contradictory under the set of governance values and standards settled in nowadays models. What is furthermore proposed is to describe the *somehow* by ascertaining that when these two elements are conveniently addressed in a partnership, the options to seek for efficient formulas of prosperity show up. It is by doing so that a wide range of such possibilities can be addressed under five different dimensions which on their own are invariable but when addressed correlatively, their contribution to development and innovation revolutionizes the standards of governance models.

The five dimensions are represented by Green Governance, Human Capital, Technology Innovation, Green Rule of Law and Market & Economy. These dimensions are believed to bring prosperity to the nation when the binomial economy and environment resilience are taken into account within all their area of effect.

Having in mind the influence of societies in building governance models, the thesis will be firstly focused on yielding the influence of the premise of the *tragedy of the commons* developed by Hardin.¹ It is by doing so that it will be understood his point of view towards the *degradation of the environment to be expected whenever many individuals use uncontrollably a scarce resource in common*.² As a consequence, the thesis seeks to discover tools for promoting the efficient management of scarce resources, where the first dimension will be thereon addressed: Rule of Law by the hand of distributive justice.

However, it was long time ago that Aristotle already remarked what the non-governance of the commons could lead to with regards to Hardin's premise and the abuse of scarce resources alike natural resources: *what is common to the greatest*

¹ Ostrom, E. (2003). *Governing the commons*. (p. 2). Cambridge: Cambridge University Press.

² Hardin, G. (1968). *The tragedy of the commons*. *Science*, (162) (3859), 1243-1248.

*number has the least care bestowed upon it. Everyone thinks chiefly of his own, hardly at all of the common interest.*³

It is for this reason that the sole dimension of the rule of law cannot cope with the exigencies of achieving prosperity by itself. In the words of Ophuls, *because of the tragedy of the commons, environmental problems cannot be solved through cooperation, and the rationale for government with major coercive powers is overwhelming.*⁴ For this reason, he continues to state that if ruin is to be avoided in a crowded world, people must be responsible to a coercive force outside their individual psyches following the *logic of collective action*.⁵ Ophuls resorted to the figure of Leviathan to explain this extent.⁶ The Leviathan, by the hand of the Governance, constitutes therefore our second dimension to the model of green governance.

Once these two theoretical dimensions have been ascertained, the full potential of natural resource governance can be projected throughout the synergy of the other three: Technology Innovation, Human Capital and Green Market & Economy. In this sense, the thesis seeks to address the results of building a system of horizontal dimensions reinforced by the presence of natural resource management aiming to achieve for prosperity from a revolutionary green approach.

This revolutionary approach comes from a philosophical surface cultivated by Olson, who stated the idea that *groups tend to act in support of their group interests.*⁷ In other words, if the members of some group have a common interest or object, and if *they would all be better off if that objective were achieved, it has been thought to follow logically that the individuals in that group would, if they were rational and self-interested, act in a way to achieve that objective.*⁸

Since Olson stated the *logic of collective action* where he ascertained that *unless the number of individuals is quite small or unless there is coercion*⁹, we can refer from within the horizontal multi-dimensional perspective to the pillar of –green- governance. It represents the coercion required to start building a new theoretical framework aiming to craft the first steps towards understanding how to deal with challenges where

³ Aristotle. (1966). The politics and the constitution of Athens. (Vol. 2, p. 33). Cambridge: Cambridge University Press.

⁴ Ophuls, W. (1973). Leviathan or Oblivion. In Toward a Steady State Economy. (p. 228). San Francisco: Freeman & H. E. Daly.

⁵ Ibidem.

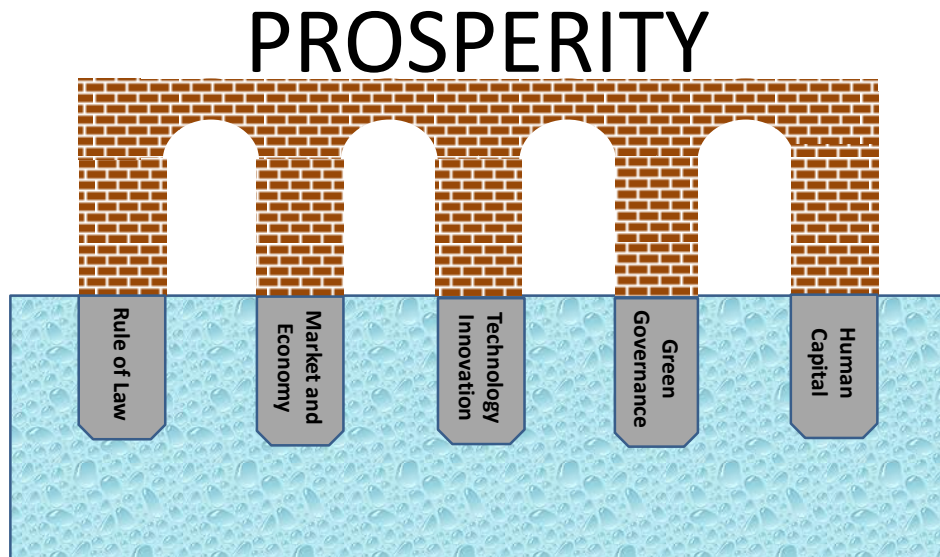
⁶ Olson, M. (1965). The logic of collective action. (p. 1). Cambridge: Harvard University Press.

⁷ Ostrom, E. (2003). Governing the commons. (p. 5). Cambridge: Cambridge University Press.

⁸ Ibidem. Page 6.

⁹ Ibidem. Page 8.

governance does not depend only on economic targets but on the evolution of tools aiming for prosperity. Human Capital, representing *the logic of collective action*¹⁰ will promote Technology Innovation and this dimension contribute thereon to the growth of the Economy. Consequently, this will derive into the development of the green Market dimension. This whole self-reinforcing synergy can be seen as follows:



11

This self-made graphic ascertains the importance and inter-dependence of the five dimensions towards achieving prosperity. On the one hand, should one of them lack, the strength and resistance of the bridge will suffer, weakening the rest of pillars, meaning less probabilities to reach prosperity. On the other hand, since the pillars constitute prosperities' inner structure, it is only due to their synergy that it is tangible and feasible to aim for reaching it.

1.1 Context of the Project.

What the thesis proposes is to follow the *logic of collective action*¹² towards achieving a common view of the importance of dealing in an environmental way with the management of natural resources. In order to be able to do so, as the commons are not by themselves able to reach the required resilience of the environment, it is required the presence of a Leviathan, which is personified in the government. The role of the

¹⁰ Ibidem.

¹¹ Self-made graphic.

¹² Ibidem.

government under its condition of superior entity is to shed light about all the policies and transformations proposed by green governance in order to make its premises appealing for its societies insofar as to manage to cooperate together in the pursue of achieving environmental and natural resources resilience. The thesis follows practical examples that strike the decisive blow in bringing natural resource to a relevant spot considered as the reference banner of the future world as the answer to the challenges of the 21st Century: seeking ways of improving economic growth; developing new technologies that adapt to environmental requirements; how to invest in human capital as a source that impacts in markets incomes; and the rule of law from an environmental law and justice perspective as the paradigm of building a synergy between natural resources resilience and economic growth in a sustainable manner. Finally, the thesis deepens on the impact of natural resources in countries that are already undergoing through green innovation policies.

1.2 Research Interests.

My research interests concern how the multiple dimensions of governance strive towards the framework of natural resources and how intensively they are interconnected. I will be focusing on how all these dimensions are balanced against each other by including natural resources within their area of effect and what bring each of them towards achieving prosperity for the nation. In order to analyze properly the subjects of this research I will attempt to come up with practical examples where rule of law, education, market and economy and governance interact within natural resources. These will not be understood as single elements of coal, forests, steel, but rather as the sum of the natural capital whose synergy provides with a profitable model of governance that makes natural resource resilience crucial to be adopted by governments across all regions. As a further step, I wish to provide with an appealing explanation that will contribute to the academic debate regarding the real position and importance of natural resources and its impact on societies of the 21st Century if is supported by the appropriate governance.

1.3 Methodology: An Introduction to a General Theory about Natural Resources Governance.

The research methodology displayed in the thesis mainly consists on gathering literature from different areas of discipline which are relevant to natural resources. The thesis

foundation is as a consequence rooted in the points of view from authors of the standing of Olson (1965), Ostrom (2003), Ebesson (2009), Dryzek (2008), Stiglitz, Sen, Fitoussi (2008); and Edwards (2012). The thesis aims for seeking which are the elements of their findings and theories in relation to economy, sociology, politics and philosophy which can be likened to natural resources in a fashion that constitutes a descriptive work towards bringing light into the context of natural resource governance as a way to face the new 21st Century challenges. For this reason, it has as well been considered appropriate to address reports issued by international organizations such as the World Bank, OCDE, UNESCO, EU(European Commission), UNEP and the IMF.

Furthermore, the analysis of the aforementioned looks forward to shed light in understanding a new model of governance in relation to the scarcity of natural resources on due regards to avoid the metaphor of the Leviathan referenced by Ophuls (1973) where he states that *scarcity is the root of political evil and political sin*.¹³

The thesis therefore aims for reflecting from a comparative point of view what all the aforementioned discussed theories might bring to the future configuration of the world and which can possibly be the outcome when addressed in practical examples beyond argumentations and theory discussions. On due regards to this, it is sought to understand the authors contributions as a prism of five dimensions on pursue of bringing in connection all of them in the aim to reach prosperity of the nation.

¹³ Ophuls, W. (1973). Leviathan or Oblivion. In Toward a Steady State Economy. (p. 143). San Francisco: Freeman & H. E. Daly.

2 The Dimension of Environmental Justice.

The aim of this chapter is to bring a theoretical sustain where to determine the implications brought by the use of models of natural resource governance which are surrounded by a legal and justice approach in terms of shaping an environmental framework. The purpose is to efficiently manage to cope with the concerns raised up by numerous archives of research and authors in the green legal scene. Such concerns range from how to legally protect the environment without jeopardizing the rapidly expansion of the economy¹⁴, or how to efficiently deal with the environment across international spheres. What is sought is to ascertain the power of the combination between environment and law and what this offers to humanity in green terms. As a consequence, it will be possible to conceal environment as the paradigm of a genuine scenario where to sustain the pillars of the sustainable future for the humankind.¹⁵ Hence, citizens will be governed following the *logic of collective action*¹⁶ in greening the world by following law regulations and the dimension of *distributive justice*.¹⁷ Therefore, those behaviors that escape these premises will be corrected under the green rule of law, promoting the acceptance and reliability of natural resources. Thereon, it is possible to avoid falling into Hardin's *tragedy of the commons*¹⁸ which would mean the depletion of the natural capital.

The rule of law must be seen as the *check and balances*¹⁹ dimension which makes possible an evolution towards greening the world by the participation of the rest of dimensions. On words of Hardin, *the law, always behind the times, requires elaborate stitching and fitting to adapt it to this newly perceived aspect of the commons*.²⁰ This stitching and fitting can only come from Ophuls and his Leviathan idea where he states

¹⁴ In some countries the chosen path deals with the idea of issuing green regulations such as the Green Economy Act in Scotia. It is stated in its precept 2(h) that "sustainable prosperity" means seizing today's opportunities without compromising tomorrow, while working together for a strong, competitive economy, a healthy environment and vibrant, thriving communities.

¹⁵ Bosselman, K. (2009). The principle of sustainability: transforming law and governance. Environmental law for sustainable society. (p. 69-75). Berlin: Monograph Series.

¹⁶ Ostrom, E. (2003). Governing the commons. (p. 2). Cambridge: Cambridge University Press.

¹⁷ Ebesson, J., & Okowa, P. (2009). Environmental law and justice in context. (p. 65). London: Cambridge University Press.

¹⁸ Ostrom, E. (2003). Governing the commons. (p. 2). Cambridge: Cambridge University Press.

¹⁹ As if we were to refer to the USA concept that no branch of the government can conceive something without any other branch being able to review that action; in the context of the thesis we shall refer to this idea as the necessity for any action that endangers or jeopardizes the green innovation or green future to be able to be reviewed by law or justice premises. This pursues upgrading and giving an opportunity to green law standards to cope more efficiently with the new challenges of the 21st Century.

²⁰ Hardin, G. (1968). The tragedy of the commons. Science, 162 (3859), 1245.

that *scarcity is the source of original political sin: resources that are scantier than human wants have to be allocated by governments... to prevent the perpetual struggle for power in a war of all against all, there must be a civil authority capable of keeping the peace by regulating scarce goods.*²¹ It is in under this context how the rule of law must be stitched and fitted into the environment and its scarce implications.

2.1 Environmental Justice. Its Different Uses. Is there a Legal Stagnancy?

By focusing on natural resource management from a moral and political point of view it is possible to connect these approaches and reaffirm its dependence to international law and its branch of distributive justice.²² It is by doing so that this model brings the *logic of collective action*²³ in connection with natural resource inputs. This brings innovation to planning and modeling numerous discourses on how to manage scarcity and which direction to choose in order to achieve a synergy of prosperity by dealing with an appropriate use of environmental resources.²⁴ The outcome for politics, economics and collective action depends on the rule of law, issued as a key role. In addition, this synergy brings an answer to the last trends of international environmental justice which questions the position and relevance of the new scenarios where human capital must be the paradigm of environmental development should we ought to display a natural resource governance. As a result, to the contrary belief, justice by the hand of the rule of law involves social improvements and greater efficiency in the market sphere.²⁵

2.2 Environmental Law and Justice. What is the Boiling Point?

As Horrigan states, Justice and Law have been often presented as a genuine partnership heading towards *the rule of law*.²⁶ Their influence shapes politics, economics and any other disciplinary ideas and values, promoting an integral connection between society needs and demands.²⁷ As a matter of fact, as society is on the need to find tangible

²¹ Ophuls, W. (1977). Ecology and the politics of scarcity. The Journal of Politics, 40 (01), 249.

²² Ebesson, J., & Okowa, P. (2009). Environmental law and justice in context. (p. 62). London: Cambridge University Press.

²³ Ostrom, E. (2003). Governing the commons. (p. 2). Cambridge: Cambridge University Press.

²⁴ Stiglitz, J.E., Sen, A., & Fitoussi, J. (2008). Report by the commission on the measurement of economic performance and social progress. (p. 18). Paris: OECD Publishing.

²⁵ Edwards, S. (2012). Left Behind: Latin America and the False Promise of Populism. (pp. 119-21.). Chicago: University of London.

²⁶ Horrigan, B. (2008). Adventures in law and justice: Exploring big legal questions in everyday life. (p. 26). New York: UNSW Press.

²⁷ Horrigan, B. (2008). Adventures in law and justice: Exploring big legal questions in everyday life. (p. 26). New York: UNSW Press.

positive outcomes in providing natural resource protection, *it must be recognized by governments that environmental law is the foundation for environmental sustainability and that it is urgent to realize its full potential in our quest towards building a green future.*²⁸ In this case, the governance of natural resources will bring after being supported by a strong rule of law an economic and technological prosperous future of the nation in a fashion that exceeds traditional governance models.²⁹ This is only feasible by setting up just and fair society's vis-à-vis the growing environmental pressures that must respect the rule of law.³⁰ It must therefore be considered law and justice as a government dimension rather than a social one. This curiously matches with the conclusion of Adams ascertaining that government is understood as the *empire of laws and not men.*³¹

2.3 Environmental Law and Justice: Innovations under the Natural Resource Banner.

It is evidenced in the international scene that the past forty to fifty years show that the rule of law at national and international levels can make a significant contribution towards forging an enduring partnership between the environment and development founded on ecological and social sustainability.³² For this reason, Sustainable Development has been explained and defined politically and legally as these are addressed as the cornerstones which condition how the concept interact with society and institutions. Brundtland Report³³ defined it as the *development that meets the needs of the present without compromising the ability of future generations to meet their own needs.*³⁴ In addition, the International Court of Justice³⁵ reaffirmed the basic idea of

²⁸ UNEP. Environment Programme, (2013). High level meeting on the rule of law and the environment. (p. 1). New York: United Nations Publications.

²⁹ This will be explained in the next chapter.

³⁰ UNEP. (2013). The rule of law and the environment (p. 2). New York: United Nations Publications.

³¹ Adams, J. (1851). The works of John Adams: Novanglus Papers, (4) (1), 106-108

³² UNEP. Environment Programme, (2013). High level meeting on the rule of law and the environment. (p. 2). New York: United Nations Publications.

³³ Our Common Future, also known as the Brundtland Report, from the United Nations World Commission on Environment and Development (WCED) was published in 1987. Its targets were multilateralism and interdependence of nations in the search for a sustainable development path. The report sought to recapture the spirit of the United Nations Conference on the Human Environment - the Stockholm Conference - which had introduced environmental concerns to the formal political development sphere. Our Common Future placed environmental issues firmly on the political agenda; it aimed to discuss the environment and development as one single issue.

³⁴ UN. Development and International Co-operation: Environment, (1987). Report of the world commission on environment and development: Our common future (document A/42/427). (IV Conclusion) Washington, DC. United Nations Publications.

³⁵ The International Court of Justice (ICJ) is the principal judicial organ of the United Nations (UN).

Sustainable Development as the “*need to reconcile economic development with protection of the environment, which is aptly expressed in the concept of sustainable development.*”³⁶

As a consequence, the idea of Sustainable Development can be likened to the idea of justice. As Bosselmann stated, justice is conceived as a fundamental principle of society and, although we may not have an agreed definition, *we know when we are moving towards it.*³⁷ In this sense, the ethical message underlying both justice and sustainability is widely accepted today as shaping and sustaining society. What lies ahead is to effectively cause an effect in societies’ roles and attitudes towards natural resources. And law has the solution by enforcing certain conducts which are beneficial for preventing depletion of natural resources.

It is noticeable that the definitions expressed above contain the terms *needs* and *future generations*; which are based on the idea of scarcity of natural resources and therefore evidence the importance to develop a *Survivalism* approach as a response.³⁸ As Bosselmann further states, since economic and population exponentially grow, *it confronts with the limits given by Earth’s supply of natural resources and the ability of ecosystems to support agricultural and industrial activity and assimilate wastes.*³⁹ As a consequence, the elements of good governance and economic impact must be taken into consideration while dealing with the concept of green governance.

It is in this context where the true power of law and justice must be evidenced: all the former concepts belong to the same pyramidal floor and do need a higher hierarchical row to ordinate and coordinate them coherently: this is the role of law and justice: establishing the way to sustain the rest of the pillars in a fruitful manner for society that incentives their natural resource resilience.

2.4 Promoting Sustainable Development due to the Green Rule of Law aiming for Economic Growth and Social Welfare.

When we are referring to the active role of society in influencing governance in natural resources we must come to the conclusion that meeting environmental objectives by the

³⁶ Case Concerning the Gabčíkovo-Nagymaros Project (Hungary/Slovakia), Judgment 1997. I.C.J. Rep.7. <http://www.icj-cij.org/docket/files/92/7375.pdf>.

³⁷ Bosselmann, K. (2009). The principle of sustainability: transforming law and governance. Environmental law for sustainable society. (p. 79). Berlin: Monograph Series.

³⁸ S. Dryzek, J. (2008). International environmental law: Paradigms and discourses. (pp. 40-45). Cambridge: Oxford University Press.

³⁹ *Ibidem*. Page 43.

government is *part of a dynamic and integrated process in which these goals are intertwined with the economic, social and political objectives.*⁴⁰ And in this context, *environmental sustainability can only be achieved in the context of fair, effective and transparent national governance arrangements in line with the rule of law.*⁴¹

Therefore governance must seek a sustainable approach to natural resource governance in order to include human capital and bring collective action into the sphere of environmental protection. This reality is only possible under a rule of law aiming for building the signals which will guide societies towards understanding natural resource values. All of these mean that the Green Rule of Law is the most crucial dimension of natural resource governance and that the above concepts-dimensions- depend upon the establishment of it.

When Bosselmann presented sustainable development as a concept determined by scarcity, this implied that law had to be present as the answer to how to deal with this pessimistic scenario where *today's global civilization has run out of space and faces the problem of borrowing time from future generations.*⁴² It was needed to develop a framework of law and justice where the political power could step inside and tackle this issue. Other how, he continued to argue that *if today's generation cannot find new ways to reconcile economic development and environmental protection, future generations, and with them civilization itself are at risk.*⁴³ The new way to reconcile economic development must follow the inclusion of human capital as one of the dimensions that develop green innovation. This clearly shows the true necessity of states to start detaching from the traditional economic growth techniques and seek green innovation. In this sense, it is needed a strong rule of law which ensures the correct function of the institutional power, the market incentives and the correct governance of human capital. By this it is reaffirmed that the rule of law is the first letter in the alphabet of natural resource governance. Without a strong rule of law, there is no possibility to promote green inclusion. For instance, in Chile as a result to the weak rule of law there is no certainty that foreign investors will be supported in fiscal and judicial terms.⁴⁴ On this

⁴⁰ Bosselman, K. (2009). The principle of sustainability: transforming law and governance. Environmental law for sustainable society. (p. 89). Berlin: Monograph Series.

⁴¹ UN. Environmental Law Commission of the International Union for the Conservation of Nature. (2013). Compliance and Enforcement (INECE). (p. 2). Washington DC: United Nations Publications.

⁴² Bosselman, K. (2009). The principle of sustainability: transforming law and governance. Environmental law for sustainable society. (p. 81). Berlin: Monograph Series.

⁴³ *Ibidem*.

