

On Soft Parameters and Externalities:

Exploring Multistakeholder Negotiations Through Case-Study Applications

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Abstract

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The purpose of this thesis is to explore the use of soft parameters and externalities analysis in valuations employed in multistakeholder negotiations. Soft parameters, externalities, and current methods of valuations will be explored from a theoretical perspective. Then, practical applications will be analyzed through specific case studies related to environmental economics and ecological preservation. An additive research approach combined with theoretical sampling of case studies has been employed to gather the data and insights necessary for this thesis. A cohort of international experts have participated as interviewees to represent the different points of view and perspectives of value generation attributed to different stakeholder groups. Additional information in the form of primary and secondary data has also been consolidated to strengthen the analysis and context of each case study. The surprising power dynamics between stakeholder groups and the central government are one of the key findings of the thesis.

Key Words: soft parameters, externalities, environmental economics, alternative valuation methods, multi stakeholder negotiations, Yasuni, Galapagos, Ecuador, multicriterial analysis

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Introduction

In 1935, Erwin Schrödinger introduced a thought experiment that consisted of a cat, a box, and poison. The Austrian-Irish physicist imagined a situation in which there is a box. A box which does not allow an observer to see what is inside of it. Inside of this box there is a cat and poison which will be randomly released upon an occurrence that has a 50 percent chance of occurring. If the poison is released, the cat will certainly die. Since the observer can't see what is in the box, the cat could be either dead or alive. Therefore, two simultaneous opposing realities are manifested, one in which the cat is dead, and one in which the cat is alive. One, and only one, of these realities will materialize when the observer unseals the box and reveals the result, therefore, effectively 'killing' the cat or saving it from its certain death by poison. A pretty gruesome way to start an academic paper on soft parameters and externalities some might say. I like to envision society and humanity as the cat in the box and the never-ending process of human evolution as the observer. We exist in a reality where the actions we collectively take as a society are going to determine in the future if we are, metaphorically speaking, a dead cat in a box or a healthy cool cat.

In my opinion, no one has elucidated this paradox better than Amory B. Lovins. This American scientist published a paper in 1977 titled *Energy Strategy: The Road Not Taken?* in which he discusses the two possible and differing 'roads' of implementing 'hard' vs. 'soft' energies. Hard energies being atomic, nuclear, and gigantic centralized electric powerplants and soft energies being what is nowadays known as renewable and sustainable energies (Lovins, 1976). What is truly amazing about this article is that, although it was published in 1976, it predicted key issues and struggles that society would face if it chose to obviate the externalities and social costs associated with the productive means deemed optimal for society. The publication explained how a myopic short-term approach to growth could end in catastrophic future consequences. Although his review was narrowly focused on energy transitions and nuclear proliferation, he sways to and from economic, environmental, and social implications that make this publication a delight for any reader. Much of my thesis will be focused on explaining the impact of the analysis of soft parameters and externalities through multicriterial approaches in multistakeholder negotiations. In other words, to explain the need for opening the box to see what is going on with Schrödinger's cat. The use of 'hard' and 'soft' as descriptive attributes will gain importance as this report moves into a more profound analysis of the current methodologies of multicriterial analysis and their application in relevant case studies. The relevance of this research is shown by the relationship brought forward between hard and soft parameters and their practical applications in real life situations. Hard parameters are complemented by soft parameters and externality analysis in order to achieve an advanced valuation that allows for a broader analysis that is not simply focused on economic or financial indicators. Multistakeholder projects and negotiations are a perfect way to explain this application because the different interest groups, varying levels of impact, and alternating perspectives of value generation. This thesis is structured to present an overview and a comprehensive definition of soft parameters, externalities, and current applications of the analysis of both through different valuation methodologies. The link between the three sections explained above will become evident and allow the research question to be analyzed through the dissection of two specific case studies. The research question proposed for this thesis is: **How are multicriterial analyses of soft parameter and externalities being employed in multistakeholder valuations and negotiations?** The research design and the methods and

methodologies chosen for this thesis will be presented before exploring the selected case studies. The Yasuni ITT initiative and the Galapagos Islands marine reserve expansion through sovereign debt repurchasing are the selected case studies because of the extensive and well-defined stakeholder groups that will allow the discussion presented in this thesis to be fully developed. This thesis will conclude with a discussion about the practical implications of the research question in the case studies presented and proposed further research on the subject.

Literature Review

On Externalities:

Externalities are best understood by this simple explanation:

Let A, B, C etc. be agents involved in a commercial transaction, or more generally in the negotiation of a contract. In the course of the transaction or contract negotiation, these agents express their preferences or interests and then evaluate the various possible decisions arising from them. The decision they finally take has positive or negative effects, here referred to as externalities, on another set of agents X, Y and Z (as distinct from A, B, and C; the latter are not involved in this transaction or negotiation, either because they have no way of intervening or because they have no wish to do so). (Callon, 1998, pp. 2-3)

The origin of the concept of externalities was popularized in 1920 by Arthur C. Pigou, a British economist who discussed the possible divergence between the interests of society in general and private ‘industrial’ entities. Pigou made reference to the fact that private sector participants were not held accountable for the social costs that their participation in the market should be accountable for. Why would they pay the bill if no one is looking? He argued in favor of reactive taxation systems that would discourage negative externalities exerted on society by the production of goods in the private sector (Woll, 2019). In 1944, Karl Polanyi published *The Great Transformation* where he stated that: “To allow the market mechanism to be the sole director of the fate of human beings and their natural environment indeed, even of the amount and use of purchasing power, would result in the demolition of society” (Polanyi, 1944, p. 73). Polanyi developed the concept that self-regulating markets are a step back in the evolution of society because the demand-supply equilibrium on which this system relies is not sufficient to account for the general social interests that had been part of previous instances of society. An obsession with optimum production costs and pricing efficiencies would be in the best interest of the direct market participants but would fail to consider wider implications in the improvement of aspects such as ‘land, labor, goods and money’. In other words, the assumption that allowing markets to be completely self-regulated, without any impediments for actual or future market formation, in the interest of allowing markets to be the unique and sole driver of the national economy, would be utopic. There are too many parties involved, with too many interests, and different levels of power influence in the proposed systemic structure for the self-regulated market theory to be upheld. ‘Land, labor, goods, and money’ would have to be subordinated to the needs of each particular market that constitutes the general ‘market’. According to Polanyi, to subordinate social fabric and human nature to economics with the expectations of optimal overall results was simply impossible (ibid). Continuing with the history of externalities, in 1968, Garret Hardin published *The Tragedy of the Commons* (my personal favorite when it comes to understanding externalities), where he eloquently brought the concept to life. Hardin explains externalities by envisioning an open pasture in the commons available to all herdsmen. Assuming that each herdsman is rational, they will want to have as much cattle as possible and get the maximum output out of each individual unit of livestock. Each herdsman will therefore ask the question “What is the utility to *me* of adding one more animal to my herd?”. For each cattle unit that an individual herdsman adds to his herd, he will obtain a +1 unit of output. However, the negative component of overgrazing will be distributed among all herdsmen, so the cost of destroying the land to an individual herdsman will be only a