⁴⁴ Edwards, S. (2012). Left Behind: Latin America and the False Promise of Populism. (p. 78). Chicago: University of London.

scenario, foreign investors are discouraged to step inside in new green projects, meaning a total loss of 6% of the GDP.⁴⁵ Edwards argues that this comes from the result of the lack of confidence these foreign investors *have in and abide by the rules of society, and in particular the quality of contract enforcement, the courts and the likelihood of crime and violence.*⁴⁶

2.5 Closing the Gap between Natural Resource Governance and Law and Justice. Paradigms and Discourses that bring Law to the highest Pedestal of Relevance.

It was in the 70s where law and justice were given consideration due to the proliferation of global environmental political discourses, soon after the publication of the Brundtland Report in 1987⁴⁷, on the pursue of aiming for a stronger rule of law which however has proven to have failed in some countries as previously stated. Multiple approaches to handle its implications to future generations arose, and all had in common the necessity to address a new legal framework to cope with the heyday of the discourses of limits and survival which arose in the *doomsday decade*.⁴⁸ There was no reason to predicate the tragedy of the commons premise anymore.⁴⁹ Indeed, law was put into test, and so was its versatility to protect environment and promote sustainable development. It was due to this reality that society was required to gather together in order to face efficiently natural resource scarcity.

The discourses were then focused on two trends: one the one hand, there were those seeking for a reformist approach, which tackled with the fact that with law as the cornerstone, a strong central administration guided by scientific expertise would rise.⁵⁰ This would mean the opportunity to deploy new instruments and transform institutions by developing an industrialism including green premises in economic growth and environmental issues. This relationship permitted Dryzek to consider scientists as the human capital due to their synergy as a team following the *logic of collective action*.⁵¹

⁴⁵ *Ibidem*. Page 120.

⁴⁶ *Ibidem*. Page 78.

⁴⁷ Bosselman, K. (2009). The principle of sustainability: transforming law and governance. Environmental law for sustainable society. (p. 43). Berlin: Monograph Series.

⁴⁸ For particularly gloomy prognostications, see R. Heilbroner. (1974). An inquiry into the Human Prospect (New York: W.W. Norton; W. Ophuls. (1977.) Ecology and the politics of scarcity. (New York; W.H. Freeman and Company.

⁴⁹ "Everyone thinks chiefly of his own, hardly at all of the common interest." Aristotle. (1966). The politics and the constitution of Athens. (Vol. 2, p. 33). Cambridge: Cambridge University Press.

⁵⁰ S. Dryzek, J. (2008). International environmental law: Paradigms and discourses. (p. 22). Cambridge: Oxford University Press.

⁵¹ Olson, M. (1965). The logic of collective action. (P.2). Cambridge: Harvard University Press.

This would mean greening innovations supported by a strong rule of law⁵², in a context where human capital was being exported and promoted foreign investment.

On the other hand, Paul Ehrlich's declared that the Earth was about to be hit by a population bomb, which would be *more devastating than nuclear weapons*.⁵³ His discourse was included in *The Limits to Growth*, promoting the Green Radicalism,⁵⁴ *which forecasted the absolute ecological limitation by the middle of the twenty first century unless action would be taken, meaning otherwise economic crash and decimation of human numbers*.⁵⁵ Here, human capital was tagged as the tragedy of the commons and seen as the reason for the "apocalypse." In this catastrophically scenario green radicalism obliged the evolution of law to limit population collateral effects in scarce resources. This meant that law was understood as the last resort to solve what the rest of dimensions could not handle.

It was then that these discourses highlighted human capital as the most influential pattern in building future natural resource governance. Law had to cope with the fact that economic development and environmental modernization lacked the breadth of sustainable development that extends to social justice, the developing world, and global concerns. This was ascertained by Mol in pursue of including human capital in the second group, the group of relevance.⁵⁶ Dryzek for his own sake stated though *that their origins are different, with ecological modernization growing alongside some actual public policy and corporate practice in northern Europe*.⁵⁷ It is indeed in this sense that it is possible to find the confirmation of the importance of law: it definitely constitutes the bridge where to build economy and ecology to merge it into sustainable development and extend its effects to social justice as a whole and impact of social welfare. As a consequence human capital can establish a tangible link towards economic and environment concerns and promote collective green action.

It has been however tough as well for discourses to assimilate the role of Law in the environmental sphere as it is widely variable and dependable on the political and

⁵² S. Dryzek, J. (2008). *International environmental law: Paradigms and discourses*. (p. 32). Cambridge: Oxford University Press.

⁵³ Ehrlich, P. (1968). *The Population Bomb (Abstract)*. New York: Ballantine Books.

⁵⁴ The discourse of Green Radicalism is both imaginative and radical. According to Dryzek (2008) it explicitly rejects the basic structure of industrial society as well as the liberal capitalist hierarchy.

⁵⁵ Ehrlich, P. (1968). *The Population Bomb (Abstract)*. New York: Ballantine Books.

⁵⁶ A.P.J.Mol, (2002) *Ecological modernization and the global economy: Global environmental politics*, (2) (2), 92-98.

⁵⁷ S. Dryzek, J. (2008). *International environmental law: Paradigms and discourses*. (p. 42). Cambridge: Oxford University Press.

governance dimension. For instance, the *Promethean discourse*⁵⁸ denied the idea of scarcity, based on the lack of any restriction to ecological or resource, basing it in the premise that no global scarcities have ever turned out to limit human economic activity because human ingenuity always finds a way around them.⁵⁹ This conceived law as meaningless as dysfunctional and prompted the de-regulation of every economic sector. Therefore, as Dryzek correctly addressed, this discourse was accepted and followed by a number of different countries, from which to remark USA with Reagan's administration: *the promethean discourse subordinated to markets and so did USA, who refused to ratify the United Nations Convention on the Law of the Sea or renounced to finance international environmental treaties*.⁶⁰

This was however not what the logic of collective action was proposing as markets were given preference over society demands, resulting in a non-governance of natural resources in an optimum fashion. This would therefore not only imply the lack of technology or human capital development but the confirmation of Aristotle's concerns when he stated that *everyone thinks chiefly of his own, hardly at all of the common interest*,⁶¹ meaning that the government was simply searching for a shortcut to fasten economic growth rather than carefully preparing for the 21st Century challenges that can only be efficiently faced under the governance of natural resources and the prism of the five dimensional reality.

If we were to explain the relationship between the rule of law and the inobservances of governments of the crucially of following green regulations, we can refer to the King Midas Myth⁶² and ascertain that Governments- Midas- would in the short term earn huge economic profit. However, this would result meaningless as without future assets - food- any outcome would be in vain and would not be spent. It seems that Aristotle statement of the tragedy of the commons: *...what is common to the greatest number has the least care bestowed upon it*⁶³ included *somehow* poison and was indeed a double-edged sword: natural resources are highly valuable to future generations and bring strong economy inputs but on the other hand if not ruled and managed under the rule of

⁵⁸ *Ibidem*. Page 34.

⁵⁹ D.H. Meadows, D.L. Meadows, and J. Randers. (1992). *Beyond the limits: Confronting global collapse, envisioning a sustainable future* (pp. 148-60). Post mills: Chelsea green.

⁶⁰ S. Dryzek, J. (2008). *International environmental law: Paradigms and discourses*. (p. 12). Cambridge: Oxford University Press.

⁶¹ Aristotle. (1966). *The politics and the constitution of Athens*. (Vol. 2, p. 33). Cambridge: Cambridge University Press.

⁶² Osborne, M. P. (1989). *Favorite Greek myths*. (pp. 9-13). Indiana: Indiana University Press.

⁶³ *Ibidem*.

law and the synergy of the other four dimensions, they will slowly innocently bring penury to the world. It seems therefore that the rule of law is obliged to evolve and avoid the *Promethean premises*⁶⁴ and focus on bringing to the other four dimensions the appropriate surface to being their green development.

2.6 The Influence of Politics in Environmental Law and Justice. Promoting Green Innovation into Society's new Appealing Trends.

In connection with the aforementioned, in order to get a more in-depth analysis of the synergies environmental law and justice bring to environmental issues and the role of human capital, it is crucial to argue about the importance that governments give to this partnership as the paradigm of natural resources protection. This partnership is believed to provide with an effective economic growth and improvement in social values of justice and morality towards inter and intra-generational generations that aim for natural resource governance.⁶⁵ What is required is that governments understand the irreversible natural resource depletion in order to encounter this partnership tangible and necessary.

Ebbesson ascertains that even if for several years there has existed a growing consensus among experts that a circumstance of ecological urgency on a global scale exists, *what is new and potentially hopeful is the rapidly increasing public acceptance of the reality of this urgency, at least with respect to climate change.*⁶⁶

The progressive acceptance of gearing up the environment with law and justice in order to prevent jeopardizing natural resources is a reality which however does not happen at the same pace across the globe.

To the monetary interests followed by the promethean discourse, the binomial North-South different conception of morality and ethics does not fulfil the efforts pursued by international institutions to bring awareness about the critical impact of a poorly management of the environment.⁶⁷ This indeed does not help improving social welfare or raising social awareness about the importance of natural resources. This constitutes a failure of the rule of law.

⁶⁴ There is no scarcity, therefore regulations are an obstacle to achieve more profitable outcomes. Dryzek, J. (2008). *International environmental law: Paradigms and discourses*. (p. 12). Cambridge: Oxford University Press.

⁶⁵ Bosselman, K. (2009). *The principle of sustainability: transforming law and governance. Environmental law for sustainable society*. (p. 53). Berlin: Monograph Series.

⁶⁶ Okowa, P., & Ebbesson, J. (2009). *Environmental law and justice in context*. (p. 39). London: Cambridge University Press.

⁶⁷ Bosselman, K. (2009). *The principle of sustainability: transforming law and governance. Environmental law for sustainable society*. (pp. 13-40). Berlin: Monograph Series.

The answer to face this situation lies by considering the environment as a sword and the rule of law as the shield. The body shall be understood as the Leviathan, the government, since it provides with justice implementation, allowing the development of the dimensions in a fruitful manner.

It shall be on this respect remembered the different discourses stated before dealing with natural resource scarcity as a double-edged sword. The election implies choosing *the tragedy of the commons* above the *logic of collective action* or *vice versa*.⁶⁸ In addition, the true potential of the government in addressing natural resource from a law and justice center of gravity lies within the result of the political decisions which hugely impact on the level of human capital, institutional resilience and the State of Law. For this reason, everything is inter-connected and, by promoting the rule of law and the *reformist discourse*⁶⁹ in a scarcity environment, it is feasible to cope with green resources governance and the logic of collective action from a sustainable point of view. This constitutes a revolution in the way governments must handle the governability of its citizens and the interests of their nation in a complementary way. This undoubtedly *sharpens* the sword and the shield of the Leviathan.

2.7 The Importance of Distributive Justice in Natural Resource Governance.

Now it is clear that environmental law is *essential for the protection of natural resources and ecosystems and that reflects our best hope for the future of our planet*.⁷⁰ Its main goal is the protection of future generations and by doing so, establish at the same time an economic model of growth which overcomes the new challenges the 21st Century by investing in human capital.

In a world of certainty, actions imply in many instances unique consequences; therefore a choice among consequences determines a choice among actions. However, under uncertainty, an action taken before the resolution of uncertainty does not uniquely determine the outcome.⁷¹ In this sense, it is certain to a point that environmental law understood as a paradigm has the power to structure the economic growth reality of a

⁶⁸ Ostrom, E. (2003). *Governing the commons*. (p. 2). Cambridge: Cambridge University Press.

⁶⁹ S. Dryzek, J. (2008). *International environmental law: Paradigms and discourses*. (p. 32). Cambridge: Oxford University Press.

⁷⁰ UN. *Environmental Law Commission of the International Union for the Conservation of Nature*. (2013) *Compliance and Enforcement (INECE)*. (p. 4). Washington DC: United Nations Publications.

⁷¹ Levin, J. (2006). *Choice under uncertainty*. (p. 1). Stanford: Stanford Institute for Economic Policy Research.

country, given its ability *to generate explanations of aspects of the natural or social world*⁷² that are becoming important indicators for keeping the economy growing.

For this reason, when the government's decisions promote the rule of law in order to deal with the adjustment of environmental issues, the chest of the Green Leviathan- and thus of natural resources, climate change, green growth, ... - is better shielded and the chances of developing an outcome of environmental friendly legislation is higher and much more efficient.

As a consequence, the efforts brought now by law and justice are focused on building a bridge between law and justice and the necessities for the growth of a nation namely address natural resource in an environmental-friendly manner. In this matter, we shall refer to distributive justice, which Ebesson defines as the branch of law focused on *seeking maxims of just compatible with developing an environmental peace, prosperity and equitable allocation of resources across societies and within states*.⁷³

Following the aforementioned, Lea Brilmayer⁷⁴ argues that international distributive justice represents an ethical imperative for States to participate in a fair and equitable behavior with its population, basing such relationship on mutual moral notion that all human beings are treated as equals in the search of intra and trans-generational equity.⁷⁵

It is therefore palpable how closely connected sustainable development is with political scene and therefore how it intensively affects environmental issues. However, as Lea continues to state, we must understand *that law is subordinated to political powers, as its power's scope reaches the possibility to neglect distributive justice by promoting a loss of equality and opening a huge gap between the ones who have and the others who do not have*.⁷⁶

Lea argues that if this relationship is based on an unjust distribution of resources, the morality cannot contribute to any positive environmental scene.⁷⁷ As an evidence, she further establishes *that every intra-generational equality is based in that every single reclamation of support for establishing a better allocation of resources lies within the*

⁷² S. Dryzek, J. (2008). International environmental law: Paradigms and discourses. (p 46). Cambridge: Oxford University Press.

⁷³ Ebesson, J., & Okowa, P. (2009). Environmental law and justice in context. (p. 65). London: Cambridge University Press.

⁷⁴ International Law Professor in Yale's Law Faculty.

⁷⁵ Ebesson, J., & Okowa, P. (2009). Environmental law and justice in context. (p. 32). London: Cambridge University Press.

⁷⁶ *Ibidem*. Page 35.

⁷⁷ *Ibidem*. Page 36.

principles of justice.⁷⁸ For this reason we shall conclude that governments must adopt a natural resource approach in building this distributive justice and adopt political decisions that concern green resources market application, technology development, human capital and social welfare. In this sense, all the aforementioned inequalities will gradually lower, just by the inclusion of green resources in the shape of the country's future. Only by doing so will citizens adopt a *collective action behavior*⁷⁹ towards natural resource governance.

2.7.1 Philippines: Example of Distributive Justice in Action: Ecological Planetary Deficit. Government Dimension Performance by Law Requirement.

In our daily basis we have the probability to face a different number of problems which yet at the end are dealt positively as soon as a solution is found. However it is true the sooner we find the better possible solution, the greater our chances to deal effectively with it and avoid facing it again at a later stage of our lives.

It was the Philippines the first country which thought that settling up a system of norms and rules in the environment sphere would strengthen the rule of law in relation to environment disputes, establishing a coherent framework of political development. A genuinely system was built and a new line of green economic growth coped with sustainable development Brundtland definition and exponentially contributed to the social growth of the nation and promoted human and social welfare and technological development.⁸⁰

Philippines developed a system of laws in place that regulate, to the extent practicable, all human-induced actions that by themselves or collectively have significant impacts on the environment.⁸¹ Furthermore, these laws are to be consistently applied over time and across the jurisdiction, compiling effectively and fairly with any enforcement action, initiated by a government representative or citizen complaint, which will be taken against anyone who disrupts the law, regardless of the offender's socioeconomic or political status. Philippines was trying to avoid the tragedy of the commons and the premise of Aristotle: *what is common to the greatest number has the least care bestowed upon it. Everyone thinks chiefly of his own, hardly at all of the*

⁷⁸ *Ibidem*.

⁷⁹ Ostrom, E. (2003). *Governing the commons*. (p. 3). Cambridge: Cambridge University Press.

⁸⁰ UN. Development and International Co-operation: Environment. (1987). Report of the world commission on environment and development: Our common future (document A/42/427). (III. 3). Washington, DC. United Nation Publications.

⁸¹ Ramos, G. (2013, June 3). 'Environmental rule of law' a reality? *Inquirer News*. (p.1). Retrieved from <http://newsinfo.inquirer.net/419423/environmental-rule-of-law-a-reality>.

common interest.⁸² For this reason, as a humble opinion Philippines was pursuing the full protection of *the common interest*, knowing this would revert into the *logic of collective action*.⁸³

In this sense, the Philippines' Constitution provides that *the State shall protect and advance the right of the people to a balanced and healthful ecology in accord with the rhythm and harmony of life*.⁸⁴ With this precedents, and with a strong rule of law, the protection of the environment was effective. For instance, in the case of *MMDA v. Concerned Residents of Manila Bay*⁸⁵, a preview of things to come was foreseen when the Court compelled *a dozen of government agencies to do their respective duties in cleaning up Manila Bay*.⁸⁶

The case is considered unique in that the Court has continuing jurisdiction over the case for as long as the concerned government agencies have not achieved their mandate to preserve, rehabilitate and protect Manila Bay: *the government agencies are required to submit quarterly reports on their clean-up progress based on their respective duties*.⁸⁷ As a matter of fact it seems that Olson was partially right when ascertaining the requirement of a Leviathan in order to make people stop pursuing their own gaze and seek for the sustainability of the whole as a synonym of prosperity.⁸⁸ What was probably unknown is the importance of law and justice insofar as to bring natural resource to a protective law environment when such Leviathan fails on its duties of promoting natural resource resilience.

2.8 Ascertaining Environmental Law and Justice as the Cornerstone of Natural Resource Governance.

Once again the importance of the rule of law has been evidenced in relation to the management of natural resources and its implications in the medium and long turn in the benefit of the nation. It is as well relevant to address that it is no matter of discussion how Sustainable Development has yielded its influence in the significance of environmental law-policy discourses. As Campins-Eritja and Gupta state, *the concept of sustainable development has become so "inescapable" that it is increasingly adopted*

⁸² Aristotle. (1966). *The politics and the constitution of Athens*. (Vol. 2, p. 33). Cambridge: Cambridge University Press.

⁸³ Olson, M. (1965). *The logic of collective action*. Cambridge: Harvard University Press.

⁸⁴ Sec. 16, Art. II, 1987 Philippine Constitution.

⁸⁵ G.R. Nos. 171947-48, December 18, 2008, 574 SCRA 661.

⁸⁶ *Ibidem*. Paragraph. (3.8).

⁸⁷ *Ibidem*.

⁸⁸ Ophuls, W. (1977). Ecology and the politics of scarcity. *The Journal of Politics*, (40) (01), 249.

by intergovernmental organizations as a general matrix to guide the achievement of their specific objectives.⁸⁹ Brundtland definition coped with the core concepts of intergenerational equity – rich and poor- and intergenerational equity- present and future generations - ⁹⁰ It was always claimed the importance of human capital as the synonym of avoiding the *tragedy of the commons*.⁹¹ This was only under a rule of law trustworthy scenario. The shield of law must be always equipped, if not every pillar of green innovation would irremediable fall since the Leviathan would be exposed to attacks.

This therefore came into the dimension of justice and law, where Ebesson stated that *it is a generally accepted view that intra and intergenerational equity are part of the wider idea of justice, that of as a result is configured in the distributive justice; showing up by ascertaining the fact that there is no just world without fair distribution of existing resources among people living today; and no future without giving due regard to the needs of people living tomorrow.*⁹² Therefore, in order to achieve sustainable development we must understand international environmental law as the challenge to regulate and manage natural resources in a way that meets both of these objectives. The interconnection could not be higher.

For this reason, Sustainable Development requires the integration of environmental, social and economic objectives. And in this sense, regardless of the political discourse willing to be adopted on how such integration could be achieved, there seems to not be dispute over the goal of integration between the environmental conservation and its outcome for the social and economic development always under the legal scope.⁹³

2.9 Ethics and Commons

Ethical choices are often charged with ideologies and political beliefs. For example, there is no idea of justice without some kind of morality on how the “goods” should be distributed.⁹⁴ In the same way, there should not be a concept of Natural Resource

⁸⁹ Campins-Eritja, M., Gupta, J., (2004) The Role of “Sustainability Labelling” in the International Law of Sustainable Development. (p. 226). The Netherlands: Martinus Nijhoff Publishers.

⁹⁰ Bosselman, K. (2009). The principle of sustainability: transforming law and governance. Environmental law for sustainable society. (p. 86). Berlin: Monograph Series.

⁹¹ Ostrom, E. (2003). Governing the commons. (p. 2). Cambridge: Cambridge University Press.

⁹² Ebesson, J., & Okowa, P. (2009). Environmental law and justice in context. (p. 67). London: Cambridge University Press.

⁹³ Sathaye, J., Najam A., Cocklin C., Heller T. Lecocq, F (2007). Sustainable Development and mitigation in climate change 2007. (p. 714). Cambridge: Cambridge University Press.

⁹⁴ Bosselman, K. (2009). The principle of sustainability: transforming law and governance. Environmental law for sustainable society. (p. 75). Berlin: Monograph Series.

Governance without a morality approach on how the goods should be distributed among people living today and people living in the future. *Some may emphasize the needs of today's poor people, even if that means additional burdens for future generations and the costs on doing so.*⁹⁵ In addition, others may emphasize the rights of future generations, even if that means limitations to the options available today. At the end *there is a balance between what is need and what is not.*⁹⁶ As long as there will be a need, there will be always required citizens' actions in the modelling of the nation; in this sense in natural resource governance. All these embraces the harsh panorama law and justice must face in this context: the blurrier the surface to extend their influence, the harder for the rule of law to avoid an attack.⁹⁷

However what is certified is that by a natural resource governance there is a possibility to solve this issue by establishing political decisions that gear citizens with roles to offer service to society as a whole. The Leviathan will be focused on achieving efficiency towards agriculture and water management in developing countries; on the other hand in those developed countries natural resource efficiency will be sought in terms of improving the state's technology as a way to generate market expenditures and investments. In both of these scenarios it will be sought the active role of the human capital dimension under law and justice premises. If human capital is not legally addressed, the tendency will move towards the *tragedy of the commons*⁹⁸, activating the trap of the double-edged sword of natural resources. If the body-government- is not embodied with a shield- *rule of law*- to protect and charge the attacks of the sword- *environment awareness*- all the system heads to failure.