fraction of -1. The tragedy occurs when, in a finite world, each individual herdsman is incentivized to add another unit of cattle for his personal benefit until the open pasture has been overgrazed beyond repair and everyone suffers the impending food shortages for their herds (Hardin, 1968, p. 1244)¹. One could think of many different current examples of this phenomenon at the time of writing this report that would be a perfect conceptual analysis to the problem explained by Hardin. Pollution of Earth as a whole, traffic jams, overfishing, literally overgrazing and deforestation, mass-industrial production of materials requiring non-renewable resources, etc. etc.. It is important to consider that although previous work on externalities has been admirable for its ability to reconcile economics and sociology (or environmentalism) it still has its limitations. In 2014, Nancy Fraser explained the need to understand the concept of externalities through a different lens. She stated that Polanyi's *The Great Transformation* is inherently flawed because it is overly focused on condemning 'marketization' and also praises social conservation exceedingly. A concept that could apply to and problematize many other conceptual studies on externalities. She states that:

“Preoccupied exclusively with the corrosive effects of commodification upon communities, it, [externalities], neglects injustices within communities, including injustices, such as slavery, serfdom and patriarchy, that depend on social constructions of labor, land and money... as it fails to note that protections have often served to entrench hierarchies and exclusions. Counterposing a ‘bad economy’ to a ‘good society’, The great transformation flirts with communitarianism and is insufficiently sensitive to domination.”

(Fraser, 2014, p. 544)

I would like to go back to the first author mentioned in this sub-section, Michel Callon, in order to address the problematic that could arise by juxtaposing a 'bad economy' and a 'good society' when developing a framework for externalities. Callon goes a step further and takes the analysis of externalities to another level. He explains the need for a combination between economics and sociology in order to 'frame' externalities adequately. He mentions that a crucial part of the applicability of externalities lies in the quantification of the external impacts of market activities. He builds on the previous work of sociological experts, Granovetters and Goffman, to capture the necessary network effects produced between different market participants (actors A, B and C, and distinct X, Y, and Z from the first quote of this subsection). He continues to develop the concept by explaining that there are two approaches to frame externalities. The first is to assume that a market system is almost perfectly framed and that the resulting unexpected 'overflows' that drip from the market system should be contained through additional measures that support the original frame. The second approach is to assume that 'overflows are the norm' and framing a perfect market system is very rarely achieved. Hence, one should start by considering the externalities that will unavoidably emerge from specific market activities before trying to frame the market design. Paraphrasing from Callon's work, three key challenges arise when working with externalities:

- i. There is a necessity to identify the 'overflows' from normal market activities into outside sectors. Something needs to break the preconceived mold so to speak. It could be a negative variable such as oil spilled in the ocean from a deep-water rig explosion, or it could be a

¹ Curiously, Hardin did not come up with this concept but rather popularized it. He found it on a pamphlet created in 1833 by an amateur mathematician named William Forster Lloyd

- positive variable such as the increase in literacy from the installation of free-access broadband in a rural community. It has to be something tangible, identifiable.
- ii. It is not enough to identify the ‘intermediary’, or the ‘thing’ that is causing an external shock. It is necessary to identify the source of the variable in mention and the outside parties affected by the consequences of such market activity.
 - iii. The effect must be quantified, there is no economic value added if the externality cannot be constantly and consistently measured and evaluated. (Callon, 1998, pp. 9-10)

The final stage described by Callon for an appropriate framing of a situation involving externalities is the differentiation between ‘hot’ and ‘cold’ situations. Hot situations are described as processes in which uncertainty is king. It is hard to identify the parties involved, to quantify the variables in mention, to find solutions, or to condensate the situation into easily digestible bits. Controversy emerges around every twist and turn of the analysis. Take the current pandemic as an example (Callon uses the Mad Cow disease in his text). The origins are still uncertain and the secondary effects of the pandemic (other than deaths caused by the virus) are still extremely complicated to quantify and measure. There is an economic aspect, a mental health consideration, political feuds, regional resentments, conspiracy theories, an improvement in vaccine development, an explosion in e-commerce, and much much more. On the other hand, cold situations are easy to contextualize, or frame, and the causes and the effects are self-evident. A good example of a cold situation would be a coal power plant in operation. We know who is causing the pollution, we can measure it based on greenhouse gas emissions and the extraction-to-fuel energy consumption chain, we know the costs of the project, the costs of replacing the project with a variety of renewable energies, how many people and in which ways they are affected in neighboring communities, how many jobs are at stake, etc. etc. Keep in mind this distinction between hot and cold situations according to the level of abstraction of the variables and stakeholders at hand. It will resemble the discussion on soft parameters in the following section. Hot situations will resemble soft parameters, and cold situations will resemble hard parameters. The difference between hot and cold, or hard and soft, will become simpler to understand and the crucial conclusion that must be taken from both is that neither is better than the other, it is rather the complement between them, and the understanding of the two ends of the spectrum, that ultimately allow for a groundbreaking and powerful analytical ideology.

On Soft Parameters and Predictive Models:

Perfect information in economics refers to a situation in which each market participant has an instantaneously complete and absolute knowledge of past occurrences in the marketplace, products, and prices (Oxford, 2021). Financial markets such as the New York Stock, Exchange, The Nasdaq, or the Japan Exchange Group have aggregated financial data that has been shared publicly for decades. The records of trades, price points of every transaction, accounting and financial quarterly and annual reports, sustainability reports, among others are made public and presented in a consistent, periodic, and almost immediate format. This has allowed for technical and traditional valuation techniques to evolve and grow exponentially and to generate substantial

amounts of wealth (even more if you consider securitization and derivative investment vehicles). Traditional valuation standards employ financial data and the correspondingly associated technical and fundamental analysis of the available numerical data. This level of modernization and technification explains a cause and effect relationship for hard data to receive a significantly higher level of importance, more practical applications, and more consideration than soft parameters (Marsden & Oakley, 1990, p. 28). Just like the hot situations described by Callon, soft parameters are more likely associated with qualitative metrics and aspects of operations and are usually more complicated to measure or quantify because of the lack of structure that is visible in, for example, financial technical analysis that has been refined and embedded into the culture of valuations for many decades.