For this reason, even if there is no consensus on the meaning of Sustainable Development, it is possible to identify some of its key features in relation to natural resources.⁹⁹ One can conclude that what Sustainable Development is trying to achieve cannot be expressed solely on the grounds of political or social terms. As Bosselman states, *since we usually know when we are experiencing morality or justice, even though there is no commonly agreed definition, we can start building our way*¹⁰⁰ through an

⁹⁵ Ibidem.

⁹⁶ Ebesson, J., & Okowa, P. (2009). Environmental law and justice in context. (p 70). London: Cambridge University Press.

⁹⁷ Continuing with the allegory of the shield, the sword and the body. Shield represents the rule of law, the sword the governance and the body the environment and the natural resources by definition.

⁹⁸ Hardin, G. (1968). The tragedy of the commons. Science, 162 (3859), 1246.

⁹⁹ Bosselman, K. (2009). The principle of sustainability: transforming law and governance. Environmental law for sustainable society. (p. 82). Berlin: Monograph Series.

¹⁰⁰ Ibidem.

environmental approach from a law and justice perspective in order to bring up a homogenous definition and work parallel to the rule of law towards Sustainable Development and Green Innovation.

2.10 Complementary Discourses between Sustainable Development and the Green Rule of Law. Linking Future Dimensional Synergy.

Bosselmann ascertains the fact that Sustainable Development, like Law and Justice, is goal-oriented.¹⁰¹ This means citizens are therefore goal-oriented as well. What is more, there is a paradigmatic coexistence in the context of the protection of present and future generations by promoting the rule of law. The more dimensions that enshrine the law dimension, the bigger the shield to protect governance and environmental awareness. Therefore we do not tackle only the strengthening of institutions, the promotion of strong government and State of Law but also it is sought the innovation of the fiscal and economic growing patterns to provide with the needs for the survival of the society in the future.

In the sphere of environmental law, justice is discussed and measured with different parameters and on different theoretical bases: which burdens and which interests or subjects should be included in such a theory and debate? Environmental law takes the form of national, supranational, international and transnational laws, so the justice considerations discussed do affect different disciplines like philosophy, morality, ethics... *As such, the notion of environmental justice may lead to different directions depending on whether the individual or the state is taken as the starting point.*¹⁰²

In this sense, state-oriented norms do not cumulate a cosmopolitan point of view¹⁰³ from which a distributive perspective is more effective and prompt to global justice.¹⁰⁴ It is therefore tougher to implement natural resource governance models should if human capital does not appear in the highest step of the pyramid.

¹⁰¹ Ibidem. Page 54.

¹⁰² Ebesson, J., & Okowa, P. (2009). Environmental law and justice in context. (Chapter XIV). London: Cambridge University Press.

¹⁰³ Kant promoted the idea that all human beings, regardless of their political affiliation, are citizens in a single community. Kant. (2006) Toward perpetual peace and other writings on Politics, Peace and History, with essays by Waldron, J, Doyle & M. W. New Haven: Yale University Press.

¹⁰⁴ Caney, S. (2005). Justice beyond borders: A global political theory. (p. 747). London: Cambridge University Press.

On the other hand, Richard Falk's¹⁰⁵ argues that the discourse on environmental justice needs to delve deeply into structural constraints on policy that arise from special interests of governments as well as the private sector. This in turn requires exploring policy proposals that call for fundamental shifts in life style, budgetary priorities and market regulations. Admitting that such changes may appear utopian and politically unattainable, *he nevertheless finds them essential in order to enhance environmental justice considerations in any response to the sense of ecological urgency he addresses.*¹⁰⁶

Dinah Shelton for her own sake reveals the numerous alternatives with three broad categories to which the discourse of international justice refers- morality, equity and law- and observes how concerns related to distributive justice arise in these three.¹⁰⁷

Since distributive justice represents the society needs, it is in this sense that she argues that *whether or not we are already situated within the domain of necessity depends on how seriously the present situation is regarded from the perspective of Environmental sustainability and the carrying capacity of the earth.*¹⁰⁸ However, the *collective imagination of the peoples of the planet, and especially the governing elites, remains in a circumstance of deep denial to the overall scale of the environmental challenge and awareness.*¹⁰⁹

It is important to understand the harm of such denial and the drawback it comes with not only as a loss of natural capital but as a loss on the possibilities for the country to grow.¹¹⁰ At present, in most of the environmental literature the two binomial: protection & justice, are wrongly merged, fomenting environmental injustice. It is right that each concept potentiates the other one, but not in a policy relevant manner.

Those alarmed principally about environmental unsustainability argue that to restore conditions of sustainability, attention to poverty and a commitment to human rights for all persons is required, but the real awareness lies especially in pricing for the market to include environmental costs and technologies that operate more benignly with respect to

¹⁰⁵ Richard Anderson Falk (born November 13, 1930) is an American professor emeritus of international law at Princeton University, takes regularly part in United Nation Environmental Conferences.

¹⁰⁶ Ebesson, J., & Okowa, P. (2009). Environmental law and justice in context. (p. 65). London: Cambridge University Press.

¹⁰⁷ Ibidem. Page 66.

¹⁰⁸ Ibidem. Page 54.

¹⁰⁹ Ebesson, J., & Okowa, P. (2009). Environmental law and justice in context. (p. 41). London: Cambridge University Press.

¹¹⁰ Ibidem. Refer to the Chapter of Bullard (2005) at (pp. 281-2) where he summarizes the harmful impact on the poor and ethnically marginalized.

pollution and toxic wastes.¹¹¹ In this sense the influence of the distributive justice must be given due regards in relation to bring into action natural resource management as the key solution to all of the above mentioned.

If not, the earth's global picture of environmental degradation is not given the proper attention, mainly due to discourses skeptically out of any environmental problem, resulting in a "free for all" race to achieve economic growth without observing environmental justice principles.¹¹² This might be feasible during the first years but in the middle and long turn would become unsustainable and would have already made a huge negative impact on the development of natural capital. This as a result would also bring into context the tragedy of the commons that was addressed by Shelton.

For this reason a mentality to pay attention to environmental justice issues are starting to rise, especially a growing realization that the heaviest immediate burdens of environmental abuse were being experienced by the most vulnerable members of society and that the life prospects of future generations were being irresponsibly jeopardized and burdened for the sake of maximizing present prospects for economic growth.¹¹³

As a result, it seems that governments have reached a point where the concerns raised by distributive justice have deeply impacted on their policy making structure, and as such sheds light in the future of natural resources governance from a human capital point of view and a collective action model. For this reason it must be understood that Natural Resources are not only able to bring environmental resilience but do promote economic growth in a green way in a fashion that promotes the technological development of the society and of the social welfare, bringing market competitiveness and job creation as a way to prepare for the new challenges for the 21st Century.

¹¹¹ *Íbidem*, Page 42.

¹¹² *Íbidem*. Page 87.

¹¹³ *Íbidem*.

3 The Governance Dimension.

It has been already discussed the importance of natural resources governance from a law and justice perspective. The aforementioned dimension implied that by including law innovations in the green pattern of growth it was possible to update economic, social, human and technological spheres. Indeed, due to this context of full synergy amongst these, law and justice can complete their area of effect and constitute a more efficient answer to the challenges natural resource governance must face to be correctly implemented and managed. As a consequence, it is feasible to opt for a green future in terms of sustainability growth.

However, the rule of law cannot by itself enact this synergy. Governance by the hand of the Leviathan is the key in the construction of our green innovation model of prosperity as a consequence of the former arisen synergy.¹¹⁴ Once the shield has been crafted¹¹⁵, it is now time to build a revolutionary innovation going through different stages, and its next step is shaping and building natural resources as if we were forging a sword.¹¹⁶ This chapter will focus on this fashion in a practical behavior that will show the consequences of the green governance and its impact in the *logic of collective action*.¹¹⁷

3.1 Defining the Dimension of Good Governance and ascertaining its Versatility.

As Barack Obama stated ...all *people yearn for certain things: the ability to speak your mind and have a say in how you are governed; confidence in the rule of law and the equal administration of justice; government that is transparent and doesn't steal from the people; the freedom to live as you choose...*¹¹⁸

Governance is a concept used regularly in numerous speeches in relation to political and social claims. The former was pronounced by Barack Obama in Egypt right after the social outcry took place and led to a change in Egypt leaving its old dictatorship roots. The fact that it is connected to social claims brings light in so as to understand the connection between governments and societies: the development of science, public

¹¹⁴ Ophuls, W. (1977). Ecology and the politics of scarcity. The Journal of Politics, (40) (01), 249.

¹¹⁵ Referring to the rule of law and the components of human capital, technology development, environmental concerns and economy growth.

¹¹⁶ The sword is understood as the arm of the environment- the body part- where the energy is catalyzed towards the world. If the sword is armed with the four dimensions of natural resource, the stab is critical and will make foundations tremble.

¹¹⁷ Ostrom, E. (2003). Governing the commons. (p. 2). Cambridge: Cambridge University Press.

¹¹⁸ Discourse of President Barack Obama (2009). Cairo, Egypt,

administration, democracy, civil society, participation, human rights and economy and environment are terms widely repeated in every of these speeches.¹¹⁹

What these seek is its promotion and development by the government. This is in line with the environmental philosophy developed by the Leviathan proposed by Ophuls who ascertained the fact that *the contribution to the Leviathan can give to the green development much more than the concept of authority or coercion. Perhaps the idea of constructing a political system based on recent developments of what is human nature, or human passions, and following a method integrating cooperation, participation, communication and open mind which would help us further.*¹²⁰

It is therefore no matter of coincidence that the better the governance of a country towards achieving these claims, the lesser the chances for another discourse of these to rise up, meaning that the country's politics are supported by its citizens. Including social concerns in policies¹²¹ will in return bring a synergy that promotes natural resource optimum management as *commons* will not seek their own benefit but will respect what the Leviathan proposes as their concerns have been addressed.¹²² In conclusion, the sword must be appealing to its wearers.

3.2 Building Tangible Synergies between Governance and Natural Resources.

Environment concerns have been a raising issue through 21st Century. As if Obama could have somehow predicted it, his speech could have been soon easily repeated in the *Taksim Meydanı* in Istanbul right after the Turkish governmental newspaper agency stated that Turkish civilians, activists and environmentalists were up in arms protesting the demolition of Taksim Square's Gezi Park, one of the last remaining green spaces in downtown Istanbul: *protesters were eventually forced out by police armed with tear gas and pressurized water.*¹²³ The demonstrations quickly escalated into violent clashes with police. This led into one of the most concerning outcries in 21st Century. As if we

¹¹⁹ Ebesson, J., & Okowa, P. (2009). Environmental law and justice in context. (p. 45). London: Cambridge University Press.

¹²⁰ Guedes Vaz, S. (2012). The tragedy of the commons and leviathan. A small insight into environmental political philosophy. (p. 79). Lisboa: Universidade de Lisboa e University of East Anglia.

¹²¹ For the sake of the thesis we are here referring to natural resource concerns.

¹²² Ebesson, J., & Okowa, P. (2009). Environmental law and justice in context. (p. 46). London: Cambridge University Press.

¹²³ Addawoo, L. (2013, 6 5). Turkish protests: it started with a tree. Global News. Retrieved from <http://globalnews.ca/news/616750/turkish-protests-it-started-with-a-tree-2/>

could build a metaphor with the environment and the outcry; *like most trees, it started with a simple seed.*¹²⁴

Protesters -commons¹²⁵ - did not accept the idea of losing by no reasonable meaning an environmental green space. For this reason, and as being already stated above, the society reacts in arms towards the lack of what is seen as an ethically good governance. The fact that citizens of this country are already aware that *the earth is richly, endowed with valuable natural resources that have played important roles in improving human existence*¹²⁶, did not helped either the government, which is still struggling with the situation. It is however important to remark the fact that the society of Turkey is acting with the *logic of collective action*¹²⁷ towards environment issues, and it is here that the Leviathan fails to assume its green role.

In this context it is ascertained the fact that natural resource claims do not only contribute to the development and resilience of the environment but as well strengths its defense in the political dimension. In other words, as natural resource claims affect the governability of the state, a good governance must take into account green innovation, *understood as the sum of political decisions...to face the idea of natural resources scarcity.*¹²⁸

3.3 Natural Resources Governance in the Quest for a Sustainable Growth Pattern.

As Olson states, *in a competitive environment, those who are not in search of alternative singular or innovative policies that will report benefit or growth to the nation will lose with respect to those who are successful in such quest.*¹²⁹ For this reason, the relentless and growing pollution in different natural areas is depriving its people in an irreversibly way of vital natural assets that are very costly yet unknown how to be replaced.¹³⁰

¹²⁴ *Íbidem.*

¹²⁵ Making a reference to Aristotle and his approach towards collective action and the tragedy of the commons. Aristotle. (1966). *The politics and the constitution of Athens.* (Vol 2, p.33). Cambridge: Cambridge University Press.

¹²⁶ Andrew P. Morriss. (2012). *Avoiding Future Famines: Strengthening the Ecological Foundation of Food Security through Sustainable Food Systems.* (p. 30.) A UNEP Synthesis Report. Washington, DC: The United Nations Publications.

¹²⁷ *Íbidem.* Page 8.

¹²⁸ World, B. (2013). *Frame working and action planning, Connecting and Financing cities. Lessons from Urbanization Reviews.* (pp. 8-20). Washington, DC. The World Bank Publications.

¹²⁹ Ostrom, E. (1990). *The evolution of institutions for collective action.* (p. 56.). Cambridge: Cambridge University Press.

¹³⁰ *Íbidem.*

Natural Resource Governance constitutes the alternate innovative set of policies that bring answer to the new challenges of the 21st Century. It builds a path from where society must walk on in order to *survive*¹³¹ the new challenges that need an adaptation to. It is by this reason that obsolete models of governance are no longer worthy or able to sustain the new pillars of the 21st Century. The Leviathan must be able to adapt to the new challenges. There are numerous indicators which forecast what can be named the green revolution which is in the verge of altering the course of governance. For instance, due to the increasing dependence to natural resource assets, Latin America is on the peak of collapsing should their governments does not adopt models which include foreign direct investment and avoid fiscal policies which cut the cash flow from foreign countries' private stakeholders.¹³² It is by this reason that corruption must be eradicated, since as Helge states, *a huge indicator of it is understood as an evidenced poorly functioning state, and as a failure of ethical leadership, democracy and good governance*.¹³³

As we might have already noticed, what natural resource involves is avoiding old-trends, cutting with the tendency. Requires a revolution from the inner spheres. If not the *sword* will not last enough. Natural Resource Governance requires innovation. For instance, In United Kingdom there is no corruption to the same degree as in the vast majority of Latin America countries, and as a result numerous multinationals are investing their future renewable energy plants there. In fact, the Prime Minister has said new offshore turbines could create 70,000 jobs through a new £80m wind turbine factor.¹³⁴

3.4 Green Innovation as a Paradigm to head Towards the Long Awaited Green Revolution.

Natural Resource Governance is a challenging yet genuine system whose existence is unfortunately present in a different reality than most of the political and social actual inertia, and as such cannot face with optimal instruments the environmental exigencies demanded. In addition, there is an inexistence of financial instruments as most of the governments, especially those from developing countries, spend their cash flows on

¹³¹ Remember the survivalism approach stated in the first chapter.

¹³² Edwards, S. (2012). *Left Behind: Latin America and the False Promise of Populism*. (p. 87). Chicago: University of London.

¹³³ Helge, O., Amundsen, I. (2000). *Research on Corruption: A policy oriented survey*. Commissioned by NORAD Final report. Norwegian Institute of International Affairs. Bergen: NUPI Publications.

¹³⁴ Information retrieved from the web page: <http://www.ukoffshorewind.com/news/70,000-jobs.aspx>

every other social issue since environment is understood as a drawback on economic growth rather than a positive aspect that brings prosperity to society as a whole. As being already evidenced, this trend must be shifted. The Green Leviathan must be able to provide with green economic growth, bringing new job opportunities and human capital development as a way to reach social welfare. Natural Resources are the paradigm of growth if treated from a *logic of collective action*¹³⁵, and the way to reach this collective action relies on the governance dimension.

Green Innovation is the nickname for natural resource governance as it constitutes the fundamental tool for the development of the country taking natural resources in an inclusive policy way for the society as a whole. Green innovation does not only entail development of the environment but constitutes the first domino token that once enacted will promote technological development, human capital improvement and enhance institutional and rule of law enforcement. It updates society and the country as a whole. It brings new growth opportunities. It breaks the mold. For example, Green Innovation is also in line with achieving an investment aimed at ensuring the promotion of the development of renewable energy and natural resources to improve health outcomes.¹³⁶ It brings an energetic revolution. And it puts human capital in the vanguard: collective action is sought and it is only possible by inter-connecting every dimension that tackles natural resources governance.

For this reason, the path to achieving this governance lies within the possibility to acquire specific and plausible objectives.¹³⁷ In other words, what is sought is to promote the set of environmental, economic, technological, fiscal and a wide range of social awareness from the natural resource management aimed to the redistribution of wealth. In this sense, a study in South Africa finds that an *energy revolution scenario—that is, a scenario with a strong transition toward renewable energy—creates 27% more jobs than the usual business scenario*.¹³⁸

It is evidenced that Natural Resource Government is not only plausible as an environmental solution but as an answer-bringer to every different social and economic contexts. Natural resources are the protagonist of the 21st Century. And to the extent of this prominence depends the governance of the nation. This is reaffirmed in the words

¹³⁵ Olson, M. (1965). *The logic of collective action*. Cambridge: Harvard University Press.

¹³⁶ Ebesson, J., & Okowa, P. (2009). *Environmental law and justice in context*. (p. 75). London: Cambridge University Press.

¹³⁷ *Ibidem*.

¹³⁸ Bank, T. W. (2012). *Inclusive green growth. The pathway to sustainable development*. (p. 94). New York: The World Bank Publications.

of Ban Ki-Moo, General Secretary of the UN, who recognizes *peace and security as the fourth dimension of sustainable development, greatly related with achieving the goal of a good governance of natural resources.*¹³⁹

3.5 The Spot of Natural Resource Governance in a Non-Green Globalized World.

In order to implement an environmental friendly policy framework to aim for an optimal natural resource management system and bring positive inputs for the rest of dimensions involved,¹⁴⁰ it must be understood that the government owns the keys to promote the institutional power. In this sense, the ability to meet the different objectives of a government depends primarily on its institutional organization, but mostly on its method of governance.¹⁴¹ Therefore, even if we are dealing with environmental issues from a law and justice perspective, we must consider the political discipline if we seek for an environmental positive outcome in the short, middle and long-term. There is no reason to own a shield if we cannot later have the initiative with a strong forged sword.

As a consequence, environmental governance refers to the interaction and synergy of political, social, economic and management systems that come into play to regulate the development and management of natural resources and the provision of natural services at different levels of society. Therefore, natural resources governance exists where state organizations responsible for natural resources management establish an effective policy, along with an appropriate legal framework to regulate and manage the different resources the country owns in ways that respond to environmental, economic, social and state policy needs. As a consequence, along with the participation of all social stakeholders it is sought the inclusion of the society in natural resource concerns promoting the idea of collective action.¹⁴²

The problem arises when there are countries that due to their political organization there is no possibility to promote green innovation and thus environment is not protected or promoted resulting in both: a loss of economic growth and human capital development. If the Leviathan fails, the rest of dimensions do so, and thereon scarcity will govern future generations and will bring into context the anxiety of societies to

¹³⁹ Speech pronounced by the General Secretariat of the UN Ban Ki-moo on the International Day for the Prevention of the Exploitation of the Environment in War and Armed Conflict. 6th of November 2012.

¹⁴⁰ Economy & Market, Technology, Society & Human Capital and Governance.

¹⁴¹ Dominguez Serrano, J. (2012). UNESCO, Natural Resources Governance. Good governance to integrated water and resources management. (p. 8.). New York: World Water Forum.

¹⁴² It is as well sought to provide with money those projects that are not reached by public funding.

uncontrollably harvest as much resources as possible.¹⁴³ There are two possible endings to the same story, whether *the tragedy of the commons*¹⁴⁴ or the *logic of collective action*¹⁴⁵ imposes widely depends on the governance and the degree of importance natural resource is given.¹⁴⁶

3.6 Green Globalization and Solutions to Public Bottlenecked Investment.

Due to this phenomenon, globalization has ensured these countries with the possibility to be assisted by international stakeholders, which shape the social and political network in order to ensure a middle and long term development in areas where natural resources are not given the due importance within their political influence.

As such, it is crucial to first determine the needs in order to establish the solutions: the concept and content of water governance for instance in the Americas was defined, as an answer to who, how and when decisions *are made regarding water resources and how they should be addressed within a context of good governance*.¹⁴⁷ In other words, the UNESCO Water Governance programs sought an answer to *how are water resources governed in the continent? What institutional reforms are needed to have better governance of these resources?*¹⁴⁸ The international organization ascertained that this concept differs from “governability”, and it is conceived as a continuous, dynamic, flexible and necessary process to achieve good Integrated Water Resources Management. This led to the inclusion of collective action in order to answer these questions. The UNESCO was then able to provide with financial aid and prevent water loss and brought prosperity to the region in terms of natural capital. The logic of collective action is not only referred to citizens but to public and private actors.¹⁴⁹

Globalization, as evidenced above, can be seen as the 21st Century *logic of collective action*.¹⁵⁰ It has adopted a key role as a relevant hallmark that configures worldwide development. Besides having lifted barriers and borders, it has also promoted development of ideas, something unimaginable years ago, such as the ability to import technology, goods, capital and people’s knowledge. It has created business

¹⁴³ This would prove the model already detailed of Hardin and the tragedy of the commons.