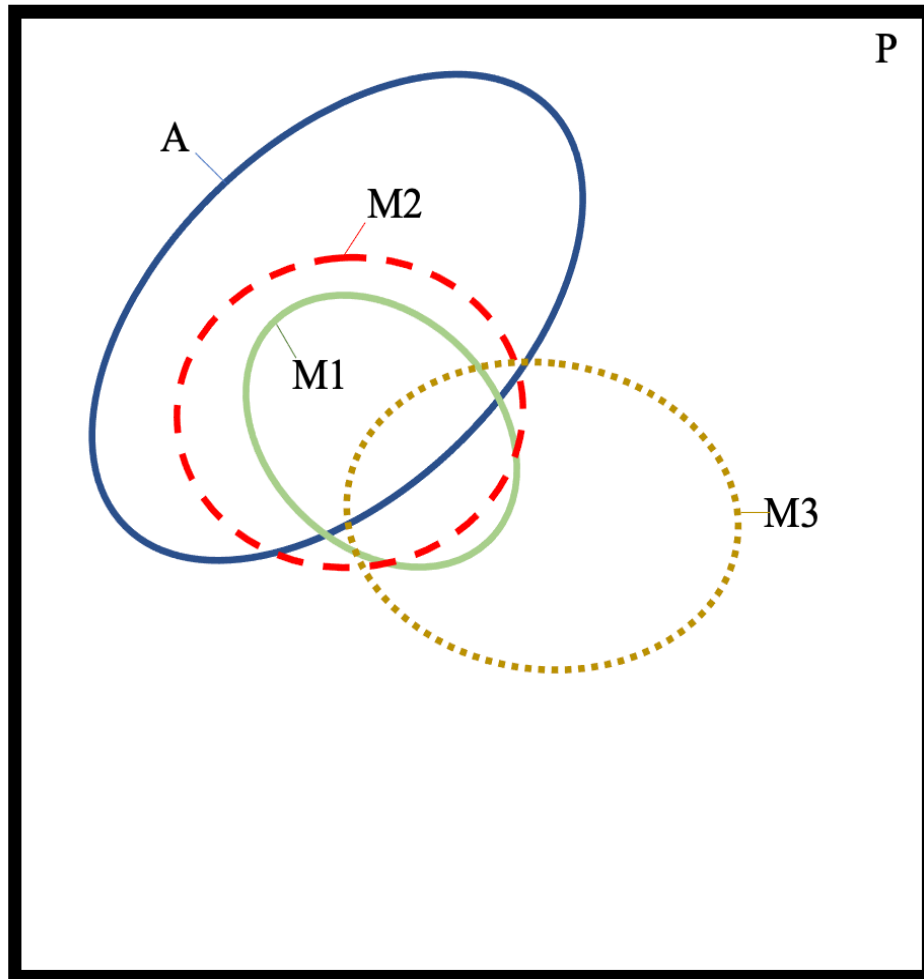
To fully understand the concept of ‘soft parameters’, we must make a retrospective analysis back to the origins of the expression. After all, the term is derived from personal soft skills. Soft skills is not a new concept to the business world and has been used frequently in academic and conversational business jargon since the beginning of the 1990s. The origin of this term is traced back to the US Army. In 1972, high ranking officers determined that there was a need to separate physical and technical skills related to combat training from intra and inter personal skills. The army determined that the intangible psychological skills of an individual such as ‘personality, attitude and behavior’ were just as important as ‘hard skills’ depending on the situational context. Leadership, resilience, and teamwork were some of the examples of soft skills listed in the publication (Whitmore, 1972, p. 12). The next publications that are relevant to this literature review are a series of academic studies on ecological water systems performed by different engineers in the late 70s and 80s. It might sound a little far-fetched, but these are the first instances of formal differentiations between hard and soft predictive models and the limitations of using each of them separately and the strengths of using them combined. Predicting water movements in lakes, reservoirs, and natural water systems, and the effect of the species inhabiting these locations is a daunting task. Hence, engineers started to advocate for the need to develop adaptive systems that were not only guided by a strictly predefined methodology or path of analysis. Walter J. Karplus started this trend by placing two types of analytical models at each end of a hypothetical spectrum and starting the analysis from the outside of the spectrum first, black or white, and then moving into grey areas. ‘White box’ systems, or ‘hard parameters’, are in one end of the spectrum: for example, a circuit system in electrical engineering or an ROA ratio in financial analysis (returns on assets). On the opposing limit of the spectrum one would find ‘black box’ systems, or soft parameters, such as externality based socioeconomic systems or agile methodologies in business management. Karplus predicated that with adequate interpretation of the further research required black box systems could be pushed towards the other end of the spectrum and made easier to grasp by analysts (Beck, A Procedure for Modeling, 1983, p. 20). Take notice of how this is perfectly in line with the goals explained by Michel Callon to properly frame externalities. There is an implicit need to quantify, measure, aggregate, and value the data from ‘black box’ systems or ‘soft parameters’ in order to make progress in the discussion of advanced valuation methodologies. The historical literature review in this section is of great importance because in the next section of this

report, we are going to look at specific examples of differing valuations according to methodology and their impacts on the related stakeholders.

M.B. Beck expanded this distinction between rigid and flexible systems in 1981. He actually jumped the chasm and started referring to white box systems and black box systems as hard and soft systems respectively. The major contribution made by Beck, also in line with Callon's reference to a collaboration between economics and sociology, is that he highlighted the urgent need to reconcile both soft and hard systems in synchrony to achieve optimum results. A predictive model needs inputs from both ends of the spectrum and constant measurement and calibration to improve reliability and predictive power. Kaizen. He accentuated that: "there is a need to reconcile the growing incompatibility between what can be simulated in principle and what can be observed in practice...[sometimes] that which can be simulated in principle is simply not matched by that which can be observed and verified in practice" (Beck, *Hard or soft environmental systems?*, 1981, p. 236). In his publication, Beck uses a quote to assert that the risk of focusing only on soft or only on hard parameters could "crudely oversimplify extremely subtle arguments... the use of many standard (statistical) techniques for determining sufficient model complexity is questionable in the case of 'badly defined' systems" (Maciejowski, 1979, p. 583). 'Badly defined systems' alludes to the same concept as 'hot situations' used by Callon. The use of standard statistical and financial techniques would give rise to controversy and miserably fail in an attempt to understand challenges that call for a multi-stakeholder approach. Traditional valuation methodologies have a logical over-reliance on hard parameters and hard data. This dynamic is obviously understandable because of the level of advancement and sophistication in the data aggregation process that is available in financial markets. The integration of multi-platform, artificial intelligence, and neural networks has been established to allow analysts to take real-time decision and access business intelligence seamlessly. This does not mean that the current valuation culture and methodologies cannot be improved, nor that they are enough, nor the best fit to measure social development and socially just results (Marsden & Oakley, 1990, p. 139) . There is an ever growing need to explicitly highlight long-term value creation principles when implementing projects or channeling investments because there is a considerable probability that hard data will be secondary in importance to soft parameters, and only accurately and successfully predictable once soft parameters have been accounted for. There are situations that can be framed before accounting for externalities, but there are many that would be impossible to adequately frame without utilizing externalities as a starting point. I have adapted a model used to graphically explain ecological water systems, presented by Beck in 1981, in order to visually represent the difference and the impacts of using only hard parameters, only soft parameters, or both combined in short-term and long-term time horizons, and hot and cold situations. In the next two pages the graphical models will be presented, and in the pages following the exhibits, practical examples will be presented to expand the discussion.

Exhibit 1: Hard & Cold Models in Short-Term Predictive Analysis

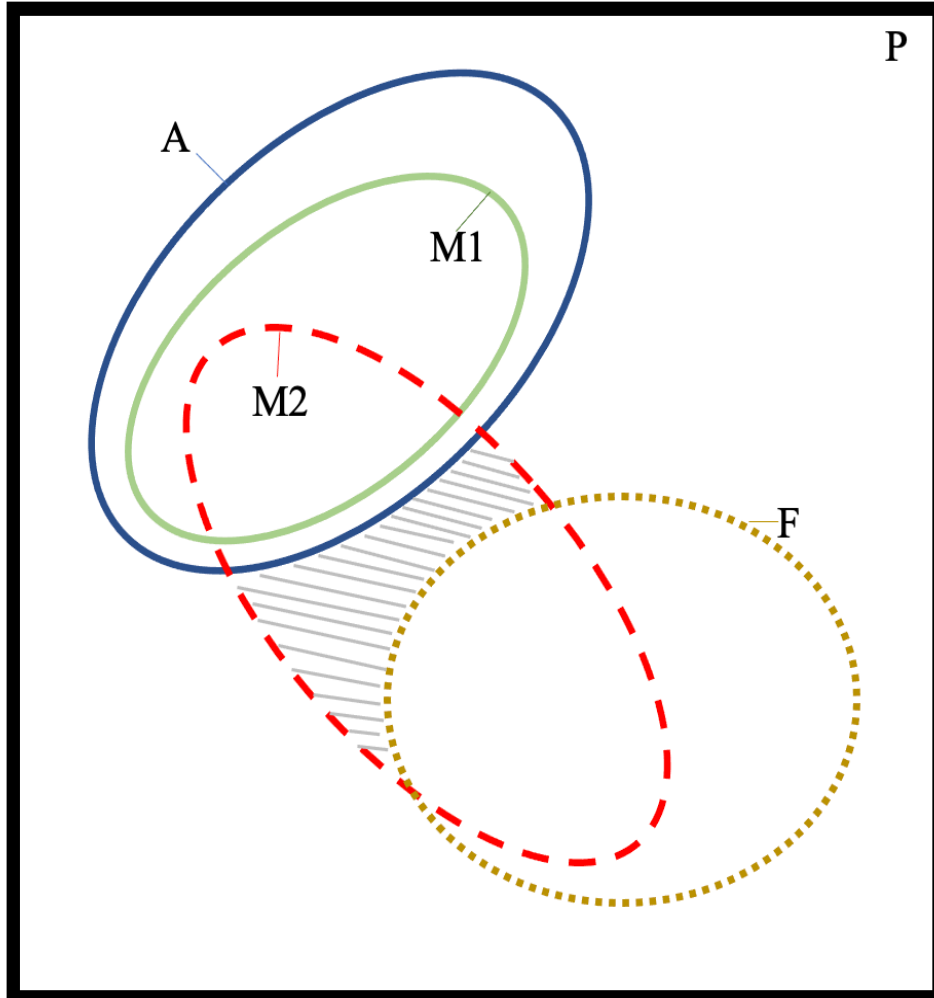
Hard / Cold Model Short-Term Predictive Analysis



- P = the set of all possible behavior patterns
e.g. Historical NPV & DCF valuation averages on comparable energy projects
- A = the historically observed pattern of behavior
e.g. Possible returns, costs, and impacts historically observed for other coal-powered electric plants and comparable projects
- M1 = the behavior pattern simulated using only hard parameters
e.g. Valuation for coal-powered electric power plant calculated using NPV, DCF, ROI, ROA, Payback period, and other traditional financial techniques
- M2 = the behavior pattern simulated using both hard and soft parameters
e.g. Valuation model employing the hard data from M1 and combining it with SDGS, SROI, and other relevant soft parameters
- M3 = the behavior pattern simulated using both hard and soft parameters and considering for 'black swan' events
e.g. Predicted valuation model accounting for low-probability radical externalities such as armed conflicts, natural disasters, etc...

Exhibit 2: Soft & Hot Models in Long-Term Predictive Analysis

Soft / Hot Model Long-Term Predictive Analysis



- P = the set of all possible behavior patterns
e.g. Historic valuations or long-term value projections for all types of energy projects
- A = the historically observed pattern of behavior
e.g. Historic valuations or long-term value projections for comparable electricity generating energy projects
- M1 = the behavior pattern simulated using only hard parameters
e.g. Predicted long-term valuation for coal-powered energy plant using only hard data (NPV, DCF, ROI, etc...)
- M2 = the behavior pattern simulated using both hard and soft parameters
e.g. Valuation model employing the hard data from M1 and combining it with SDGS, SROI, and other relevant soft parameters
- F = A set of possible future behavior patterns of the actual system
e.g. Predicted long-term valuation of the project considering tectonic shifts in the industry and / or the company itself

Exhibit 1 and Exhibit 2 graphically explain the difference between ‘hard’ and ‘soft’ predictive models. In this case, hard & cold models are those that would be associated with short-term and medium-term investment goals, expressed in Exhibit 1. For example, if a national government was trying to predict the returns and environmental impact of a coal-powered electric plant for the next fiscal year, In Exhibit 1, *A* would be all the possible returns, costs, and impacts that have been historically observed in the past for other coal-powered electric plants and comparable projects. *M1* would be a predictive model created to explain the expectations of the possible outcomes of the new project using purely hard parameters and quantitative financial information available for the government. *M2* would be a model that considers both the purely hard parameters of *M1* and the portion of soft parameters of the project and similar energy generation projects that can be reliably quantified and considered for analysis. *M3* is less important and is an example of a model that would consider an externality of ultra-significant impact on results and therefore has a much lower probability of occurring (armed conflict for example). Let’s look at a different example in a different industry. If an investment fund was trying to predict the returns of Facebook for the next fiscal year, In Exhibit 1, *A* would be all the possible returns that have been historically observed in reality for Facebook and comparable tech companies. *M1* would be a predictive model created to explain the expectations of the possible returns of Facebook using purely hard parameters and quantitative public financial information available for the investment fund. *M2* would be a model that considers hard parameters of *M1* and soft parameters of Facebook and related tech companies. *M3* is less important and is an example of a model that would consider an externality of extremely high impact on results and therefore would have a much lower probability of occurring (a global pandemic for example...). These types of models would be useful when trying to predict outcomes in a well-defined investment environment with clear patterns of behavior. It is important to emphasize that *M2*, by including soft parameters, explains a larger portion of the historically observed results and at first sight looks better than *M1*. The effectiveness of *M1* and *M2* in Exhibit 1 is directly correlated to the quality of the hard data and the specificity of the analysis at hand. It might be that if the hard parameters are strong enough to explain the nature of the results being predicted, there would be no practical application for *M2* since the probability of the results being outside of *M1* would be disregardable. *M1* is a great example of predictive models that would be useful for types of analyses that fall closer to the ‘black-box’ end of the spectrum and for systems that can be purely explained by quantitative data in shorter event-horizon situations.