¹⁴⁴ Ostrom, E. (2003). *Governing the commons*. (p. 2). Cambridge: Cambridge University Press.

¹⁴⁵ Olson, M. (1965). *The logic of collective action*. Cambridge: Harvard University Press.

¹⁴⁶ Ostrom, E. (2003). *Governing the commons*. (p. 3). Cambridge: Cambridge University Press.

¹⁴⁷ Domínguez Serrano, J. (2012). UNESCO, Natural Resource Governance. *Good governance to integrated water and resources management*. (p. 6.). New York: World Water Forum.

¹⁴⁸ *Ibidem*.

¹⁴⁹ *Ibidem*.

¹⁵⁰ Olson, M. (1965). *The logic of collective action*. (p. 3). Cambridge: Harvard University Press.

opportunities and has built an extensive and growing network comprising both private and public sectors of different design and operation. This promotes the *realization of strategic opportunities, evaluate the complexities of policy shifts in a fruitful manner, and thus work effectively to achieve pro-development change*.¹⁵¹ With this set up, green innovation is able to benefit roughly from globalization if taken due consideration. The continuously rapid progress of globalization has led to drastic modifications of the set of elements that configure policies which affect both developed and developing countries, in fields like economy, society and environment, amongst others. Natural resource governance must be able to manage the tools, information and know-how brought with due regards to globalization as a shortcut to consider the distribution, allocation and management of natural resources in the economic, financial, social welfare and development prisms, improving the growth of the nation radically in comparison to old fashioned standards.

To illustrate this scenario, we can take a look into Brazil and its complex system of city planning that follows guidelines suggested by international experience that indicate *a properly integrated system to share interests and incentives between rural and local governments*.¹⁵² In this context, with an inclusive political discourse between local and the state government it is displayed a more efficient green revolution by avoiding duplicities and potentiation of competitiveness promoting the management of determined natural resources more appropriate to the singularities of each locality.¹⁵³ It is evidenced the logic of collective action is imposed on the tragedy of the commons as once again a common reaction to the arisen problems is perceived.

In this sense, we can note that coming up from the base of natural resources and the environment, we are taking into account not only environmental issues but legal, financial, political, international, economic and technological. And this is the victory of the Leviathan. Natural Resource governance has the key to induce the world into a profitable economy standard model following green innovation ideas related to enhancing energy efficiency technology. This is what makes citizens respect the environment. Europe has been one of the first ones to address globalization and natural resource governance as they seek to have implemented by 2020 a full transformation of

¹⁵¹ Ferrer, I. (2013). Understanding policy change: How to apply political economy concepts in practice. (p. 315). Washington, DC: The World Bank Publications.

¹⁵² Childress, Malcom D. (2008). Land Policy and Administration as a Basis for the Sustainable Development of the Brazilian Amazon. (p. 3). Washington, DC. The World Bank Publications.

¹⁵³ Ibidem. Page 6.

the economy onto a resource-efficient path, *something that will bring increased competitiveness and new sources of growth and jobs through cost savings from improved efficiency, innovations and better management of resources over their whole life cycle. This requires policies that recognize the interdependencies between the economy and natural capital and seeks to remove barriers to improved resource efficiency, whilst providing a fair, flexible, predictable and coherent basis for business to operate.*¹⁵⁴ Under this context, the sword is drawn and its stabs effective.

3.7 Dealing with Crises that Endanger our Green Future.

It is rightful to come to the conclusion that the green model of governance seeks to promote the defense of natural resources by establishing a governing synergy between what economy demands and what natural resources offers. Under this premise, it is in the 21st Century where the perfect setup to bring into action such model arises.

This is due to the increasing number of situations where natural resources arise in relation to political, legal, economic or social decisions. The 21st Century brings new challenges which test the ability of governments to adapt to them in a green, profitable way. However, the present section will bring the reader the occasion to judge the fact that current government standards are not green enough yet to talk about green innovation or green acceptance. This implies the loss of opportunities to shift the tendency towards managing natural resources, in a word where unfortunately their presence is limited and where every negative decision which brings them to the last step of consideration impacts decisively on natural resource survivability.

3.7.1 America: Example of turning Poor Water Governance into Green Innovative Governance.

Despite the fact that America as a continent owns a total water abundance of more than the 30% of the world's, its water resource management is far from being adequate.¹⁵⁵ The institutional weaknesses does not provide with the appropriate framework to deal with it, and thus productivity and benefit out of these water reservoirs are not positive for the growth of the countries enshrined in the continent, more concretely those located in the South of the region. How can the Leviathan and collective action provide with a solution to this?

¹⁵⁴ EESC. (2011). Roadmap to a resource efficient Europe (COM (2011) 571 final). (p. 5) Brussels: European Commission.

¹⁵⁵ Dominguez Serrano, J. UNESCO, Natural Resource Governance. (2012). Good governance to integrated water and resources management. (p. 9.). New York: World Water Forum.

The UNESCO Regional Process of the Americas¹⁵⁶ crucially states that the problems of natural resource governance in the region are associated with the *administration of water that needs to be managed in an integral manner, meaning the necessity to expand and strengthen public institutional capacities, the establishment of effective and clear regulations to provide efficient services, the coordinated management of shared river basins, and the formulation and implementation of effective, cross-cutting and coordinated policies, especially with the entities at local level.*¹⁵⁷ Finally, *the subsidiary action of governments, whenever possible, and the awareness and motivation of the population is also needed.*¹⁵⁸

As natural Resource Governance is bound by a wide range of dimensions to transform the world following the green revolution into a much more sustainable conception, every of the deficiencies that are connected to natural resources find a solution within the Leviathan's range of action. In the present example the answer to the institutional weakening must be tackled from its legislative dimension by issuing environmental legislation on access to information on water issues, *especially those topics which are most interesting to citizens, in the appropriate language, motivating their involvement.*¹⁵⁹ As a consequence, all these concerns are positive for the contribution of the development of the country as they open a wide range of operability and bring room for improvement for institutions and implication of human capital. The outcome is that once natural resource governance is given importance and therefore taken into account, it will result in a slingshot impact in the institutional power which will understand, under the laws and regulations surface, how to proceed with the management of the water seeking for the better welfare of the society.

3.7.2 Ecuador: Example of providing Genuine Solutions to Depletion Concerns.

Policy decisions which are taken outside the scope of natural resources directly impact its outcome, mostly in a negative way since they are not being taken into consideration. For this reason, the shield and the sword clearly show the inter-dependence between the states' governing dimension and the natural resource challenges. As an example to evidence Olstron's and Aristotle's concerning's¹⁶⁰, in this scenario we can refer to South America where most governance models are *halted in a bubble of poor*

¹⁵⁶ *Ibidem.* Page 6

¹⁵⁷ *Ibidem.* Page 5

¹⁵⁸ *Ibidem.* Page 3.

¹⁵⁹ *Ibidem.*

¹⁶⁰ Referring to the tragedy of the commons already explained in the first chapter.

*institution-trustworthy scenario, minor rule of law improvement, and property rights deteriorated.*¹⁶¹ How can natural resource survive in this habitat? In Ecuador, the National Park Yasuni is one of the greatest biodiversity areas in the world.¹⁶² However, in the same area lies correlatively one of the biggest concentrations of oil reserves in the world.¹⁶³ Due to this situation, and due to the necessity of developing countries to catch up developed ones, the proposition of starting fueling from this reserve was too appealing to be ignored.

However, in an unprecedented manner, Ecuador has decided to maintain the crude oil in the underground in order to put social and environmental values first. Ecuador will indeed forgo 846 million barrels of heavy crude reserves and, in turn, become the *first developing country to propose an effective, quantifiable and verifiable carbon abatement model.*¹⁶⁴ This model could be well related to the green governance model proposed through the thesis. Ecuador understood that the change of tendency towards natural resources protection had well to be addressed globally, and as *such, in the spirit of co-responsibility, requested the world community to contribute 50% of the income it is forgoing, amounting to US\$ 3.6 billion, with the balance being the contribution of the people of Ecuador to global goods.*¹⁶⁵ However, no sooner had this initiative started that it has miserably nevertheless proven to be a fiasco. The president of Ecuador stated that *"it was not charity that we sought from the international community, but co-responsibility in the face of climate change."*¹⁶⁶ However, only \$13M have been raised. Correa stated then that he had no other option but to abandon the fund as *"the world has failed us"*.¹⁶⁷

The failure in the proposed funding which was supported by the United Nations Development Program¹⁶⁸ has evidenced the reluctance from every actor to consider natural resource as a variable as important as the economic dimension. Even if some scenarios which will be further explained ascertain the shifting in this matter, the world

¹⁶¹ Edwards, S. (2012). *Left Behind: Latin America and the False Promise of Populism.* (p. 6.). Chicago: University of London.

¹⁶² The park is 250 km from Quito and was designated a UNESCO Biosphere Reserve in 1989.

¹⁶³ Yasuni National Park is home to an estimated 800 million barrels of crude oil – 20% of Ecuador's reserves.

¹⁶⁴ Information Retrieved from the Web page <http://mptf.undp.org/yasuni>.

¹⁶⁵ Ecuador Yasuni. (2012). ITT Trust Fund - Memorandum of Agreement

¹⁶⁶ Statement reproduce from the Web page: <http://www.bbc.co.uk/news/world-latin-america-23722204>

¹⁶⁷ *Ibidem.*

¹⁶⁸ The UNDP Office enables Contributors/Partners, Governments and UN organizations to work together in a unique, coherent way in a partnership with specific, well-defined purposes. The Office enables and strengthens these partnerships by offering an array of different Administrative Agent services.

has failed in providing natural resource with the resilience they require in one of the most important areas of the Earth. This might however be the result of an Ecuadorian model which lacks the variables and appealing necessities to bring the logic of collective action into play. For instance, the model was widely related to economic funding rather than technological or green market models of growth. As such, the green model of governance here appointed might be more inclusive since it is related to every dimension of the governance of the nation, and its variables are more enriching to the society as a whole rather than base its premises on simple economic matters.

3.8 Natural Resource Institutes an International Green Institutional Framework.

The complexity management of natural resources issues bring the necessity to take into account that those countries which do not issue natural resource legislation will be losing all the value this could report to society in terms of economic profit and human capital development.¹⁶⁹ The OECD in this sense is more concrete and mentions the fact that a governed environment will bring resource productivity as a mean to capture the needs for an efficient use of natural capital. This will open the possibility to capture aspects of production that are rarely quantified in economic models and accounting frameworks.¹⁷⁰ For this reason, this will furthermore improve economic opportunities and policy responses to help discern the effectiveness of policy in delivering green growth, reflecting the risks to growth from a declining asset base and the need to maintain the asset base to sustain growth.¹⁷¹

The UNESCO Water governance report continues to shed light into this matter and admits *that legislative asymmetry has several negative consequences for achieving a proper governance.*¹⁷² The lack of coordination between frameworks seems therefore to constitute another governance problem. Since various government agencies concur without the explicit obligation to cooperate, the report pessimistically states that *the result is the development of duplicities in sectorial actions within the same territory, duplicating efforts, resources and activities, promoting contradiction amongst these actions, reflecting all these in the lack of coordination, something mandatory when*

¹⁶⁹ UN. Development and International Co-operation: Environment, (1987). Report of the world commission on environment and development: Our common future (document A/42/427). (III. 6). Washington, DC. United Nation Publications.

¹⁷⁰ De Mello, L., & Dutz, M. A. (2012). Promoting inclusive growth: Challenges and policies. (p. 141). Paris: OECD Publishing.

¹⁷¹ *Ibidem*.

¹⁷² Dominguez Serrano, J. UNESCO, Natural Resource Governance. (2012). Good governance to integrated water and resources management. (p. 6.). New York: World Water Forum.

*natural resources governance issues arise*¹⁷³. The Leviathan falls and so does the logic of common action, which is replaced by the *tragedy of the commons*.¹⁷⁴

3.9 Natural Resource and Green Innovation. The Logic of Collective Action.

Continuing with the transformations that natural resource governance can bring to the 21st Century reality, we must thereon focus on addressing the fact that there must exist a synergy between governance and environmental law and justice in order to develop green innovation, and that this does not imply the fact that only these two elements must be addressed. There is indeed a deeper problem which drastically limits the room for action in this field, which is the lack of public funding some countries, especially the developing ones, have to face when deciding how to invest their money. Despite the huge drawback this can seem to result for these developing countries' growth perspectives, due to the promotion of globalization there is clear sight for looking to new ways of funding.

3.9.1 USAID and Green Innovation. Aiding Public Actors.

USAID¹⁷⁵ is a public United States stakeholder enshrined with the role of providing with the assistance and improvement of lives in the developing world, ranging from promoting human progress while at the same time making local governments better manage their natural resources equipping with the appropriate gear.

As a result, with a huge money investment, this organization is able to provide with the necessary funding to *support land tenure policies and resource rights, giving people the right to own and manage natural resources responsibly; fight deforestation and planting trees, so that forests continue to provide clean water and air, improve agricultural productivity; slow the rate of climate change, counter desertification, and support economic growth; protect biodiversity, so that people don't lose essential goods and services generated by intact and functional ecosystems, and species aren't lost to extinction; and mitigate and adapting to the effects of climate change, so countries can grow without harming the environment while strengthening their resilience to warmer temperatures and weather shocks*.¹⁷⁶ The *patched Leviathan* works correctly. It manages to adapt to new models of coercion which in this case do not imply obligation

¹⁷³ Ibidem. Page 9

¹⁷⁴ Ostrom, E. (2003). *Governing the commons*. (p. 2). Cambridge: Cambridge University Press.

¹⁷⁵ For more information on this matter please refer to the web page: <http://www.usaid.gov/>

¹⁷⁶ Information retrieved from the web page www.usaid.gov.

but derivate authority.¹⁷⁷ These models of Leviathan are believed to adapt fast enough to every environment as are supported by money expenditure.

Good Governance does not only mean political action, law enforceability, economy growth or human capital development. It must also manage to appear attractive to foreign investors in order to aim the aforementioned. In this sense, it is sought *capacity building, leadership promotion, participation of local actors, and incorporation of clinical and managerial best practices in health care facilities*.¹⁷⁸ For example, USAID works with the regional governments to identify problems, set priorities and develop strategies. The activity also works with local stakeholders, including governments, to prioritize improvements in the quality of environmental services provided. USAID uses as well the Performance Improvement Methodology to identify gaps in performance standards in local and national institutions, *allowing for better planning and focusing of resources to improve the quality of services provided*.¹⁷⁹ All of this result in the fact that due to the promotion of natural resources governance we are unconsciously promoting the welfare of the nation as a whole in terms of education and health.

3.10 The Positive input between Investing in Green Innovation and the General Growth's Outcome. The Victory of Green Governance.

One of the World Bank environmental Report Publications¹⁸⁰ has ascertained the important value of natural resources for the world's conception in different stages of its future development. *Short-term gains will come from improved economy wide efficiencies, to be achieved through efficient pricing (land, water, carbon, and pollution), regulatory reform, and public investment in critical green infrastructure*.¹⁸¹

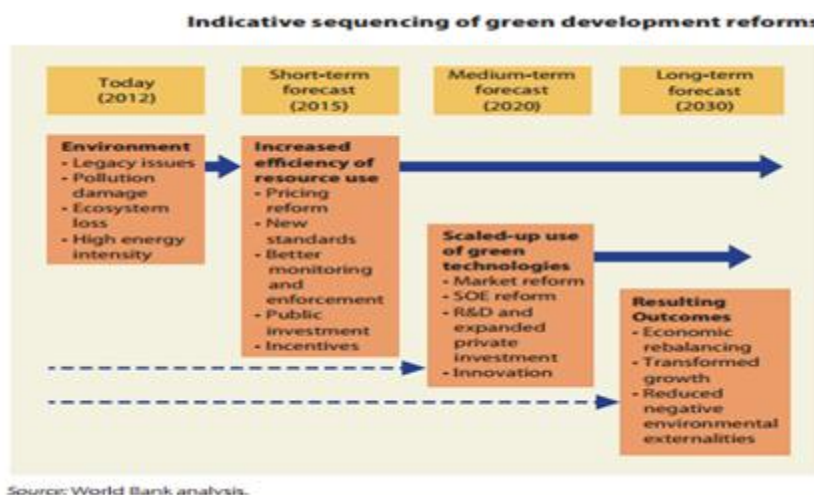
¹⁷⁷ Guedes Vaz, S. (2012). The tragedy of the commons and leviathan. A small insight into environmental political philosophy. (p. 78). Lisboa: Universidade de Lisboa e University of East Anglia.

¹⁷⁸ Edwards, S. (2012). Left Behind: Latin America and the False Promise of Populism. (pp. 114-21.). Chicago: University of London.

¹⁷⁹ Information retrieved from <http://map.usaid.gov/ProjectDetail?id=a0cd00000011q7SAAQ>

¹⁸⁰ Adams, J. (2013). The World Bank's GEF program in East Asia and the pacific. (p. 30). New York: The World Bank Publications.

¹⁸¹ *Íbidem*.



182

Early steps should also be taken to strengthen standards in areas that will pave the way for technical developments and behavioral change, such as more efficient buildings or transport vehicles.¹⁸³

We can refer to the attitude China's Leviathan is adopting towards this reality by bringing collective action into play by *expanding opportunities and services such as health, education and access to jobs for all people; modernizing and strengthening its domestic fiscal system; and seeking mutually beneficial relations with the world by connecting China's structural reforms to the changing international economy.*¹⁸⁴ China has rightfully understood fast enough the importance of being in the head of the race towards green innovation.

Continuing with the graphic study, medium-term gains will result from innovation and changed behaviors, which are believed that *will come in response to government reforms in support of new technologies, goods, and services; infrastructure and information support to green domestic and export markets; and scaled-up public education for all ages to help induce consumer and household behavior changes.*¹⁸⁵ The growth impacts of new technologies—in output, employment, and exports—should be measurable and significant by 2020, a date also chosen for the EU's new policy challenges.¹⁸⁶ In this EU's sphere we should refer to the projects seeking to *establish a common methodological approach to enable Member States and the private sector to*

¹⁸² Bank, W. (2013). China 2030: Building a modern, harmonious, and creative high-income society. (Charter IV). New York: The World Bank Publications. Research Center of the State Council.

¹⁸³ Ibidem. Page 33.

¹⁸⁴ Bank, W. (2013). China 2030: Building a modern, harmonious, and creative high-income society. (Abstract). New York: The World Bank Publications. Research Center of the State Council.

¹⁸⁵ Ibidem. Page 54.

¹⁸⁶ For further information about what this plan proposes please refer to http://ec.europa.eu/europe2020/index_en.htm.

*assess, display and benchmark the environmental performance of products, services and companies based on a comprehensive assessment of environmental impacts over the life-cycle.*¹⁸⁷

As a matter of fact, by 2030, under this program recommendations, important targets in lower emissions growth, clean energy, air pollution, waste management, and efficient land markets can be met.¹⁸⁸ In addition, the program route seeks to avoid risks associated with resource scarcity, climate change, and irreversible biodiversity losses stating that it *can be easily managed with a strong human capital and collective action background. This will bring 100% efficient renewable energy, air pollution, and waste management.*¹⁸⁹ By this time, countries which are focused on green innovation will have already routed a long way which will be hard to follow by countries struggling with their heritage in old fashioned growth paths that promote commons' individual approach to markets and benefits.

¹⁸⁷ EESC. (2011). Roadmap to a resource efficient Europe (COM (2011) 571 final). (p. 7). Brussels: European Commission.

¹⁸⁸ *Ibidem*. Page 10.

¹⁸⁹ *Ibidem*. Page 11.

4 The Human Capital and Social Welfare Dimension.

Once the Leviathan has been geared with a sustainable shield and a powerful sword, the green effects are soon displayed. It is time for addressing the tangible results in areas of society which highly influence the outcome and the prosperity of the nation. It is under these circumstances that I will be referring to education within the human capital and social welfare dimension.

As a humble opinion, the green revolution on education promotes the understanding of the needs of the environment and provides with the necessary knowledge to reach an environmental sustainability in the long-term; instructing new generations with the adequate know-how in order to balance economic growth without jeopardizing green innovations but maximizing the benefits it brings to the prosperity of the country. This constitutes another application of the *logic of the commons*¹⁹⁰ aimed to reach young generations which are ready to face as a group the new challenges of the 21st Century. If the synergy proposed is homogeneously acquired, the outcome for dealing with natural resource will be optimum. Education is widely related to technology innovation and thus constitutes the fuel of the natural resource governance while creating new green job opportunities.

It is ascertained the fact that relationships between individuals are the sum of natural capital, understood as an asset that has the potential to *yield streams of benefit that make future natural resources resilience processes more efficient, effective and innovative*.¹⁹¹ It is therefore important to take into account that if we are to implement natural resource governance models, we must not only focus on market or green regulations but greenly educate present and future young generations. These are the sword and shield wearers. What is sought is to demonstrate the interdependence between investment on education and innovation in governance.