On the other hand, consider an investment that is focused on long-term value creation and has a much larger event-horizon and a much higher degree of unpredictability. Using the same two examples from the previous paragraph, if the national government in mention was trying to predict the valuation of a coal-powered energy plant 25 years from today, there is a need to account for the increasing amount of pollution and greenhouse gases emitted when compared to alternative technologies, the levels of direct pollution to nearby communities, the health considerations of the workers, risk mitigation strategies, ecosystem destruction and polluted waterways, and many more possible outcomes. Exhibit 1 would not be an adequate representation of this specific situation. By referring to Exhibit 2 we can observe how there are multiple scenarios considered across universe

P. In Exhibit 2, *A* would be the expected possible returns, costs, and impacts of the project according to previously observed and comparable energy generating projects. *M1* would be the estimated net present value of the project using purely hard parameters, similar to Exhibit 1. *M2* would be the new possible predicted net present value calculated using not only hard parameters but also accounting for soft parameters that are related to the project in the next 25 years. *F* would account for future valuations affected by factors that do not even exist today. For example, if a war broke out with a neighboring country, if the international community places trade-bans on countries operating with coal plants, if a new technology is invented that renders fossil fuels obsolete, etc.... Now, let's look at the Facebook example again. If an investment fund was trying to predict the market capitalization of Facebook 7 years from now (approximate average exit window for private VC firms in the US), the fund would have to take a whole new set of factors into consideration (Spieler, 2013). The fund would have to account for possible acquisitions, the competitive landscape, and possible pivot to new lines of business (such as cars, fitness, etc...). In Exhibit 2, *A* would be the future calculations of possible valuations of Facebook determined by observed investments and exits in comparable tech companies, if the information would be available. *M1* would be the future possible valuations of Facebook predicted by the investment fund using purely hard parameters, like in Exhibit 1. *M2* represents the new set of predicted valuations calculated with hard parameters and soft parameters. Note that Facebook is part of an extremely dynamic and complex industry. *F* represents future valuations affected by factors that do not exist as of today. Consider the government of the U.S. deciding to forcefully take over Facebook and weaponize the platform, or if the antitrust and monopoly laws would change in a way that would force Facebook to dissolve and separate WhatsApp or Instagram or both from its core line of business.

These examples of future outcomes are not as improbable as one might initially consider once you factor in longer term valuation and investment scenarios. There is a probability that the valuations and future expectations of value, the costs, and the impacts, would change so drastically that it would be almost impossible to predict hard & cold models by themselves, or find any reliable use for previously observed historical data. M.B. Beck captures the uncertain nature of valuations and predictions by humorously and paradoxically explaining that:

Hence, we arrive at the dilemma that is to be the terminal point of this discussion. With a large model (M2), it may well be possible to predict the 'correct' future, but one would have little or no confidence in that prediction. With a small model (M1), it may be that a quite 'incorrect' future is predicted, and, worse still, one might place considerable confidence in that prediction. (Beck, Hard or soft environmental systems?, 1981, p. 248)

I would like to emphasize once again, that the models presented in Exhibits 1 and 2 are adapted from M.B. Beck's publication in 1981.

Continuing the historical analysis of soft and hard parameters, in 1990 Oxfam published a book titled *Evaluating Social Development Projects* where the main conclusion was that traditional quantitative techniques were not effective to adequately measure the impact and the results of projects that had social implications. For example, it is noted that it would be impossible to

effectively quantify the enhancement of citizen participation, an increase in solidarity, or building institutional capacity through the use of a technocratic approach that employs hard parameters alone. The publication emphasized that there is an ongoing but unstructured effort to find and create “more sophisticated indicators which will measure the less tangible advances which are deemed to be at the heart of effective development” (Marsden & Oakley, 1990, p. 150). The problem with relying solely on hard techniques is that the socioeconomic and political aspects required by the project might be entirely neglected. As Oakley remarks, there is a vast amount of information regarding traditional quantitative methods and technocratic approaches because of the deep roots that have formed between research and hard data because of the close association with schools of management. The author continues to develop this concept by explaining that quantitative approaches assume that control and order are achievable through ‘fine tuning’ and calibration of the technical methodologies applied in these systems structures. Since this is not possible to achieve in poorly structured systems, there is a need for a different approach. The authors mentioned that when a hard methodology is unfit for a project, one should consider an interpretative approach: “An interpretative approach provides the basis for what one might call a ‘practical’ evaluation methodology... something which holds the issues of participation, capacity-building, sustainability, and empowerment as central to the elaboration of more appropriate development strategies” (ibid, p. 138). The most interesting part of this report, in my opinion, is the fact that the authors make a fantastic job when describing the particularities, advantages, and limitations between ‘hard and soft techniques’, or the ‘negative academic and the positive practitioner’, and create a well-structured guideline of when to use each of them, but, fail to mention the need to combine both of them for better results. The focus of the publication is not on how to create better predictive and measurement models, but rather to distinguish the technocratic from the interpretative approach. Coincidentally, in line with what this thesis report presents, one of the closing statements in the book asserts that: “Rather than taking for granted the often implicit views of others, incorporated into what are seen as authoritative texts, it is important to strip them of their pretensions and point out their partialities as the first step in the construction of purposive actions” (ibid, p. 138). There are many ways to categorize hard and soft parameters, quantitative and qualitative, hot and cold, technocratic and practical, among others. Just as people can have hard and soft skills, companies and projects can have hard and soft parameters as well. We will be able to understand the context and application of different variables and parameters through the next sub-section of the literature review. There is no universal manual or rulebook that explains how to combine externalities, soft parameters, and hard parameters, but, understanding the context and the stakeholders involved allows for an advanced and practical approach to the understanding of complementing and combining valuation methodologies.

Current applications and measurement techniques for soft parameters and externalities:

There have been significant advancements since the 1990s when constructing methodologies that account for multi-stakeholder interests. Some examples of progress are the Sustainable Development Goals created by the United Nations, ESG metrics, and the Social Return on

Investment methodology created by The SROI Network. The level of consideration and depth of multi-stakeholder approaches will be explored and placed in a context where it is related to ecological economics and practical applications. There are three prevalent reasons for choosing externalities and soft parameter analysis in environmental projects. First, both of the case studies that are going to be analyzed in this thesis are related to multistakeholder environmental negotiation processes and the level of application and sophistication of multicriterial analysis employed in each of them. The second reason is that there is a breadth of research on the subject that allows for a more objective analysis of the interrelationships between the selected groups of stakeholders that participate in the process. Likewise, there are multiple iterations of mapped methodologies and schematic processes that have established the professionalization of the analysis of hard and soft parameters simultaneously in the valuations of environmental projects, particularly of ecosystem valuations, through risk assessment valuations in the decision-making process. The third reason is that environmental multistakeholder negotiations involve all the stakeholder groups that are commonly analyzed, providing a perfect scenario for stakeholder analysis to be conducted. The stakeholder groups identified for analysis in this thesis are the public sector, the academic sector, the private sector, general public / society, and the environment / nature (Millenium Ecosystem Assessment, 2005, p. 26). This thesis, in line with the IPBES Global Assessment on Biodiversity and Ecosystem Services, aims to:

“be more effective [by having] clear, unambiguous, simple language, with quantitative elements; take account of synergies and trade-offs between targets...take greater account of socioeconomic and cultural contexts and values; take account of climate change impacts and responses; integrate insights from the conservation science community as well as social scientists, indigenous and local knowledge, and non-academic stakeholders and take account of the availability of existing indicators and the feasibility of developing new ones”
(The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, 2019, p. 9)

The traditional investment process is focused and specialized on what can be described as ‘hard parameters’, through the use of discounted cash-flows, rates of return (accounting and internal), payback periods, returns on investments or assets, and comparable industry multiples. Although these are all useful methodologies for valuations, the problem lies with the data that has been traditionally required and employed to generate results through these models. The data used is ‘hard data’, traditional financial, accounting, and economic inputs that rarely consider the impact of ‘soft data’, externalities, and derivative cashflows. Different stakeholders have different risk profiles and different valuation methodologies that better adapt to their specific interests. The main issue with soft parameters is that they are harder to parametrize and therefore more complicated to integrate in standardized valuation methodologies. The focus and goal of soft parameters are to include the interests, or the costs and benefits, of different parties that previously have not had a seat in the table. In other words, to consider the impact of investment decisions on a variety of stakeholders and not just on direct financial costs and revenues associated with the project (Kenter, et al., 2016, p. 538). This thesis will focus on analyzing the impact on the other side of the coin into the analysis, soft parameters and externalities. It is important to generate a distinction between

what this thesis aims to do and what it does not. The purpose is not to explain how to value different parameters employing different valuations but rather on analyzing the usage and impact of alternative valuation techniques in multistakeholder negotiations.

In this section we will review the most commonly used valuation methods for soft parameters and externalities. The valuation methods analyzed are focused on ecosystem valuations and environmental projects because of the direct relationship to the case studies used in this thesis. The first method reviewed is total economic value (TEV), and it's employed when the current value of all benefits associated to an ecosystem are being quantified with the objective to understand the tangible and intangible contributions to society. The amount provided by each service is multiplied by the value associated with each specific category. TEV is composed of 'use value' and 'non-use value' components. The first component, use value, is broken down into three categories, direct use value, indirect use value, and options value. Direct use value refers to the benefits derived from direct consumptive and non-consumptive activities such as timber, food harvested, natural resources, and leisure and cultural activities that are not associated with extraction processes. Indirect use value refers to benefits that overflow beyond the ecosystem, such as a mangrove's protection on a coastal city from storms and hurricanes. Options value alludes to the probable benefits that will be obtained in the future, such as resources not exploited or future applications that are not yet well known. A practical example would be the regulation of overfishing to sustain the current stock of fish and allow future generations to benefit from it instead of maximizing the amount of the daily catch. On the other hand, non-use value is associated with the benefit that any given person obtains from the ecosystem's existence, and for the legacy values that it will provide to future generations, although they never expect to use the resource or visit the ecosystem themselves. Since valuing indirect use value is often complicated, alternative valuation techniques have been modified for their application in this context. These methodologies are summarized and presented in Table 1. Pure returns and net profits are not the best measure of success if the true costs and returns of the project are not aggregated accurately (The International Bank for Reconstruction and Development, 2004, p. 27).

Table 1: Main economic valuation techniques (The International Bank for Reconstruction and Development, 2004, p. 11)