4.1 Education. What is the Purpose of Establishing a Green Revolution in Education?

It is true to a certain extent that the current growth patterns are deeply inefficient. As a result, *they prevent the possibility to develop socially, environmentally and*

¹⁹⁰ Olson, M. (1965). The logic of collective action. (p. 1). Cambridge: Harvard University Press.

¹⁹¹ Kuku, O., & Ajibola, A. (2011). A review of literature on agricultural productivity, social capital and food security in Nigeria. (p. 34). Nigeria: Nigeria Strategy Support Program Publication (NSSP).

economically.¹⁹² Despite this matter, the past 20 years have shown that the economic and social goals are not only highly compatible, but also largely complementary, even dependent.¹⁹³

This data, taken from a World Bank report¹⁹⁴, imply the direct relationship between growth and poverty reduction. As a consequence, improved social outcomes, such as better health and education and greater equality of opportunities determine which types of policy interventions would help a country reach its environmental goals while also improving economic growth and social welfare. For instance, the report continues to state that in South American countries there is a need to reallocate resources from fuel subsidies to spend on education, health, and infrastructure, *as this will help reach environmental objectives and increase economic growth*.¹⁹⁵ *Energy subsidies in Ecuador, on average, cost double what the country spends on education*.¹⁹⁶ Furthermore, education spending in LAC ranges from 2 to 5% of GDP, whereas energy subsidies reach as high as 8.7%.¹⁹⁷ In addition, *energy subsidies are not transparent, obscuring the budgetary trade-offs*.¹⁹⁸

All in all, if we are to cut the trend of corruption and low rule of law, we must educate new generations on the basis of new values which must be in line with achieving a sustainable future. This is the human capital of the nation and implies that, if given the proper education and knowledge, the green educated generations will develop the long-awaited green revolution. Green shall not be misunderstood: it does not refer to teach generations about the characteristics of specific trees or plants. It means that due to the exigencies that natural resource scarcity impose it is feasible to develop new growth patterns adapted to the circumstances of the 21st Century and potentiate every economic and technological context.

Under this panorama it is crucial to produce a model of natural resource governance which copes with the necessity to educate in a fashion that will block and prevent degradation of the countries' governance by investing more in human capital. The

¹⁹² Bank, T. W. (2012). Inclusive green growth. The pathway to sustainable development. (p. 16). New York: The World Bank Publications.

¹⁹³ *Ibidem*.

¹⁹⁴ Bank, T. W. (2012). Inclusive green growth. The pathway to sustainable development. New York: The World Bank Publications.

¹⁹⁵ *Ibidem*. Page 160.

¹⁹⁶ Nash, J., & De la Torre, A. (2010). Natural resources in Latin America and the Caribbean beyond booms and boost? (p. 31). Washington, DC: The World Bank Publications.

¹⁹⁷ *Ibidem*. Page 36.

¹⁹⁸ *Ibidem*. Page 33.

accumulation of physical and human capital generate income levels and growth rates which were unreachable with traditional education models.¹⁹⁹ New education must be addressed by natural resource governance due to its powerful and sustainability implications. It enshrines people with the power to understand new problems and find innovative solutions, learning from past mistakes. Green education manages to shape behaviors in a positive way. Education is a cornerstone part of the green innovation. And what is more important: education is not only about knowledge but about job creation and therefore proliferation of models of collective action towards facing green problems.

4.2 Human Capital and Green Technology. Why is Natural Resource Governance Crucial for Education?

Most relevant economists have pointed that people in this century invest in themselves and that these investments contribute greatly to the growth of a nation in economic and social terms.²⁰⁰ Following such premise, one can take a look in the economic growth of different countries along the globe to certify that, in fact, investment in human capital with the promotion of education and strong institutions focused on research and development do have a relevant impact on the wealth of the nation.²⁰¹ In this sense, it seems simple that if people invest in green education they will actively contribute to the growth of the nation in fields such as renewable energies and technology and infrastructure innovation efficiently enough to manage profitably with scarcity, maximizing its life existence.

It is crucial for governments to invest on human welfare as the nation will not only ensure a competitive technological position but the promotion of capital flow within the country, maintaining a constant growth as money expenditure will be reinvested within

¹⁹⁹ International Bank for Reconstruction and Development. (2007). Intergovernmental fiscal transfers: Principles and practice. (Chapter IV). Washington, DC: The World Bank Publications.

²⁰⁰ Adam Smith included all of the acquired and useful abilities of all of the inhabitants of a country as a part of capital. In the same way did Marshall went through the concept of human investment as a core in the nation's wealth by explaining that human beings are incontestably capital from an abstract and mathematical point of view, where it would be out of touch with the market place to treat them as capital in practical analyses.

²⁰¹ By investing public funds on Research and Investment on developing people's overall knowledge on fields in which the country is in competitive advantage to another one, the amount of expenditures spent on them will pay back to the growth of the nation at a further date when in fact human capital will not leak the Country.

it.²⁰² All of this is reaffirmed by prestigious economists such as Schultz and Becker, who have addressed the importance of people in the process of production and in return they are rewarded by an *amount which constitutes the largest fraction of income*. Therefore, *an explanation of economic growth is unsatisfactory so long as the rate of technological advance is treated as exogenous to the system*.²⁰³

Natural Resource Governance brings growth to the nation in a number of different assets. It can promote *inter alia* equalities, culture, or the generation of new green job opportunities. It as well brings societies the knowledge to understand new challenges. All of these nevertheless depends on the willingness of the government to promote education. And therefore here is where the role of the natural resource governance or the Leviathan shows up.²⁰⁴

If green values begin to be tackled within education as a form of investing in human and social capital it is feasible to develop a green approach in order to make *future productive processes more efficient, effective, innovative, or simply expanded, just like physical and natural capital*.²⁰⁵ As Coleman states, *unlike physical or human capital, however, social capital is not embodied in one person; rather it is in the relations a person has with other individuals and with the socioeconomic institutions within which that individual operates*.²⁰⁶ Therefore, if the government manages to introduce green ideas and green innovations within a society's educative dimension, these will ease the path for promoting green and manage to efficiently introduce the idea of the logic of collective action.

As a consequence, in countries where there is lack of money expenditures, it would be enough to promote green education in regions where societies are strongly connected, resulting in the *possibility of individuals to take advantage of whatever financial and human capital other family members possess*.²⁰⁷ Various studies in Africa

²⁰² This is what the Stieglitz Report's Formal Recommendations evoke with regards to considering income and consumption jointly with wealth as well as tackling quality of life indicators to understand human-beings needs and focus policies on its promotion.

²⁰³ Razin, A. *Metroeconomica*, (1972) Vol. XXIV Phase II, Tel Aviv: University of Tel Aviv.

²⁰⁴ We should refer here to the concept of natural resource governance as the ability of the government to implement Green policies and invest on Green innovation in a way that will be included within the education objectives of new generations in a fashion of importance for understanding better the management and relevance of natural Resources in order to prepare these future young generations with the required knowledge to deal effectively with the new challenges that must be greenly solved.

²⁰⁵ International Bank for Reconstruction and Development. (2007). *Intergovernmental fiscal transfers: Principles and practice*. (p. 54.). Washington, DC: The World Bank Publications.

²⁰⁶ Coleman, J. S. (1988). Social capital in the creation of human capital. (p. 120). *The American Journal of Sociology*, 94 (95).

²⁰⁷ *Íbidem*.

have shown that the social capital that families have access to make a big difference in their abilities to surmount adverse events.²⁰⁸ It is feasible then to connect social capital with the *logic of collective action*.²⁰⁹ As a consequence, we have come to the position of ascertaining that due to natural resources governance we are not only promoting green patterns of growth but managing to create synergies between developing regions. Green education will in the long turn bring prosperity to these nations starting from the human capital. From thereon, the rest seems automatically programmed.

As an example we can refer to India and the launched campaign *Total Sanitation* in 1999, focused on education and communication mainly. There was little government contribution to the capital cost of sanitation facilities. Instead, the program was run by private investment and private behavior change, namely following the logic of collective action, which impacted in people not included in the project and brought the *green seed* to them as the campaign was able to bring awareness of the benefits of sanitation. Soon sanitation was being proactively addressed by human capital and proliferated across the regions.

4.3 The Other Side of the Coin: Far-too Reaching Objectives under the Banner of Natural Resource Governance education?

Numerous are however the speeches of poor people who bring skepticism to a hypothetic positive impact of natural resource governance in bringing positive outcome to human welfare somehow. For example we can cite Tomnissoi Davlat, who from a tiny African region states that this year he had only harvested *500 kilograms of wheat per hectare*. He *therefore sowed his seeds too late because fuel prices rose sharply at the beginning of spring*. Then, once he had enough money for fuel and plowing services, it was already too late.²¹⁰

At the same level are the statements of Fulmandi Mandi, citizen from India, who argued that she is very worried about her children's future: *now we have 2.5 acres of land. I have three sons. When they divide the land, each one of them will get only 0.8 acre, which is of no use. I don't know how they will survive.*²¹¹

²⁰⁸ Kuku, O., & Ajibola, A. (2011). A review of literature on agricultural productivity, social capital and food security in Nigeria. (p. 34). Nigeria: Nigeria Strategy Support Program Publication (NSSP).

²⁰⁹ Olson, M. (1965). The logic of collective action. (p. 3). Cambridge: Harvard University Press.

²¹⁰ Voices of the Hungry. (2012) International Food Policy Research Institute. Information Retrieved from <http://www.ifpri.org/blog/voices-hungry?print>.

²¹¹ Ibidem.

How can education and green governance possibly cope with such a negative tendency? Are not these situations outside the scope of action of this dimension? Is it feasible to reconcile education and natural resource into social welfare in this scenario? It is true there is the natural capital asset, however there is a lack of governance willingness to promote intra-generational equity. The tragedy of the commons is meant to deeply occur under this scenario.²¹²

For this reason what is aimed is to achieve a breakthrough in improving governance transparency and an interest in institutionalizing and transforming all policies promoting a close and equalitarian intra-generational relationship with society. What is sought is the intention of upgrading values. The contribution of green governance to this reality comes by the hand of establishing a nonmonetary *form of capital which is indeed an important source of power and influence similar to the influence of traditional economic capital such as the size of one's stock holdings or bank account.*²¹³ It is aimed to manage natural capital in a way that brings prosperity to the nation. This is the role of education and of human capital. For this reason, in these countries that lack the political willingness to do so, globalization will aid financially and institutionally to these effects. It is in this branch of natural resource dimension that the logic of collective action must be preserved, and only by educating new generations to do so will governments be able to provide with environmental resilience in areas where these concerns are not yet known.

4.4 Examples of Social Capital: Green Educative Collective Action heading towards Green Revolution.

Continuing with the two quotations from the villagers, it should be noted that Governments from India and Africa could promote a better situation by instituting green revolution under social capital means.²¹⁴ This could well provide citizens with better income opportunities establishing a harvesting method as a starting point from where to begin developing the poorer regions. In this regard, a definition by Bourdieu was proposed in order to highlight two cornerstone elements: *the social relationship which*

²¹² Ostrom, E. (2003). *Governing the commons*. (p. 5). Cambridge: Cambridge University Press.

²¹³ Portes, A. (1998). Social capital: Its origins and applications in modern sociology: *Annual Review of Sociology*. (24) (1), 12.

²¹⁴ Social Capital is understood as the “features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit.” Putnam, R. (1995). *Bowling alone: America's declining social capital*. (p. 67). *Journal of Democracy* 6: (65-78.)

*provides people with the right to claim access to the resources of their network and the amount and quality of those resources.*²¹⁵

One distinction that Bourdieu makes on social capital states that while the outcomes of social capital are economic, *the process that brings about this economic outcome are not economic but social driven.*²¹⁶ And this is what must be promoted in developing regions by including green innovation and the educational field as soon as possible. Education is conceived as a social welfare indicator. *Unlike traditional economic interactions,* continues Bourdieu, *within the framework of institutionalized social interactions, various actions are driven by unspecified obligation with uncertain time frames and the possible violations of immediate reciprocity.*²¹⁷ Green education aims to correct this.

4.5 Green Development and new Sources of Employment. Competitive Human Capital as a Comparative Advantage.

As a matter of fact, natural resource governance does not only provide social capital to developing regions. Growth is correlated to innovation, and so is education to technology. What is sought is to stimulate a green economic growth²¹⁸ that makes feasible the use of natural resource governance models. Therefore we must find a link between promoting green education and producing growth that exceeds traditional growth models.

In this sense empirical research done in developed countries has concluded that in the medium term, green growth will have a positive but small net effect on the number of jobs in the global economy.²¹⁹ Within this overall scenario some countries who are over-populated but which consist on full human capital such as China, will perform intensely in creating green technology jobs. Furthermore, evidence from another developed countries also suggests that *those jobs that are created in the transition to green growth are often skilled and high paying.*²²⁰ Another study in Germany conducted by the UNEP found that implementing measures to mitigate climate change led to more

²¹⁵ Siisiäinen, M. (2000). Two concepts of social capital: Bourdieu vs. Putnam. (pp. 10-18). Dublin: University of Jyväskylä Publications.

²¹⁶ Ibidem. Page 15.

²¹⁷ Ibidem. Page 16.

²¹⁸ As being already explained, governments tend to apply the best growth model possible from what they have to offer as a country to the market.

²¹⁹ Gaušas, S. (2012). Greening of industries in the EU: Anticipating and managing the effects on quantity and quality of jobs. (p. 14) Lithuania: Eurofound.

²²⁰ A recent nationwide study of green industries in the United States revealed that the median wage in these industries is 13% higher than the median wage in the overall economy.

job opportunities for college graduates.²²¹ This finding is linked to the higher component of innovation found in newer technologies than in more traditional ones.

For this reason it is important to remark the UNEP 2011 Report which argues that green policies are *a new engine of growth* and *a net generator of decent jobs*.²²² The recent global economic downturn triggered many proposals for *green* fiscal stimulus to promote growth by green job creation. The OECD also suggested that investing in green activities has substantial potential to create jobs. It furthermore states that Chinese for its own sake estimate that *measures to save energy, protect the environment, and replace polluting industries with high tech firms would lead to the net creation of 10 million jobs over the next 5–10 years, and that exports of green goods could create some 4–8 million jobs*.²²³ The key concept lies within the power of governments to keep promoting this trend, as this brings economic growth in long term and at the same time issues resilience to the environment. It is evident however that human capital is what makes this reality possible. Natural Resource governance is the best choice to address future challenges.

However, as the OECD reaffirms, the key finding is that environmental policies will lead to substantial job creation only if other inefficiencies are tackled. In other words, it states that *green growth policies are no substitute for good growth policies*.²²⁴ But while green growth may not be the answer to general unemployment and low competitiveness, the OECD fears that environmental regulations would result in job losses and lower competitiveness.²²⁵ Meanwhile, better regulations such as tax recycling, implying *using revenues from environmental taxes to reduce other taxes* will help on their point of view minimize the risks posed by green growth policies and maximize co-benefits.²²⁶ For this reason it seems that the role of the human capital once it has been correctly instructed is to bring collective responses to these situations and to bring gradually an answer to these environments which are still outdated.

²²¹ UNEP. Environment Governance, (2011). Annual Report 2011 United Nations Environment Programme (DCP/1492/NA). (p. 43.). Washington, DC. The World Bank Publications.

²²² Ibidem. Page 72.

²²³ EESC. (2011). Roadmap to a resource efficient Europe (COM (2011) 571 final). (p. 3). Brussels: European Commission.

²²⁴ Bank, T. W. (2012). Inclusive green growth. The pathway to sustainable development. (p. 12-45). New York: The World Bank Publications.

²²⁵ UNEP. Environment Governance, (2011). Annual Report 2011 United Nations Environment Programme (DCP/1492/NA). Washington, DC. The World Bank Publications. From which to focus on Martinez-Fernandez and others, 2010; Dupressoir and others 2007).

²²⁶ Nash, J., & De la Torre, A. (2010). Natural resources in Latin America and the Caribbean beyond booms and boost? (p. 34-40). Washington, DC.: The World Bank Publications.

This obviously depends on the background and context of the country, its needs and its demands. It also varies regarding the education and the degree of importance different green industries are given and so the human capital development will head towards one or another direction. However this should not be a problem in terms of addressing the globalization in means of importing foreign human capital. This leads to a global collective action towards natural resource resilience. This will in long-run mean the negation of the premise of Aristotle claiming that *what is common to the greatest number has the least care bestowed upon it.*²²⁷ The only feasible way to change the trend was to include new growth patterns that were conceived as a result of the new education model prompted to adapt to natural resource scarcity.

4.6 Green Revolution in action: Developing Green Patterns as a Reward for Investing on Human Capital.

The rapid understanding and adaptability of some governments to cleaner energy technologies is illustrated by the surprising rise in the number of worldwide patent filings for the kind of these efficiency technologies. This is stated in the Chinese Environmental Report of 2013²²⁸, which reaffirms the model of investing heavily on human capital and promoting green energies in education is efficient and rewarding. For instance, it sheds light in this issue by ascertaining that China occupies a prominent place within this global trend of innovation.²²⁹ The number of wind power patents granted to Chinese inventors has in fact increasingly evolved within the past five to seven years, *and transfers of wind power technologies to China from the developed countries over the past two decades have exceeded any other country.*²³⁰

As China continues to absorb and innovate new green technologies, these technologies will become increasingly competitive and contribute to the country's growth in the upcoming years. This is only due to the proactive governance towards natural resources protection and the investment in green education. For this reason, the growth of China's environmental protection and natural resource promotion demonstrates the crucial role that the governance plays in promoting green growth. We

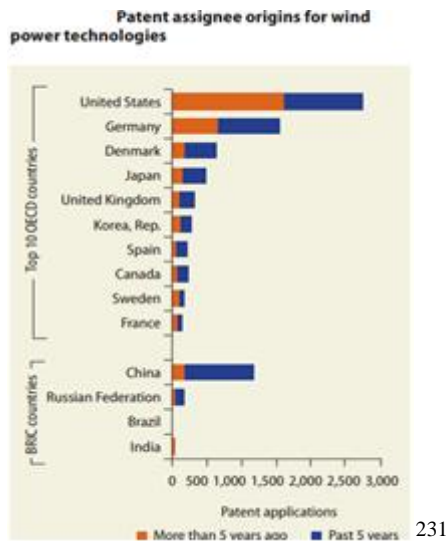
²²⁷ Aristotle. (1966). The politics and the constitution of Athens. (Vol 2, p.33). Cambridge: Cambridge University Press.

²²⁸ Bank, W. (2013). China 2030: Building a modern, harmonious, and creative high-income society. (p. 212). New York: The World Bank Publications. Research Center of the State Council.

²²⁹ Bank, T. W. (2012). Inclusive green growth. The pathway to sustainable development. (p. 60). New York: The World Bank Publications.

²³⁰ Ibidem. Page 18-30.

can ensure there will not be another *Cold War* but probably in the near future we will be facing a *Green War* where human capital will decide more than technology developments.



4.7 Green Improves the Quality of Growth.

Continuing with the green revolution in China, we shall continue to mention the above report of the World Bank where it is conceived people's welfare as the sum of concepts such as good health, quality of life, and a clean environment, in addition to income and economy grow.²³² The Report states that while some of these welfare concepts are not quantified in traditional measures of GDP, they can, nevertheless still be measured.²³³ For example *improving the "quality of growth" implies improving some or all of these welfare measures that convert into education improvement.*²³⁴ It has been already mentioned that social welfare is an indicator of education.

In a green environment, the report continues: *China has already made great strides in improving these welfare measures by capitalizing its human capital.*²³⁵ This indicates that some improvements in environmental quality are necessary investments that will benefit the quantity of growth in the medium and longer terms as well.²³⁶

²³¹ Graphic obtained from: Bank, W. (2013). *China 2030: Building a modern, harmonious, and creative high-income society.* (p. 212). New York: The World Bank Publications. Research Center of the State Council.

²³² Bank, W. (2013). *China 2030: Building a modern, harmonious, and creative high-income society.* (p. 211). New York: The World Bank Publications. Research Center of the State Council.

²³³ Bank, W. (2013). *China 2030: Building a modern, harmonious, and creative high-income society.* (p. 211). New York: The World Bank Publications. Research Center of the State Council.

²³⁴ *Ibidem.*

²³⁵ *Ibidem.* Page 212.

²³⁶ *Ibidem.* Page 213.

In conclusion, these investments are mainly focused towards education and human capital as a way to reach faster technology development. Technology is a collective concept and as such its development depends on the degree of collective action that the government manages to produce. For this reason, in countries which are based on abundant natural resources, the comparative advantage between developing greater technology will consist on the assets to take into consideration improvements on the educational field.²³⁷

In this way, policy making regulation must be able *to realize strategic opportunities, evaluate the complexities of policy shifts in a fruitful manner*, and thus work effectively to achieve pro-development change.²³⁸ This is a result of the promotion of human welfare, as the nation is not only ensuring itself a competitive technological position but the promotion of capital flow within the country.²³⁹ In fact, investment in human capital with the promotion of education and strong institutions focused on research and development²⁴⁰ do have a relevant impact on the wealth of the nation. A proof of this can be found in the pattern graphic. Society uses to their benefit the education the government has invested on them. These are the results of following green collective action policies: raise awareness to society about their key role in promoting the defense of natural resources in a fashion that, by doing so, it will report back a benefit for them that is valuable in the 21st Century: Survivability and Economic growth.

²³⁷ Edwards, S. (2012). *Left Behind: Latin America and the False Promise of Populism*. (p. 113.). Chicago: University of London.

²³⁸ Corduneanu-Huci, C., & Hamilton-Huci, A. (1983). *Understanding policy change: How to apply political economy concepts in practice*. (1st ed., p. 315). New York: The World Bank Publications.

²³⁹ This is what the Stieglitz Report's Formal Recommendations evoke with regards to considering income and consumption jointly with wealth as well as tackling quality of life indicators to understand human-beings needs and focus policies on its promotion.

²⁴⁰ By investing public funds on Research and Investment on developing people's overall knowledge on fields in which the country is in competitive advantage to another one, the amount of expenditures spent on them will pay back to the growth of the nation at a further date when in fact human capital will not leak the Country.

5 Natural Resource Governance and the Market Dimension. Harvesting the already Grown Green Seeds.

5.1 Aiming for green Patterns of Revolutionary Growth to Compete with Traditional Income Models.

As the OECD states, green growth strategies *cover a wide range of policies in order to deal with the specific characteristics of the countries in which it is applied, as well as the existing institutions and regulations in those countries, and the relevant nature of the environmental problem involved.*²⁴¹ For this reason, once an environmental friendly governance has been set up, with the assistance of a strong institutional system which manages to respect and develop the enforceability of the rule of law from an environmental justice perspective, we can start building the inclusion of green innovation in the education field as a promotion of the technological efficiency and the efficient way natural resources will be managed in the near future. In this sense, at this point the model is ready to bring profit in monetary terms to nations. Green innovation's outcome will therefore under OECD's premises result in a positive input for the economic growth of the country.

As an evidence we can note that market and policy incentives that reward business investments in efficiency are indeed occurring. These incentives have stimulated new innovations in resource efficient production methods that are starting to be more generally used. For this reason, *economic growth and wellbeing is decoupled from resource inputs and come primarily from increases in the value of products and associated services.*²⁴² This increase in the value is provided by green innovation, and detaches harming the environment from receiving economy benefit.

5.2 Measuring Economic Performance in the Green Dimension Market.

As the economy matures, it starts to take into account environmental tools previously extraneous for the market, as it realizes the economic benefits of cleaner and more efficient production. For this reason, *gradually the environmental command-and-*

²⁴¹ De Mello, L., & Dutz, M. A. (2012). Promoting inclusive growth: Challenges and policies. (p. 141). Paris: OECD Publishing.

²⁴² EESC. (2011). Roadmap to a resource efficient Europe (COM (2011) 571 final). (p. 7). Brussels: European Commission.

*control “push” policies in the initial periods are replaced in the medium to long run by market-driven pull policies to achieve cleaner and more efficient production.*²⁴³

In other words, a Green Growth scenario assumes the increasing investment towards cleaner technologies. It promotes a new environmental-friendly trend in global economics, which is further complemented by the use of taxes. These are primarily associated with an increase in pollution control techniques seeking for the modernization of existing capital by the dropping over time of its use in non-clean energies *with very low additional cost to the producer.*²⁴⁴ The money earned reverts into public expenditure.

5.3 Disarming Capitalism Skepticism under Green Resource Market Forecasts.

In most of today's societies it has always been promoted the idea- probably as a result of the capitalism- of the importance of achieving economic profit no matter how. However the enrooted this idea seem to be in most of the societies nowadays, especially those in the western, with the development and inclusion of green innovation a country can shift to green growth by establishing strategies to reduce environmental degradation in order to maintain a high pace of economic growth without jeopardizing future's environmental sustainability or risk economic development. In this sense, under a World Bank report²⁴⁵, it is stated that India can stop its not so green economy growth at the minimal cost of 0.02% to 0.04% of average annual GDP growth rate, and nevertheless promote long-term economic growth and environmental sustainability; giving value to biodiversity and ecosystem services in its regions.

In this sense, according to this assessment, the annual cost of environmental degradation in India amounts to about \$80 billion, the equivalent of 5.7% GDP.²⁴⁶ Furthermore, the assessment states that *about 23% of child mortality in the country could be attributed to environmental degradation*²⁴⁷, whit a critical collateral effect in the human capital and therefore in the lack of technology prosperity. What natural resource governance defends is a clean model of technology efficiency that in return of managing sustainably the environment this will bring benefit and economic growth to the nation.

²⁴³ Bank, T. W. (2013). Diagnostic assessment of select environmental challenges in India. (p. Abstract). New York: The World Bank Publications.

²⁴⁴ *Ibidem*.

²⁴⁵ *Ibidem*. Page 56

²⁴⁶ *Ibidem*. Page 43.

²⁴⁷ *Ibidem*. Page 32.

It is in this context where we must understand the real role of the natural resource management towards market profiting: *there are low cost options that could significantly bring down environmental damage without compromising long-term growth objectives.*²⁴⁸ On words of Ruhl, World Bank country director in India, *the costs of doing this are not only affordable in the long-term but would also be offset by the significant health and productivity benefits.*²⁴⁹ Green Market brings income and respects societies at the same time.

5.4 Bringing Natural Resource Advantages into the Market Dimension.

We are witnesses of the development of a new economy trend that considers environment as the key role from which to develop a new model of market which respects human and environmental health and promotes the use of new energy sources. It has been stated that with the support of policy mechanisms such as taxes and compensations, and with the enforceability of the rule of law which promotes the development of human capital and institutional strength, it brings green governance to an economy growth model suitable for the challenges of the 21st Century. What is even more, this model brings not only the reduction of CO2 emissions in order to face Climate Change, but it is meant to be a tool for policy making: *its strengths lies in the representation of inter-sectorial linkages both within and outside the country. At an economy-wide level, the model makes it possible to determine whether growth objectives are compatible with the environmental objectives.*²⁵⁰

5.4.1 Boosting Economic Performance in Green Market Models.

Due to the wide spectrum of possibilities environment by the hand of natural resource management brings into collation to policy making, there are a wide range of indicators that make possible the optimum shaping and modulating of the green economy market. This is feasible by taking into account profitable partnerships from disciplines ranging from science to statistics. In this sense, what is sought is to generate a full natural resource governance in line with a strong environmental rule of law which benefits from policy making as a whole.

²⁴⁸ Bank, T. W. (2013). Diagnostic assessment of select environmental challenges in India. (p. 24). New York: The World Bank Publications.

²⁴⁹ Press Release. (2013, July 17). India: Green growth is necessary and affordable for India, says new World Bank report. <http://www.worldbank.org/en/news/press-release/2013/07/17/india-green-growth-necessary-and-affordable-for-india-says-new-world-bank-report>

²⁵⁰ Stiglitz, J.E., Sen, A., & Fitoussi, J. (2008). Report by the commission on the measurement of economic performance and social progress. (p. 21). Paris: OECD Publishing.

Under the Stiglitz Report, focused on measuring economic performance and social progress, it has been ascertained as a matter of fact that it is possible to correct the GNP and environmental health by applying indicators to the green economy model by establishing, inter alia, carbon impacts of different growth paths²⁵¹, in order to choose the best one out of probabilities and science-tests. It furthermore states that it is also important to incorporate multiple scenarios to rely on monetary and fiscal stimulus to ensure an income growth pattern.²⁵²

There are as well measures to facilitate infrastructure investment, reform the financial sector and labor markets. According to IMF in fact, *reorienting expenditure toward social areas is vital to make growth more inclusive, which, in turn, would boost growth.*²⁵³ These are all the advices natural resource governance must take into consideration and include in the markets in order to change the fashion and engine of it and turn it into a green more profitable one that is not only concerned about producing money but on bringing sustainable income and health care.

As a consequence, one of the advantages of green markets that is being professed in these reports is that there is a factual flexibility in incorporating multiple scenarios where environment and natural capital are taken into account in order to be able to correctly determine how the market must act within its operability framework.²⁵⁴ This means that the Leviathan and the logic of collective action must be taken into account as some natural resources will need a concrete technology innovation in order to be profitable economically.²⁵⁵ This brings specialization to the markets and comparative advantage towards choosing the better green models of growth.

5.4.2 Economic Revolution towards Leading Human Capital Development. Bi-dimensional Synergy.

Following the above premises, it must be concluded that Green Governance, as Prosperity, is not a fixed term, and as such its applicability and its indicators on how to do so largely depend upon the context and the situation where it is taken into account.

²⁵¹ Parikh, K. (2009). India's Energy Needs, CO2 Emissions and Low Carbon Options', 22nd International Conference on Efficiency, Cost, Optimization, and Environmental Impact of Energy Systems. (p. 3). Foz do Iguaçu: Brazil.

²⁵² *Ibidem*. Page 4.

²⁵³ IMF. IMF Publication Services. (2012). Outlook and risk regarding growth. (IMF Country Report No. 12/96). (p. 7). Washington, DC: IMF Publications.

²⁵⁴ *Ibidem*.

²⁵⁵ Ophuls, W. (1973). Leviathan or Oblivion. In *Toward a Steady State Economy*. (p. 228). San Francisco: Freeman & H. E. Daly.

For this reason, in a developed country it will be more necessary to focus on developing macro-economic inputs translated into fiscal mechanisms when dealing with green markets. To the fact that human capital will be more connected to the technologies disposed, there will be a strong rule of law where institutions can sustain the genuine evolution in the scenario where the environment has the key in the shaping of politics and economics.

From a market perspective, environmental law and justice are less decisive than politics or economics, as they are more static. What is therefore needed is to update and adapt laws and regulations to cope with the new challenges green growth markets bring into action.

In this model of natural resource governance it is evidenced a strong rule of law, assisted by the institutional power which prevents corruption and therefore eases the path for economic growth. Environmental policies are more prompt to be effectively enshrined. For example, in Ireland progress has been made under this tenor by integrating biodiversity concerns into the law dimension, issuing regulations where local authorities' development plans must include objectives for natural heritage protection and landscape preservation.²⁵⁶ This leads to the designation of Special Areas of Conservation under different European Directives such as the Habitats one.²⁵⁷ This evidences that green markets must respect such regulations and adapt to profitable ways to produce income.

On the other hand, in developing countries such as those localized in Latin America or Africa, Natural Resource Governance has to face a completely radically different market context. To the concentration of corruption, which has been identified as one of the major actors that can hinder development²⁵⁸, we must also add to the pot a weak rule of law, resulting in a significantly drawback in terms of affecting economic growth and distributive outcomes.

In this sense, and considering *corruption as a huge indicator of human development*, it is understood that in these areas there is a poorly functioning state, meaning a failure of ethical leadership, democracy and what is worse, good –natural

²⁵⁶ OECD. OECD, Environment Directorate. (2010). OCDE environmental performance reviews. (p. 115): Ireland. Dublin: OECD Publishing.

²⁵⁷ Ibidem.

²⁵⁸ Corduneanu-Huci, C., & Hamilton-Huci, A. (1983). Understanding policy change: How to apply political economy concepts in practice. (p. 323). New York: The World Bank Publications.

*resource- governance.*²⁵⁹ There is no Leviathan. The tragedy of the commons is the general rule in a context where the economy fails and drug-related activities become a superior economic alternative. Macedo states that this in turn makes institutions deteriorate, corruption spread and rule-of-law disappear. *A vicious spiral gets underway, with bad institutions and bad economic performance reinforcing each other.*²⁶⁰

5.4.3 How to face this Two-speed Race Problematic.

As if we were to build a house, we would not start by setting up its roof but deciding how to locate its pillars to sustain the house as a whole. In this sense, it is important to understand that we cannot start building a green economy market from the highs, namely to directly develop a governance system that only seeks to produce instant economy growth and that lacks institutional strength and is based on a weak rule of law. This is simply far-fetched. Under this conditions everything is set up for starting the tragedy of the commons.²⁶¹

What must be sought is to develop a market system able to cope with green human capital and from thereon, develop the social capital of the nation which at the end will improve *several aspects of social welfare, particularly poverty reduction, in addition to influencing technology adoption.*²⁶² In this sense, the political will and the power of institutions will manage to form a synergy between social needs and economy growth. This will induce an idealistic environment profitable future for present and future generations as for the positive economic impact of the nation.

In order to promote green innovation it is necessary to break the mold of monotony of pollution and loss of human capital and generate an environmental friendly policy able to bring environmental law and justice as the paradigm of achieving sustainability in relation from what the country has to offer for income growths and market resilience when dealing with environmental concerns such as climate change or CO² pollution.

²⁵⁹ Sissener, T., & Søreide, T., Amundsen, I. (2000). A policy oriented survey. Research on Corruption. (p. 52). Oslo: Norwegian Agency for Development Co-operation Publications.

²⁶⁰ Macedo, J. (2012). The urban divide in Latin America: Challenges and strategies for social inclusion. Latin American Research Special Issue, 31(2), 265-266.

²⁶¹ Ostrom, E. (2003). Governing the commons. (p. 2). Cambridge: Cambridge University Press.

²⁶² Kuku, O., & Ajibola, A. (2011). A review of literature on agricultural productivity, social capital and food security in Nigeria. (p. 1). Nigeria: Nigeria Strategy Support Program Publication (NSSP).

5.4.4 Economic Performance in Nigeria: Putting Theory into Practice.

Despite the rapid pace of urbanization taking place in some African countries like Nigeria²⁶³, most of the population still lives in rural areas whose unique meaning of subsistence is agriculture. This situation does not help social capital as there is neither money nor social inputs. Is it therefore feasible to bring a green market model?

As a Report of the UNDP in 2009 states, Nigeria is the 8th most populous nation in the world, with about 140 million inhabitants.²⁶⁴ This evidences the completely dependence on climate factors and human workforce labor, even more when the first economic sector is of such crucially that employs over 70% of the Nigerian labor force, and serves as a potential vehicle for diversifying the Nigerian economy.

In this sense, the report continues to mention that there have been several attempts by the federal government to create programs to improve agricultural productivity in; many of which are developed with the aid and inputs of international organizations. What these seek is the greening of traditional sectors, which is a half-step between a less dramatic and revolutionary natural resource management than the development of cutting-edge new technologies.²⁶⁵

The report states that this is mainly due to the fact that many efficient investments are also cost-effective and yield high economic returns, something that agriculture in Nigeria is not bound to cope with. For this reason, as a first step moving towards green innovation, natural resource governance must provide *social relationships with an instrumental role in the daily lives of all humans, particularly in developing countries where these relationships bridge the gaps caused by numerous market and institutional failures.*²⁶⁶

Under this panorama, it seems that what lies ahead is the necessity to bring globalization into context as the tool to generate private investment and therefore the possibility for the developing country to start building a profitable market in medium and long-turn. As a consequence, it is needed the surveillance of an international organization to delineate the role of the nongovernmental or private corporation and as well make this nation appealing for private investors.

²⁶³ Where there are 70 million individuals.

²⁶⁴ Poverty is widespread with an estimated 80% of Nigerians subsisting on less than \$2 a day (UNDP 2009). Despite rapid levels of rural-urban migration, poor rural dwellers still account for about half of Nigeria's population.

²⁶⁵ Kuku, O., & Ajibola, A. (2011). A review of literature on agricultural productivity, social capital and food security in Nigeria. (p. 12). Nigeria: Nigeria Strategy Support Program Publication (NSSP).

²⁶⁶ Ibidem. Page 8.

It is known that by doing so, a large number of existing conventional techniques and management models will not only reduce energy use and emissions but also improve the level of corporate profitability. This will at some point turn into the expansion of emerging green industries which will in the long-term replace agricultural dependence. The report finalizes by arguing that agriculture is here seen as a negative indicator that hinders human capital and social welfare and as such must be prevented in a way that will stimulate a market innovation under natural resource scarcity management.²⁶⁷

For example, in developing countries, human capital and the logic of collective action proposed by Olson will be idealistically pursued in order to move towards emerging green industries which include solar and wind energy.²⁶⁸ In addition, increased public awareness will help shift consumer demand toward green products and promote the much needed common action. This will promote in the long turn services as a complement to new green product markets and incentive changes in consumer preferences. Not only will the rising share of services in GDP help reduce the economy's carbon intensity, specialized services are likely to develop that specifically support green development. The green market is implemented and already providing with future innovations and developments.

5.5 Shared Prosperity. China on the Lead after adopting Green Market Prospects.

Green market models are based on the fact that scarcity is the common denominator towards planning new sources of income. This promotes the development of new green growth patterns, *allowing the economy to create more with less, delivering greater value with less input, using resources in a sustainable way and minimizing their impacts on the environment.*²⁶⁹

In this sense we should travel to the Asian continent to look into China and its efforts to come up with genuine developed strategies highlighted in the Report of the World Bank 2013 that seek to rebalance the role of the government and markets, human and social welfare and society within the public and private sectors, to reach the goal of a high income country by 2030. It indeed states that *it is sought to do so accelerating the pace of open innovation; meaning going "green" to transform environmental*

²⁶⁷ Kuku, O., & Ajibola, A. (2011). A review of literature on agricultural productivity, social capital and food security in Nigeria. (p. 12). Nigeria: Nigeria Strategy Support Program Publication (NSSP).

²⁶⁸ The Energy use per capita (kg oil equivalent) is only 714 kg and therefore there is room to be grown.)

²⁶⁹ EESC. (2011). Roadmap to a resource efficient Europe (COM (2011) 571 final). (p. 3). Brussels: European Commission.

*stresses into green growth as a driver for development.*²⁷⁰ This would mean expanding market opportunities and services such as health, education and access to jobs for all people. This deepens in the logic of collective action and purses the first real feasible Green Leviathan.

The Report ascertains the fact that it is expected a full modernizing and strengthening of its domestic policies in order to change international economy into a green market *reality that addresses natural resource in a way that is profitable for the future's countries' growth.*²⁷¹

5.5.1 How Green Innovation Contributes to Economy Growth in a Capitalist Sphere.

The report brings light into the fact that Green development is primarily market driven. For this reason, the prerequisite for green development is a sound market economy in which the government functions in a way that manages to correct environmental market failures through combined policies, regulations, and investments which combine every of the natural resource governance dimensions on the way it is required.²⁷² It can be noted that past unsustainable growth represents the failure of governments therefore to fulfill this proactive role.

The report continues to state that once these green government actions are introduced, the market will therefore respond in a fashion that will reduce environmental and social costs.²⁷³ Furthermore, it will bring back a more efficient resource management of natural resources, a higher productivity of the markets in terms of income revenue, a higher revenue in order to invest in education and more promotion of technology, and all in all a inter connection amongst necessities and demands powering a self-reinforcement market system which is unbeatable by traditional markets based on *high-polluting, high-emitting, and resource-intensive products, which will become less competitive as their external costs are internalized.*²⁷⁴

It is therefore believed that these changes in relative prices will help push resources into industries and services more consistent with green development objectives, and those countries which do not adapt to this new trend will be in serious troubles when it

²⁷⁰ Bank, W. (2013). China 2030: Building a modern, harmonious, and creative high-income society. (p. 45.) New York: The World Bank Publications. Research Center of the State Council.

²⁷¹ *Ibidem*, page 70.

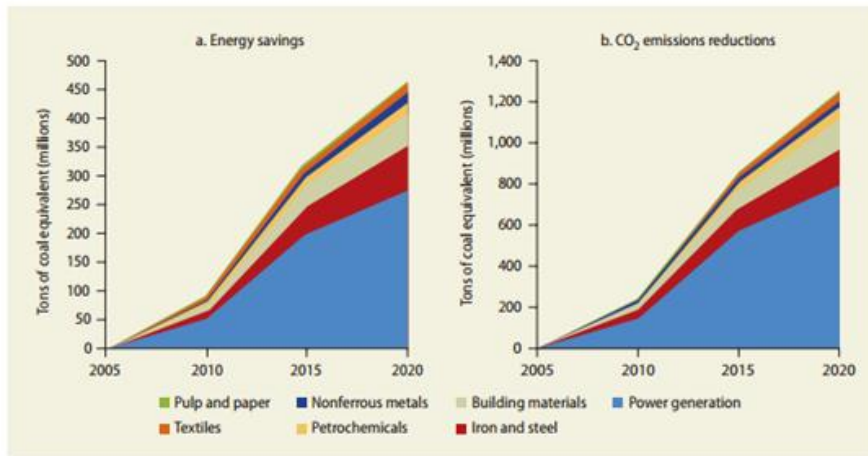
²⁷² *Ibidem*, page 90

²⁷³ *Ibidem.*, page 81

²⁷⁴ *Ibidem*.

comes to the evolution of GDP in the future.²⁷⁵ It can be seen that once the logic of the common action has been pursued at the early stages of the development of the green leviathan, it is easier to receive all the benefits of having trusted in a governance that allies with natural resources.

Estimated energy savings and emissions reduction from installing 79 efficiency technologies in heavy industry, 2005–20



Source: Feng and others 2011.

276

As an example of the aforementioned paragraph, the present graphic from the already mentioned report represents the differences between the energy savings of different natural resources within a green governance market and its repercussions for the CO₂ emission. The countries that indeed promote green efficiency contribute to build a green environment and improve at the same time due to this innovation human and social welfare in such a fashion that are able to cope with the rest of green and non-green exigencies, such as building growth models or developing technological systems. In this sense, this will consequently impose the tendency to build better institutional power to cope with green innovations and this returns in human capital. The synergy of natural resources is deeper than what was at first thought. Some of the most powerful states are already experiencing notable benefits, especially China, who understood that green markets must promote green innovation in a modern and harmonious fashion.

²⁷⁵ *Íbidem*.

²⁷⁶ Bank, W. (2013). *China 2030: Building a modern, harmonious, and creative high-income society*. (p. 226). New York: The World Bank Publications. Research Center of the State Council.

6 Prosperity and Green Technology Dimension.

It has been already proven with data that natural resource governance is the 21st Century paradigm of achieving the growth of the nation by upgrading and evolving the human capital, rule of law and political-economic sphere of the country. The present chapter will be dealing with the long-term outcomes inclusive green growth provides to the country once the green innovation tendency has been adopted as the general rule to follow. By doing so we will attach the tendency to practical examples that ascertain and ratify that natural resources management provides with a clean path to aim for the prosperity of the nation.