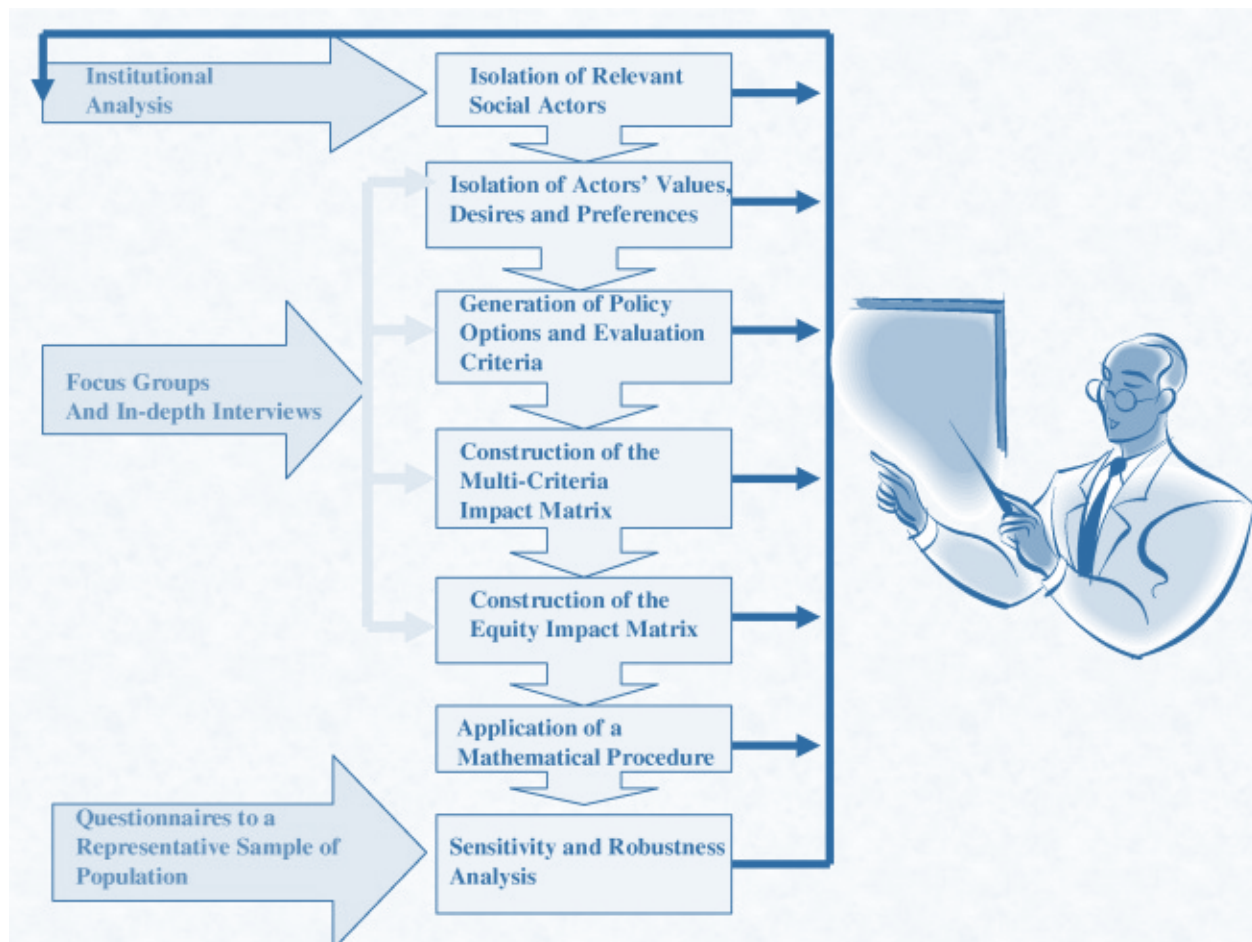
<i>Methodology</i>	<i>Approach</i>	<i>Applications</i>	<i>Data requirements</i>	<i>Limitations</i>
Revealed preference methods				
Production function (also known as 'change in productivity')	Trace impact of change in ecosystem services on produced goods	Any impact that affects produced goods	Change in service; impact on production; net value of produced goods	Data on change in service and consequent impact on production often lacking
Cost of illness, human capital	Trace impact of change in ecosystem services on morbidity and mortality	Any impact that affects health (e.g. air or water pollution)	Change in service; impact on health (dose-response functions); cost of illness or value of life	Dose-response functions linking environmental conditions to health often lacking; underestimates, as omits preferences for health; value of life cannot be estimated easily
Replacement cost (and variants, such as relocation cost)	Use cost of replacing the lost good or service	Any loss of goods or services	Extent of loss of goods or services, cost of replacing them	Tends to over-estimate actual value; should be used with extreme caution
Travel cost (TCM)	Derive demand curve from data on actual travel costs	Recreation	Survey to collect monetary and time costs of travel to destination, distance traveled	Limited to recreational benefits; hard to use when trips are to multiple destinations
Hedonic pricing	Extract effect of environmental factors on price of goods that include those factors	Air quality, scenic beauty, cultural benefits	Prices and characteristics of goods	Requires vast quantities of data; very sensitive to specification
Stated preference methods				
Contingent valuation (CV)	Ask respondents directly their WTP for a specified service	Any service	Survey that presents scenario and elicits WTP for specified service	Many potential sources of bias in responses; guidelines exist for reliable application
Choice modeling	Ask respondents to choose their preferred option from a set of alternatives with particular attributes	Any service	Survey of respondents	Similar to those of CV; analysis of the data generated is complex
Other methods				
Benefits transfer	Use results obtained in one context in a different context	Any for which suitable comparison studies are available	Valuation exercises at another, similar site	Can be very inaccurate, as many factors vary even when contexts seem 'similar'; should be used with extreme caution

The second type of methods under analysis are two stated preference valuation methodologies, both included in the table presented above. These are of particular interest for the purpose of this thesis because both contingent valuation and advanced choice modeling (multicriterial analysis) play an important role in the negotiation processes of the case studies presented. Contingent valuation is relatively straight forward; people are asked how much they are willing to pay to either obtain or preserve a non-market good. Then, the average willingness to pay (WTP) is multiplied by the number of households or individuals affected by the initiative at hand. The objective is to value a good, ecosystem, or intangible asset that has not been priced by the market before. However, this methodology has various gaps when not applied in the appropriate context. WTP has been proved to be considerably higher when the time horizon of the payment schedule is increased relative to one-time payments. The value of the non-market asset in mention could be considered arbitrary because WTP might be volatile when analyzing the asset by itself or in a broader context. Also, the individual WTP or the maximum individual contribution per respondent to preserve a non-market good might be interpreted not as the fractional value attributed to the asset but rather as the individual cost of purchase of moral satisfaction (Kahneman & Knetsch, 1990, p. 57). One way to address these weaknesses associated with contingent valuations or basic choice modeling in environmental considerations is the implementation of deliberative methods. Common deliberative approaches include but are not limited to focus groups, citizen's councils, juries and panels, consensus oriented conferences, valuation workshops and market stalling. Purposefully implementing deliberation processes is likely to help decision makers narrow down the context of the stated preference methodology in use in order to obtain data of better quality from the respondents. Context, preference biases, and individualistic rationale are factors that need to be addressed when using stated preference methodologies such as contingent valuation or choice modeling (Lienhoop, Bartkowski, & Hansjurgens, 2015, pp. 522-525).

The second stated preference method analyzed is choice modeling. Giuseppe Munda, one of the leading experts in mathematical multicriterial analysis and its direct application to environmental processes remarks that: "In the area of environmental and resource management and in policies aiming at sustainable development, conflicting issues and interests are the normal state of affairs" (Heracles Polatidis, Munda, & Vreeker, 2006, p. 189). Although he clarifies that mathematical approaches are not the 'panacea' to global conflict, Munda highlights the importance of the adequate application of quantitative data in order to shed light and bring clarity on issues that have been traditionally hard to grasp for politicians, policymakers, and civil society alike. He has developed a variety of methodologies and applications that employ fuzzy cluster analysis, binary choice modeling, and specific-to-project data in order to reach a set of ranked desirable outcomes and valuations depending on the options-of-choice path taken by the stakeholders. This combination of data organized in ranges with probabilistic analysis helps to address the problems associated with the lack of historical information regarding global and regional environmental problems. A pure probabilistic analysis would be helpful when there is a perceived 'weak uncertainty' level and the iteration of presented pairs of options can be compared reliably. Uncertainty is exponentially strong once you consider the multistakeholder nature of projects related to the environment, ecosystems, and natural resources that are considered public (ibid). Even when this type of multicriterial analysis can have infinitely deep layers of scenarios, the

purpose of this process is to help decision makers process and understand information that has been traditionally hard to quantify. The definition of the scope of each project is of paramount importance because of the intricate relationships created between and across the multiple stakeholders being analyzed. The situation needs to meet four criteria in order to create a competent predictive algorithm. First, only well-defined policy options. Second, a linguistic variable impact evaluation technique. Third, the semantic distance generated between stakeholders is taken as a conflict indicator. And fourth, the fuzzy cluster algorithm should be used to explain the similarities or discrepancies between stakeholders. Ideally, a complete project analysis should be structured following the process in Figure 1 presented by the author of the study (Munda, 2007, p. 310).