6.1 Green Growth Strategies that Follow Natural Resource Governance Models: Achieving Real Prosperity.

The story of the ideas and research of the theory and empirics of economic growth is organized around different themes.²⁷⁷ What these yield in common is the ascertaining importance and relevancy that with the most appropriate governance it exists a paradigm of achieving prosperity. In this sense, most governments seek to implement policies which are in line with promoting economic growth, basing the election of these under fiscal, social and technological indicators targeted by technocrats as the most appropriate ones to activate and potentiate the economic. This however is not efficient in the 21st Century.

The prosperity of a nation is not quantified only under economic terms but as the sum of social welfare, human capital development, strong rule of law, competent and not corrupted institutional system, technology development and poverty reduction. And it is the sum of these that are only met under a green governance model which has in common the defense and promotion of the natural capital.

6.2 Green Technology: Aiming for Competitiveness and Income Proliferation.

The OECD has stated on its report on Environment for the year 2013, that *technology plays an increasingly more important role in green growth*. To the extent that *international diffusion of environmental technologies and knowledge is vital to*

²⁷⁷ For example, Adam Smith came to conclude with its invisible hand theory that there was a relation between society initiative directed by needs and demands, and market reaction towards managing scarce resources and wanted resources.

addressing global environmental problems,²⁷⁸ it must be however ascertained that with the current available technology it is hard to maintain high growth rates and reduce harmful emissions from energy use for the simple reason that *a large part of the global economy is fuelled by fossil fuels.*²⁷⁹ Even if a huge population living in developing countries depend on renewable natural resources –water and land- that are increasingly over-exploited due to population pressure and economic growth, the OECD states that *most of others have only recently made the transition to modern energy systems and may therefore become locked into the same fossil fuel dependence as richer countries.*²⁸⁰ This trend must be stopped, reverted. It is not in a prosperous green route that social welfare and social capital enter in this venous spiral.

Under this scenario the key questions and challenges that natural resource governance must answer from a prosperity dimension are to localize and build new technologies that will bring better efficiently implementation and further economic development than the old-fashioned traditional fossil-fuel industry configuration. As a consequence, the questions natural resource governance must face are raised in the aforementioned OECD Report, which questions *if resource scarcity and pollution policies will induce the technical change or if specific technology policies are needed to this end?* Furthermore, *it discusses whether green technologies will diffuse to parts of the world where different growth and development patterns prevail or not.*²⁸¹

Even though green innovation is still on its early stages of development and its possible tangible connection with technology is still uncertain, the opportunities it brings to governance are increasingly recognized as examples of collective action. For example, the OECD's latest Green Growth Strategy points out that *“green growth has the potential to solve economic and environment problems and become a new source of growth.”*²⁸² Under the words of Jaeger (2013), *if Europe's emissions reduction target is raised from 20% to 30% by 2020, Europe's annual rate of economic growth may increase by up to 0.6%, generating 6 million new jobs and boosting investment as a*

²⁷⁸ OECD. OECD, Environment Directorate. (2013). OECD work on environment. (p. 16). Paris: OECD Publishing.

²⁷⁹ Brempong, G. OECD, Social Protection. (2009). Social protection, poverty reduction and pro-poor growth. (pp. 14-17). Paris: OECD Publishing.

²⁸⁰ OECD. OECD, Environment Directorate. (2013). OECD work on environment. (p. 18). Paris: OECD Publishing.

²⁸¹ Ibidem. Pages 18-21.

²⁸² Ibidem. Page 22.

*share of GDP from 18 percent to 22%.*²⁸³ These results seem to be in line with what China is trying to achieve on its own. It is interesting therefore to notice how relevant political international actors are shifting their policy models into greening ones and promoting technological changes by taking into account natural resources as the future path for achieving economy growth. It is also noticeable that those countries with huge investment on human capital are the ones which are moving earlier achieving this technological innovation.

6.3 How to Bring the Logic of Collective Action within Green Economy Growth Paths. Testing Natural Resource Innovations.

The degradation of environmental quality and natural resources as well as the rise of atmospheric greenhouse gases, in addition to the lack of green innovation in developing countries must be remarked. This brings skepticism to a hypothetical green growth panorama that is compatible with a technological Leviathan. In this sense, *in order to stop environmental degradation, economic growth does not need to be stopped but de-linked from growth in material input flows through the introduction of new energy sources and new technologies that are more resource-efficient.*²⁸⁴ Governments must understand that natural resources are their highest priority if they ought to stand for a chance to be in the head of the race towards the growth rates of the near future.

This is why governments must take due consideration to international reports such as the OECD one that tackle investment in technology as a way to aim for prosperity. This Report from 2010²⁸⁵ states that it seems less productive to speculate on the strength of the aforementioned trade-offs between growth and green than to try to *find policies that combine growth and greening of the economy.*²⁸⁶ Governments must see this as the perfect opportunity to come up with a synergy between technology and green governance. The collective action here is likened between the Leviathan and the human capital. This partnership is not only about promoting new lines of technology development or human capital development. It must be also taken into account the different situations where natural resources are present in order to ideally issue a competitive market that addresses every of its singularities, denoting a continuous

²⁸³ Bank, W. (2013). China 2030: Building a modern, harmonious, and creative high-income society. (p. 122). New York: The World Bank Publications. Research Center of the State Council.

²⁸⁴ *Ibidem*. Page 123.

²⁸⁵ OECD. OECD, Environmental Directorat. (2010). OECD work on environment. (p. 46). Paris: OECD Publishing.

²⁸⁶ *Ibidem*.

evolving system able to cope with any drawback on its way to define resilience to the environment and make it economically worth.

6.4 The Versatility of Green Technology to bring Solutions to the Deficiencies of Models of Governance that Lack the Natural Resource Variables.

After centuries of continuous slow population growth with a linked slim increase in per capita income, the World Bank Report on China (2013) states that *it has been only in this century where the world economy has combined per capita income growth for a majority of people with population growth in all regions*²⁸⁷, especially those developing where the population increase has not been properly controlled. Under this perspective, it seems that natural resource governance cannot cope with the exigencies society demands to build a strong economy and face new challenges of the 21st Century.

However, we must take into consideration that technological change has on the other hand been exceptionally fast over the past decades. In this sense, the same report states that technology, contrary to popular belief, should not be considered as something that slowly develops in a fashion that is unknown for society or economy.²⁸⁸ It indeed offers great potential for problem solving. Technology manages to develop differently under singular economic conditions, namely under countries based on different natural resources construction: *it is an endogenous rather than an exogenous system*.²⁸⁹ It is here where the natural resource governance must find its best dimensional partnership. For this reasons, in these over-populated countries which lack the technology to deploy correctly green resources, for example in India or Argelia, it must be on the other hand seen as an opportunity to start a green revolution promoting the need of less work force to produce the same amount of food, and therefore to bring more space for land-working bringing productivity and efficiency. Agriculture's innovation will head towards green innovation, and therefore the partnership between technology and natural resource governance is seen as a tool for managing scarcity. The social capital will get rewarded for this as well as the development of the logical of collective action, which will propagate amongst all the regions of the country.

²⁸⁷ Bank, W. (2013). China 2030: Building a modern, harmonious, and creative high-income society. (p. 122). New York: The World Bank Publications. Research Center of the State Council.

²⁸⁸ Ibidem. Page 43.

²⁸⁹ Meaning that technical change is the result of deliberate efforts by innovators which spend Resources on improving technologies. For this reason the direction of technological change is to some degree a matter of choice of what to improve and in what type of markets they would like to be their green revolution patterns.

The 2003 Report of the World Bank seeks for discovering if there are sufficient incentives to develop the type of technologies that we desire in the global economy, those that contribute towards greening the economy and making growth more inclusive with green innovation.²⁹⁰ As a matter of fact, the Leviathan will be able to start working towards producing its natural resource model by providing with a development on the rule of law and the strengthening of the institutions. It is most likely that this will be achieved by stakeholder's funding. However we must remain positive in the sense that the house that was referred in the Chapter II is being built. It is evidenced that due to technology and globalization it is feasible to promote natural resource models in those regions that lack its own green Leviathan altar and must construct them from the exterior.

Despite the relevance and the implications for sustainability that technology brings into play, it is however not yet certain its outcome, as the Report concludes that *technology can be devastating for the environment, for example as resource-consuming; or more importantly, friendly to it, for instance by replacing scarce natural resources.*²⁹¹ For this reason, the governance is what will mostly decide the direction of the innovations and evolutions.

6.4.1 Linking Natural Resource Governance with Technology and the Policy-Making Framework.

In order for governance to display an optimum technological scenario that promotes environmental resilience and consignees natural resource relevance to economy in the quest for prosperity we must once again refer to the term *sustainable development* which was keyed as a model for policy-target after the Brundtland report (WECD, 1987), where was defined as the *ability to meet the needs of the present without compromising the ability of future generations to meet their own needs.*²⁹² In this sense we must understand the importance to adapt growth to sustainable development as a strategy to follow. And what is more, this growth must be technologically green and likened to human capital as a goal to achieve by issuing green policies.

²⁹⁰ Bank, W. (2013). China 2030: Building a modern, harmonious, and creative high-income society. (p. 120). New York: The World Bank Publications. Research Center of the State Council.

²⁹¹ Stiglitz, J.E., Sen, A., & Fitoussi, J. (2008). Report by the commission on the measurement of economic performance and social progress. (p. 83). Paris: OECD Publishing.

²⁹² UN. Development and International Co-operation: Environment. (1987), Report of the world commitment on environment and development: Our common future (document A/42/427). (IV Conclusion). Washington, DC: United Nation Publications.

As a result, the Environmental World Bank Report of 2013 states that natural resource governance is likely to be most successful in areas where growth and sustainability are complementary.²⁹³ This is the perfect scenario for collective action as it promotes individual's action towards achieving green benefit and it provides governments with the resilience to green dimensions of the environment.

This ideal however brings at the same pace the necessity to institute a hierarchically order of priorities where to focus the efforts of displaying governance in these two fields. In this sense, the Stiglitz Report from deepens in what the World Bank Report stated, expressing that it is also necessary for governance to be effective when taking into account *that development with growth is less specific and more palatable, but only if the metric of growth encompasses things that we care about: useful consumption of goods, public goods, leisure time, etc.*²⁹⁴ In this way, it is crucial to address that even if GDP is not such a metric value, there are ways however to *build green GDP figures once the growth component has been labeled green and related to sustainability under technologically improvements.*²⁹⁵

It is in this context that governments shall promote the use of cleaner energies rather than allowing the trend to continue by choosing the cheaper but jeopardizing ones. The World Bank report affirms that it should be possible by *including within their policies a new fashion green productive capacity and infrastructure without having to eliminate equal amounts of existing physical capital.*²⁹⁶ This will protect human capital and promote innovative ideas where technology can be even more useful.

6.4.2 Mongolia and Argentina: Examples of Natural Resource Governance: Cutting Interregional Inequality by helping Developing Regions catch up with the Metropolis.

Green Prosperity can stimulate interregional inequality reduction by helping its relatively underdeveloped regions catch up the richer ones. By doing so, these regions will not follow the models of the already developed provinces ignoring natural resource existence which are especially abundant over this regions. Although extractive industries may have led to high GDP growth rates, the Stiglitz report ascertains that the

²⁹³ Bank, W. (2013). China 2030: Building a modern, harmonious, and creative high-income society. (p. 123). New York: The World Bank Publications. Research Center of the State Council.

²⁹⁴ Stiglitz, J.E., Sen, A., & Fitoussi, J. (2008). Report by the commission on the measurement of economic performance and social progress. (p. 23). Paris: OECD Publishing.

²⁹⁵ *Ibidem*.

²⁹⁶ Bank, W. (2013). China 2030: Building a modern, harmonious, and creative high-income society. (p. 244). New York: The World Bank Publications. Research Center of the State Council.

income levels of people living in these regions has not grown commensurately, and in some places, the natural environment has been severely degraded and therefore impossible to receive any source of income.²⁹⁷

It is under these premises that the Stiglitz report comes to rightfully conclude that the least developed regions should avoid the environmentally degrading growth path and promote technological changes for several reasons. First, the ecological environment of these regions is relatively fragile. Second, population is aging rapidly as well as misuse of human capital. As the surplus agricultural labor force that filled the factories of the developed regions gradually shrinks, it will become impossible to sustain the kind of labor-intensive growth observed over past decades.²⁹⁸ Thirdly, following the advices of the OCDE Report on Environment, as more stringent policies to conserve energy and reduce greenhouse gas emissions are issued, *the potential for growth from high-emissions, resource-intensive industries will be limited, as the national government has imposed stricter controls on the use of land for industry.*²⁹⁹ All these policies bring natural resource in the pot. It is certain that at some point collective action can be limited due to these policies but the logic will be able to adapt and bring a green evolution in order to adapt to the new scenario where technology must be highlighted.

Following the premises stated above, it is crucial for the rightful outcome of the natural resource governance to establish a hierarchy amongst the needs of the region so as to account for the most appropriate policy to promote in terms of choosing the most efficient technological approach. This will bring a collective solution to the scarcity and management of natural resources in line with the development of the social and human capital. In sum, *green development is being driven by harsh economic realities, changing global priorities, and growing technological possibilities.*³⁰⁰

As a practical example we can refer to the efforts shown by the World Bank bringing hope to a Mongolian region.³⁰¹ This International Organization with the support of the local government has made possible to implement a system of solar

²⁹⁷ Stiglitz, J.E., Sen, A., & Fitoussi, J. (2008). Report by the commission on the measurement of economic performance and social progress. (p. 32). Paris: OECD Publishing.

²⁹⁸ Ibidem. Page 33.

²⁹⁹ Ibidem. Page 232.

³⁰⁰ Bank, W. (2013). China 2030: Building a modern, harmonious, and creative high-income society. (p. 219). New York: The World Bank Publications. Research Center of the State Council.

³⁰¹ Program focused on providing with solar power renewable energy herders in Mongolia. For further information please refer to <http://www.worldbank.org/en/news/feature/2012/09/20/solar-power-lights-up-future-for-mongolian-herders>.

energy in order to make possible for more than 100.000 people to start using electricity for the first time in their lives.³⁰²

"We are proud to be part of this effort, which means 500,000 people, or half the rural population of Mongolia, have electricity through portable and affordable solar home systems," said Pamela Cox, World Bank Regional Vice President for East Asia and Pacific in her first visit to the country.³⁰³ "Now, children can study at night, families can watch TV and recharge cell phones, enabling them to connect to the world while maintaining their nomadic lifestyles. This is one of many innovative ideas that we are putting to work on the ground to make growth more inclusive."³⁰⁴

What the World Bank is promoting by these initiatives is the development of the social capital of the region, realizing it will have a human capital impact in the long-term, making possible a better management of the natural resources of the area. With the appropriate technology and the possibility to learn how to deal with the natural resources, this will lead to a more efficient resource consumption, opening a door for city planning upgrade to continue with the efficient harvest. As natural resources are spread within their area, what these Mongolian citizens are seeking for and the World Bank is giving them is the know-how on how to deal with natural resources. This will avoid these regions to convert into a fossil fuel energy future and nevertheless continue with green innovation and some day in the near future be competitive enough.

The same procedure can be found travelling across the South Atlantic Ocean in Argentina, where sustainable development and technology implementation have been targeted as the most important hierarchical concepts to seek for in order to institute a first step of good governance in natural resources in the region.

Many rural Argentineans in 19 provinces found their quality of life improved through access to electricity. For this reason, the World Bank has decided to bring renewable energy power to the rural corners of Argentina.³⁰⁵ So far, around 25,000 residential customers and nearly 2,000 schools have been reached, and 300 solar thermal stoves, furnaces and water heaters have been installed. Also 2,000 users in small, isolated communities have benefited from small power systems. The project has

³⁰² Information retrieved from the web page: <http://www.worldbank.org/en/news/feature/2012/09/20/solar-power-lights-up-future-for-mongolian-herders>.

³⁰³ Ibidem.

³⁰⁴ Ibidem.

³⁰⁵ Information retrieved from the web page: <http://www.worldbank.org/en/news/feature/2013/01/04/energias-renovables-en-zonas-rurales>

also included almost 400 public buildings, such as health centers, community centers, as well as Gendarmerie and National Parks Administration's stations.

*The children of fishermen can now go to school twice a week and do chores at home, it is not necessary to travel several miles to buy kerosene and it is much easier to charge mobile phones.*³⁰⁶ "In the Impenetrable Chaco, the population is very spread out and so solar panels have had a significant impact, as they have managed to supply 14% of users," says Raul Garcia, an Official in the Secretariat of Energy for the Province of Chaco who has been participating in PERMER over the last 12 years.

Rather than setting up new technology innovations it is also feasible for the own human capital of the region to promote the green revolution and head towards prosperity in original ways. This implies the fact that *the logic of collective action*³⁰⁷ is not required to be imposed as these citizens have the morality and ethics of the distributive justice required to act on their own to protect what is common to them. We can light this situation by referring to China; more concretely to Huaihua, in the Hunan Province.³⁰⁸

This region is focused on taking full advantage of improved transportation, telecommunications, and logistics networks to pursue a new strategy for economic growth not based on technological innovations. The previously undervalued intangible resources of the Wuling Mountain Area, *such as its beautiful natural environment and rich cultural heritage, will provide a new source of income for local people and help promote local economic growth.*³⁰⁹ Through the coordinated efforts of government and private entrepreneurs, poor regions are utilizing new market mechanisms and building green economies that include conference centers, medical services, and eco- and cultural tourism. A more productive division of labor is evolving, with the local population benefiting as both farmers and service providers. *This means environmental governance brings at the same time human capital development.* The slogan of this experiment, "Villages Making Life Better," *suggests that villages will no longer represent poverty in China but will be a symbol of a high-quality lifestyle. More important, the models are duplicable elsewhere.*³¹⁰

³⁰⁶ Alberto Alcain is the Alternative Energies Coordinator in Entre Rios, the South American Region.

³⁰⁷ Olson, M. (1965). *The logic of collective action*. Cambridge: Harvard University Press.

³⁰⁸ Bank, W. (2013). *China 2030: Building a modern, harmonious, and creative high-income society*. (p. 28). New York: The World Bank Publications. Research Center of the State Council.

³⁰⁹ *Ibidem*.

³¹⁰ *Ibidem*. Page 232.

6.4.3 Conclusion.

Out of the above stated examples we can come to the important conclusion that Natural Resource governance is used sometimes as a prosperous policy-making instrument and as an educative tool for population about the importance and relevance of the environment and its challenges and objectives. It promotes human capital development and contributes to environmental innovation in the technological dimension, which is the genuine one able to firstly adapt to necessities of citizens and deal with scarcity in a prosperous vision.

These regions are therefore the most appropriate to start promoting new alternative energies which are environmental-friendly: *people have adapted well to technology and began to ask for solar panels instead of electricity lines,*" asserts Graciela Pedro, who's in charge of the Alternative Energies office at the Energy Agency of Neuquén.³¹¹

In addition, it must be as well taken into account the fast-paced adaptability of these regions to natural resource governability rules as these citizens have not been subjected to outdated market systems or polluted models of growth. In this sense, the green prosperity of the nation is therefore characteristically understood as a tool for inter-generational equity, defending the idea widely recognized throughout the thesis of the huge synergy natural resource governance brings to society as a whole. Obviously, whether green becomes a dominant source of growth will depend to a great extent on future technological improvements, which vary from region to region. Still, with stable green development policies, *the pace of technological innovation and investment will undoubtedly quicken, thus increasing the possibility of technological breakthroughs.*³¹²

6.5 Sectorial Benefits of Natural Resource Governance.

It has been already proved the importance of establishing new models of green governance in regions which are not bound to outdated models of energy generation or market profit standards which are not environmental-friendly. This will most likely bring these regions to the lead path on the growth of the nation in the near future due to the competitiveness green innovation brings to the country in terms of prosperity development. In addition it must be also remembered that these realities are wide

³¹¹ For more information regarding the procedure of the program please refer to <http://www.worldbank.org/en/news/feature/2013/01/04/energias-renovables-en-zonas-rurales>

³¹² Bank, W. (2013). China 2030: Building a modern, harmonious, and creative high-income society. (p. 223). New York: The World Bank Publications. Research Center of the State Council.

spreading. For this reason, green governance brings innovation to the country's sectors as well.

In this sense, under the OECD 2013, it has been stated that the efficient use and better governance of land will help reduce urban congestion and sprawl. Furthermore, infrastructure constraints, particularly for handling coal, will be eased, and infrastructure investment requirements reduced.³¹³ By anticipating climate impacts on agriculture, low-lying coastal areas, and areas vulnerable to extreme weather events, green development will reduce climate-related risks and improve investor and consumer confidence. All in all, these measures will support growth through reduced costs, improved certainty, and the reduced need for risk management options.³¹⁴

The reason why all of the above is tangible is due to the government's ability to mobilize action on high-priority.³¹⁵ In this context we can address the project *Europe 2020*³¹⁶, which is the EU's growth strategy for the coming decade, bringing within the EU borders high levels of employment, productivity and social cohesion.³¹⁷ The path to do so pursues five ambitious objectives - on employment, innovation, education, social inclusion and climate/energy to be reached by 2020.³¹⁸ Each Member State has adopted its own national targets in each of these areas. It is therefore proven that when it comes to innovation and developing of model of growths, the commons tend to group in order to act logically towards achieving a group objective which report growth incomes to their countries, generating prosperity.

What it is sought is to reaffirm the change in the trend in the policy of governments and firmly introduce the environment as a variable that should be addressed when building new paths of economic growth. Since the environment implies technological development, the 2020 is projected to have had by 2050 the necessary inclusive green innovation policy in a fashion that has lead EU's economy grow in a way that respects resources constraints and planetary boundaries, thus contributing to global economic transformation.³¹⁹ *“Our economy is competitive, inclusive and provides a high standard*

³¹³ OECD. Environment Directorate. (2013). ECD work on environment. (p. 7). Paris: OECD Publishing.

³¹⁴ Bank, W. (2013). China 2030: Building a modern, harmonious, and creative high-income society. (p. 224). New York: The World Bank Publications. Research Center of the State Council.

³¹⁵ Ibidem. Page 239.

³¹⁶ European Commission. Brussels, (20.9.2011) COM (2011) 571 Final Communication from the Commission to the European Parliament: Roadmap to a Resource Efficient Europe {SEC (2011) 1067 final} (p. 5). {SEC(2011) 1068 final}

³¹⁷ Ibidem.

³¹⁸ Ibidem.

³¹⁹ Ibidem.

*of living with much lower environmental impacts. All resources are sustainably managed, from raw materials to energy, water, air, land and soil. Climate change milestones have been reached, while biodiversity and the ecosystem services it underpins have been protected, valued and substantially restored.*³²⁰

As can be seen, within the EU's bubble, green development is consistent with further market reforms that promote efficiency, while increasingly correcting market externalities that can be addressed only with a proactive green government. *All of the above is possible as there is abundant capital (including human capital) to invest in green sectors.*³²¹

As a result, this attracts more direct foreign investment than any other country; it has built up an impressive research and development infrastructure much more than appealing for stakeholders. These foresee the policy and investment choices made today by governments in a green way that will over the next two decades have long-lasting implications for efficiency, lifestyle, the environment, and carbon emissions. This green revolution does not stand there since the prosperity of the nation brings as well new versions of the rule of law, with a strong distributive justice context and the development of green companies in a profitable green pattern market.

6.6 Natural Resource Governance as a Paradigm of Achieving Economic Growth High Income Improvements.

Prosperity out of green innovation and green governance depends as well on the incentives for environmental protection. Clear environmental regulations enforced by government are crucial for improving its quality.³²² Should environmental regulations remain relatively weak, enforcement will be undoubtedly inconsistent. It is required that technology finds a way to solve this issue.

The problems associated with a lack of incentives for environmental protection are evident in some natural resource management models. 2020 EU's project is already aware of the situation and has come up with technological instruments that *include adequate and cost-efficient reporting and monitoring requirements as well as review mechanisms in order to facilitate policy adaptation and take due account of technology*

³²⁰ European Commission. Brussels, (20.9.2011) COM (2011) 571 Final Communication from the Commission to the European Parliament: Roadmap to a Resource Efficient Europe {SEC (2011) 1067 final} (p. 3). {SEC (2011) 1068 final}.

³²¹ Ibidem. Page 2.

³²² Ibidem. Page 3.

evolution."³²³ When the Leviathan fails, there are external actors that correct the situation. It also seems therefore that for the green model to stand out of any drawback on its inclusion it depends on the importance it is given by every actor that has the power to impact on natural resources. For this reason it is also crucial that natural resource governance depends on multiple dimensions, each of these are inter connected and provide with a strong resilience system. The outcome of this is that prosperity is more prompt to be reached and more inclusive.

A further implication of Natural Resource Governance in technology with law will bring into collation a competitive environment market for green industries. As an example, in China's policy towards greening its infrastructure *it can be found that its transition to green development has two levels: the first is "greening" its current economic base, and the second is a more fundamental shift toward emerging industries.*³²⁴ This governance seeks the rapid green company growth in recent years, as exemplified by the rise of its clean energy industries. However there is an externality that must be faced which is the fact that *the playing field for investment in emerging industries is still not level, meaning that emerging industries still lack a fair and open competitive market environment in which to grow.*³²⁵ This however ranges outside the thesis objective and should be addressed separately as it constitutes a singular problem of China.

6.7 Why Natural Resource Governance is appealing for Governments and its Outcome. Green Wars.

Most of the western countries are making the transition to a more competitive form of green development as a result of the technological changes adopted under the green prosperity horizon. For this reason, a new race towards green development is now being played out in the global economy, with significant benefits accruing to early movers. In 2009, the OECD issued a Declaration on Green Growth in which its member countries set forth a comprehensive green growth strategy.³²⁶ In addition, at "Rio+20," the United Nations Conference on Sustainable Development held in Rio de Janeiro in June 2012

³²³ Energy Council meeting. EUCO, Natural Resource Governance. (2011). Council conclusions on energy 2020: A strategy for competitive, sustainable and secure energy (EUCO 2/11). (p. 4.) Brussels: Council of the European Union.

³²⁴ Bank, W. (2013). China 2030: Building a modern, harmonious, and creative high-income society. (p. 221). New York: The World Bank Publications. Research Center of the State Council.

³²⁵ Ibidem.

³²⁶ OECD. Declaration on Green Growth (2009). (p. 12). [C/MIN(2009)5/ADD1/FINAL]

established green growth as one of the main topics of discussion.³²⁷ In Latin America, *Brazil has aggressively merged its forward-looking policies for growth, climate change, and environmental management.*³²⁸

The reason why this trend is on-going is due to the fact that Green Innovation and Green development are a branch of natural resource governance pattern of development *that decouples growth from heavy dependence on resource use, carbon emissions, and environmental damage,*³²⁹ and that promotes growth through the creation of new green product markets, technologies, investments, and changes in consumption and conservation behavior. This brings prosperity as, if we make memory to the first two chapters of the thesis, the Leviathan is embodied with the most powerful sword and shield that are available. This power comes from the green technology which covers these weapons.

Under this scenario, it can be affirmed that natural resource governance is based on two key concepts: the *process of “going green”, which can by itself be a source of growth; and “going green” as part of a virtuous circle that is mutually reinforcing with growth.*³³⁰ There is a self-energy synergy construction under the rule of environmental law in a suitable natural resource governance scenario where green growth is the means by which green development is achieved.

In regions such as Latin America, the uncontrollably past high emissions, natural resource consumption, and environmental destruction has brought external, social, and regional imbalances.³³¹ As being evidenced in the thesis, these has been needed the action of stakeholders such as the World Bank to bring green innovation path to some of these regions. However a stakeholder cannot change the trend by itself but ought's to stimulate the government, its Leviathan. *If these imbalances are not corrected soon, they have the potential to precipitate economic and social crises.*³³² Reforms are needed, and green revolution must lead them. The report on this matter concludes that *as income levels increase due to globalization, people are demanding improved welfare,*

³²⁷ For further information about this program please refer to <http://www.uncsd2012.org/about.html>

³²⁸ Bank, W. (2013). *China 2030: Building a modern, harmonious, and creative high-income society.* (p. 265). New York: The World Bank Publications. Research Center of the State Council.

³²⁹ *Ibidem.* Page 112

³³⁰ *Ibidem.* Page 219

³³¹ Edwards, S. (2012). *Left Behind: Latin America and the False Promise of Populism.* (pp. 119-21.). Chicago: University of London.

³³² *Ibidem.*

*a cleaner environment, and higher quality of life, without the recurring risks of environment-related disasters.*³³³

Under this matter, some economic research have called into question whether resources are good or bad for development: that is, whether there is a “*natural resource curse*.”³³⁴ For this reason some types of risks may be problematic in some countries or under certain conditions and can undermine economic growth, if natural resources are poorly managed. This is however uncertain since technology is versatile and from a green point of view it is supported by strong rule of law enforcement and political discourses of green efficiency.

What is certain is that all these bring opportunity for governments to start adopting a new trend in their policy-making structure and bring institutional power into context in order to shape a new economy-growth model driven by innovation and supported by *medium- and high-value-added production as part of the policy approach to overcoming future risks and finding new robust sources of growth highly differentiated and technologically sophisticated depending on which natural resources are deployed within the regions.*³³⁵

6.8 Examples of National Green Development Strategies.

6.8.1 Germany: Example of Green Energy and Market development. Natural Resource Governance.

In May 2011, Germany chose to close all of its nuclear plants by 2022 and to become the first industrial country to shift completely to clean energy by increasing investment and research and development for renewable energy and energy efficiency. This decision comes up after the projections of EU’s current policy on energy and renewable energy keyed 2020. To fill the gap in its energy supply after it abandons nuclear, Germany has proposed vigorous development of wind, solar, and biomass and new standards for the thermal efficiency of buildings. Its human capital development is intense and so it is its technology development through achieving green growth.

³³³ Ibidem.

³³⁴ Nash, J., & De la Torre, A. (2010). Natural resources in Latin America and the Caribbean beyond booms and boost? (p. 65). Washington, DC: The World Bank Publications.

³³⁵ Ibidem. Page 18.

6.8.2 Korea: Example of using adversity to build Growth Plan after the Crisis of 2008.

The Republic of Korea is alongside Germany one of the first in the implementation of green growth. The country's governance has seen the right timing after the crack of the past crisis to begin shifting policies and move toward green growth which combines three mutually reinforcing objectives: *responding to the latest economic crisis through a green stimulus, reducing its energy dependency, and rebalancing its economy toward green sectors in the long term.*³³⁶ The financial crisis exposed Korea's reliance on imported energy as a major weakness in its growth model. In order to make this project appealing for the logic of collective action, Korea's newest innovation is the concept of "smart community," a model city that maximizes the use of renewable energy and relies on smart grids to deal with its intermittent nature.³³⁷

6.9 The Incredible Positive Results of Choosing the Green Innovation Path.

As the World Bank recognizes, while technological breakthroughs are essential for green growth, the transition to green development is a much more deep process than a simple technological change.³³⁸ This means that the transition will bring human capital development into the future's challenges, city development and scarcity management. This is the true green revolution which will imply a significant break from past pattern of fossil fuel development, cutting across all economic and social sectors. This deep restructuration will bring institutional strengthening, rule of law better enforcement, human capital and social development. As a result, countries adapted to natural resources will bear competitiveness and will overtake countries which are still based on old-fashioned economy growth models which are locked into high-emissions structures, where the World Bank refers as a loss of *competitiveness as are facing higher low-carbon transition costs in the future.*³³⁹

What is expected is that all these are prosperous dimensions that bring green and natural resource governance an important source of economic growth. The share of green products and green services in the countries' GDP will be among the highest in

³³⁶ Zelenovskaya, E. (2012). Green growth policy in Korea: A case study. International Center for Climate Governance. Moscow: ICCG Publishing.

³³⁷ For further information about this kind of cities please refer to <http://www.masdar.ae/en/>

³³⁸ Bank, W. (2013). China 2030: Building a modern, harmonious, and creative high-income society. (p. 216). New York: The World Bank Publications. Research Center of the State Council.

³³⁹ Ibidem.

the world.³⁴⁰ As being stated already, those countries which are under the possession of the highest amount of natural capital in the world will be already on the first spots. Green technologies and business models will be imported throughout the countries promoting a resource-efficient society in a globalized world. As a result, the quality of air, water, and natural ecosystems will have improved dramatically. For this reason, the recovery of the natural environment will significantly improve both public health and natural assets improving human welfare and human capital. What is even more important, the risks posed by climate change will be addressed through proactive planning across all key sectors, including water, agriculture, urban, and health. This will revert in society that will understand the proper changes are being achieved by the government and therefore will proliferate the feeling of achieving *the logic of collective action* to aim for fulfilling's the green revolution and bring natural resources with the resilience required to put into practice the model of green growth that drastically improves prosperity of a nation.³⁴¹

6.10 Development Indices: Is natural resource governance appropriate to achieve prosperity?

As it has been well exposed in the Stiglitz Report, *in order to measure the development of a nation there is required a plurality of indicators.*³⁴² The report states that we can add *average levels of life-satisfaction for a country as a whole, or composite indices that aggregate averages across objective domains, such as the Human Development Index.*³⁴³ Furthermore, following the outcome of the Stiglitz Commission, it is believed that in addition to *objective indicators of well-being, subjective measures of the quality-of-life should be considered.*³⁴⁴ In conclusion, *measures of both objective and subjective well-being provide key information about people's quality of life. Statistical offices should incorporate questions to capture people's life evaluations, hedonic experiences and priorities in their own survey.*³⁴⁵

As a matter of fact, what the Stiglitz report states fits like a glove to what natural resource governance offers. Its versatility provides indices based on the five

³⁴⁰ Ibidem. Page 233.

³⁴¹ Bank, W. (2013). China 2030. Building a modern, harmonious, and creative high-income society. (p. 65). New York: The World Bank Publications. Research Center of the State Council.

³⁴² Stiglitz, K.E., Sen, A., & Fitoussi, J. (2008). Report by the commission on the measurement of economic performance and social progress. (p.16). Paris: OECD Publishing.

³⁴³ Ibidem. Page 17.

³⁴⁴ Ibidem.

³⁴⁵ Ibidem. Page 18.

dimensions, where subjectively and objectively measures of the country towards prosperity are in unison studied. As such, this constitutes an advantage in comparison to the lack of plurality miscellaneous model of governance offers, intensely dependent on the GNP and economic assets. On the contrary, our green model of governance provides the indices of economic and market dimension in connection with the synergy between *inter alia* social welfare, quality of education, devotion to the country's protection, green development, natural resource resilience, technology development or human capital. This helps to measure more deeply and strongly prosperity requirements.

This extend could be well related to Kennedy and its point of view towards GNP, where he stated that *in fact the gross national product does not allow for the health of our children...the quality of their education, the intelligence of our public debate....devotion to our country...it measures except that which makes life worthwhile.*³⁴⁶

Whether he foresaw a model of governance able to cope with these exigencies or not, the truth is that the green governance model brings tangibility into his demands.

6.10.1 Bhutan: Example of using versatile indicators. Extrapolating Natural Resource Governance.

The Bhutanese Legal Code of 1629 already included in its precepts that *if the government cannot create happiness for its people, then there is no purpose for government to exist.*³⁴⁷

In this sense, the King of Bhutan Jigme Singye Wangchuck came to the conclusion two decades ago that the best way to approach development of the society was by instituting six development goals included within the domains of happiness: *self-reliance, sustainability, efficiency and development of the private sector, people's participation and decentralization, human resource development and regionally balanced development.*³⁴⁸ These goals have been implemented in their Constitution, where the term happiness is common in economic development, human rights, natural resource resilience, prosperous country and good quality of life.³⁴⁹

³⁴⁶ Speech of Robert F. Kennedy (1968). University of Kansas, USA.

³⁴⁷ The legal code was called Tsa Yig.

³⁴⁸ Bhutan. Planning Commission. (1999). Bhutan 2020: A vision for peace, prosperity and happiness. (Introduction). Timphu: Planning Commission, Royal Government of Bhutan.

³⁴⁹ Article 9 of the The Constitution of The Kingdom of Bhutan.

This is furthermore reaffirmed in the article 20, where it is stated that the Government *shall protect and strengthen the sovereignty of the Kingdom, provide good governance, and ensure peace, security, well-being and happiness of the people.*³⁵⁰

All in all, these six dimensions have proven to be revolutionary in the way to approach development and its measurement, reporting tangible results to the growth of the country. As a recognition to its relevance, the UN issued the *Happiness Resolution*³⁵¹, where ascertained that the Happiness Index *is based on four pillars and was developed from 33 cluster indicators with 124 variables, categorized under nine domains. In each domain, the objective indicators were given higher weights, and subjective and self-reported indicators were given lower weights. The four pillars include good governance, sustainable socioeconomic development, cultural preservation and environmental conservation. The nine domains consider psychological well-being, health, education, literacy, educational qualifications, knowledge, values; culture; time use; good governance; community vitality; ecological diversity and resilience, and living standards.*³⁵²

What the UN highlighted from this index can be well extrapolated to our green governance model, where all of the five dimension include a synergy towards measuring prosperity in the more feasible manner, as there are not only economic but versatile indices addressed as a set. As our model is geared with all these, the opportunities to develop better policies aiming for prosperity open the door to be of applicability in the long-turn and be in continuous evolution.

³⁵⁰ *Ibidem*. Article 20.

³⁵¹ UN. General Assembly. (2011). Happiness: towards a holistic approach to development (A/RES/65/309). New York: United Nations Publications.

³⁵² UN. General Assembly, (2012). Happiness: towards a holistic approach to development (Draft Note). (p. 2). New York: United Nations Publications.

7 Conclusion.

Having analyzed the model of natural resource governance and the implications it brings to the dimensions of the rule of law, governance and institutions, market assets, technology innovation and prosperity of the nation, I would like to summarize these findings by ascertaining what this synergy offers to the 21st Century challenges and goals and compare the green model to the currently settled ones.

The variety of possibilities the green model of governance offers to the development of countries has resulted to be abundant, revolutionary and prosperous. The general framework explained throughout the thesis by ascertaining both practical and theoretical aspects has proven to constitute a new way of dealing with social, political, and economic drawbacks such as unemployment rates, scarce resources, and lack of leadership in governance, amongst others. After all, even if one could state that the final aim of this model is the promotion of natural resource resilience, the thesis has on the other hand genuinely tried to bring natural resources into the same degree of relevance than economic profit. As a consequence of doing so, light has been shed into the fact that the possibilities for understanding and dealing with challenges has resulted innovative, yet revolutionary profitable. It is within the dimension of natural resource governability that numerous possibilities arise towards facing new challenges of the 21st Century that affect countries and the Earth as a whole that the economy dimension is not able to generate on its own.

For this reason, countries which have balanced these two realities have been rewarded not only from an environmental point of view but from a multi-dimensional reality which covers a wide range of variables and prosperity indicators which bring new sources of development. The model ascertains that natural resources can bring a synergy between the five dimensions tackled in the thesis, something which is impossible for the economy. This opens a new door towards understanding its real versatility, which resides in the opportunity to generate income not only from the market or the economy dimension, but by promoting inter-dimensional relationships that tackle the use of green innovations in the market dimension, education, technology innovation and even distributive justice.

It is in this context that confronting situations nowadays repeatedly presented as a binomial where to choose between economic profits above environmental resilience or vice versa shall no longer be addressed in such a fashion. On the contrary, due to the

enormous variables the green model brings into action, this binomial aims to evolve into a self-reinforced one where by understanding which is the best dimension to compare to economic growth there will be always monetary and non-monetary positive outcomes.

It is due to this reason that the green model of growth leads the way to efficiently generate the variables which must be addressed in order to aim for sustainable development in a prosperous way. This relationship would revert into society and the environment collaterally. It has indeed resulted that, to the contrary belief, this model of natural resource governance has a critical impact in fertilizing prosperity and therefore providing with a great innovation, development and evolution in all fields of state relevancy. It upgrades societies and brings new synergies.

This model of governance brings a better understanding of societies' concerns and its gravity zone constitutes an equilibrium between human needs and Earth demands. At the same time this brings prosperity and social welfare as the natural capital is part of a system which includes the evasion of the tragedy of the commons which is promoted by the currently set of models which are focused on solely aiming for economic patterns of growth, leaving the other dimensions in a secondary perspective.

Under the natural resource governance model, participation of society is rewarded; there is a promotion of social welfare and social capital. It is proposed a reality which considers natural resource as the capital of the nation from where to start building green growth patterns that allow us to face scarcity in the middle and long-term in an efficient manner by using the most appropriate dimension by taking into account what is the need and how to more profitable display the solution.

In this sense, it has been shown that some countries have understood green governance as a possibility to face economic hinder from a green technological point of view, or a technological revolution from a distributive justice dimension which regulates economic growth sustainably. Since these dimensions are interconnected, and by being the market and the economy part of this dimensional synergy, there will always be a monetary profit, the final end of capitalism. As a matter of fact, capitalism seems to be, in my humble opinion, connected to natural resource in a positive relationship.

The reality proposed by this model of governance must not only be seen as a scenario where to implement policy instruments towards saving biodiversity or ecosystems. It goes deeper to ascertain that a better global governance is indeed possible. The truth is that this model evidences the present deficiencies of the five

dimensions tackled. As for the same reason there is no real advantage in having human capital if it is wasted in developing obsolete techniques, it is evidenced that 20th Century solutions are being used to fix 21st Century problems. Therefore, what this model proposes is to display 21st Century solutions by recovering the lost time using a shortcut: natural resource resilience.

Even if it has room for improvement, as it is rightful to state that the model lacks the required enforceability where there is a weak rule of law and strong corruption, its effects are already being displayed: if China has managed to grow more intensely than USA by employing green innovation and green revolution in its market and human dimensions, developing regions have found meanwhile in the door of their house a gift in shape of learning from green social capital and educative and health recommendations bringing new techniques to face scarcity and lack of better technology. As a consequence, the strength of the different dimensions ultimately lies within the willingness of its actors to make possible the change. Even if some dimensions are weaker in some contexts, the synergy of the other allow for a slow but continuous prosperity objective.

In addition, the positive outcomes of implementing natural resource governance are very likely to result tangible and positive, as in the light of a variety of innovative indices of development it has been shown that some of their indicators are within what natural resource offers through green revolution and green development. As a consequence, taking into consideration the versatility of our model, it is fair to state that by providing a nexus between these variables and the synergy of the five dimensions it will be feasible to build a path towards promoting the best variables to aim for prosperity. This will bring competitiveness and constant evolution as the green index does not only focus on economic growth but on the sum of subjective and objective behaviors of human and social welfare.

There is still a long path towards putting into practice this model of governance which has been already predicted somehow by the literature stated throughout the thesis. However, even if problems and drawbacks will not disappear in the short-term, the theories and solutions proposed might bring light to this matter in an innovative way. The future needs innovation, and green governance is on the position to offer it.

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