Figure 1: The ideal problem structuring in social multi-criteria evaluation (Munda, 2007, p. 310)



The relationship between ecological politics and ecological economics, that started in the 1980s, tries to answer questions that have been previously left unaddressed. Since its origins, these two branches of studies have dealt with subjects ranging from the assignment of monetary values to negative externalities and to positive environmental services, the accelerating time horizons and discount rates used in valuations to account for exponential climate adaptations, the link between economic growth and demand for natural resources, and the carrying capacity related to population

growth. Another topic of interest are the social dynamics of impacts on the most susceptible population groups who often tend to have a closer link to nature and struggle with the economic quantification of non-market goods (Alier, 2003, p. 166).

As of right now, we live in a world where investments are made with a ‘carrot and stick’ incentive structure. Dangle a carrot in front of the stubborn donkey to make it move forward and hit it with a stick if it does not move. In a traditional investment process, the carrot would be net financial returns and the stick would be the consequences derived from anything but maximum expected returns. We should aim to have more ambitious goals in regard to returns than a simple ‘carrot’ when moving forward, and, avoid getting hit with a stick in the future by the real consequences of disregarding alternative measures of value that focus on more than just pure profitability and could derive in negative externalities. As you can see, as of today, we as a society are the stubborn donkey who should learn that there is more to consider than just a stick and a carrot. We can observe an evolution in the complexity and applicability of soft parameters and externalities from the literature review presented in this section. The systematic and applied analysis of both has allowed for new valuation mechanisms and theories to be created and to present alternatives to traditional valuation methods employed in the past. Although the path from theory to practice seems to be bridging, and the gap between academic research and implementations seems to be closing, from the examples presented above, it is still unclear if the presupposed functionality of these valuation mechanisms is being effected in multistakeholder negotiations where different valuations and perspectives are taken into consideration. The relationship and echelon formed between traditional and alternative valuation methodologies, in real-life multistakeholder processes, has not been clearly defined by the extant literature available on the subject.

Methods & Methodological Approach

The two case studies selected for analysis in this thesis have been chosen through theoretical sampling and after careful consideration of three factors. Both have an environmental component, involvement from all the stakeholder groups presented above (the public sector, the academic sector, the private sector, general public / society, and the environment / nature), and the use of externality and soft parameters in the valuation methodologies (to different extents). These cases have been specifically sampled to allow for the identification of relevant similarities, differences, experiences, and sources of data that would be useful to answer the research question presented in this thesis. Theoretical sampling allows for the “strategic selection of information-rich cases related to the topic of interest... [and] is a form of sampling in qualitative research that is not bounded by the limits of a priori selection” (Conlon, Timonen, Elliott-O’Dare, O’Keeffe, & Foley, 2020, p. 947). The use of case studies to explore the thematic of this thesis allows for a meta perspective and to better understand complex socio-economic phenomena. The case study research strategy responds to the form of the research question (how? why?), the focus on contemporary events, and the lack of control over behavioral events (Yin, 2003, pp. 3-4). Through an adductive process of research and systematic combining, as presented by Dubois and Gadde, one can understand how case studies contribute to the process of knowledge discovery and creation by presenting the information at hand in a non-linear process that explains the intertwined and interrelated aspects to be analyzed. Previously developed frameworks, like the examples in the literature review, are combined with empirical observation and the particularities of each case study before arriving at theory. Through the iterative combination of these 4 components, the process of ‘direction and redirection of the study’, and the ‘matching between theory and reality’ presented in Figure 2, the most important aspects of each case study can be combined with existing frameworks to create knowledge. The process of abduction allows for the frameworks to be modified, applied, or explored in depth throughout the thesis (Dubois & Gadde, 2002, pp. 554-556).

Figure 2: Systematic combining (Dubois & Gadde, 2002, p. 555)

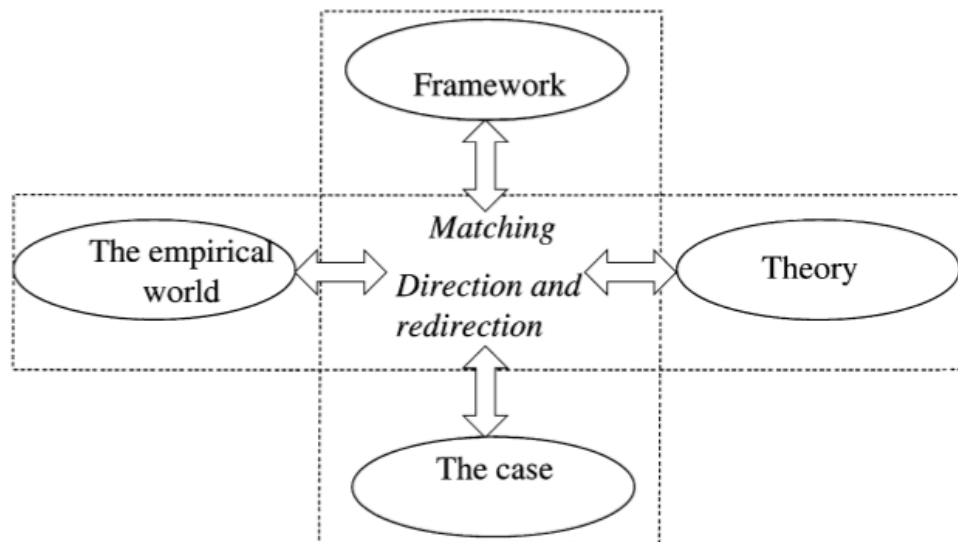


Fig. 1. Systematic combining.

I have selected a quote by Friederichs and Kratochwil to summarize the value of combining an adductive research methodology with case studies and in-depth, unstructured, interviews:

“the social world is constituted not by physical objects but by intersubjective meaning and ‘value relations’ (Wertbeziehungen). Social scientific knowledge is therefore based as much on verstehen (understanding) as on erklären (explaining). This does not imply that a correct understanding of social conduct is possible only if we ‘empathize’ with others. The personal realm or private mind of others is ultimately inaccessible, and thus we always have to attribute motives and meaning. But far from depending on empathy, such attributions can be based on intersubjectively shared understanding and culturally transmitted schemes. It is then possible to test our interpretations by confronting them with the internal accounts of those being studied, as well as engaging in counterfactual reasoning. An alternative to ontological realism will accordingly take the intersubjective quality of social reality seriously.” (Friedrichs & Kratochwil, 2009, p. 704)

The methods employed for this report are two case studies, as mentioned before, a set of 7 and 6 open-ended interviews for each case study respectively, the gathering of primary and secondary information in the form of public information from newspapers and broadcasts, and data from the original reports that were used for the official structuring of each of the projects pertaining to the case studies analyzed. Even when the number of interviews conducted is relatively small, I consider that the quality of the interviewees and their responses is much more significant than achieving numerical significance based on quantity rather than quality. This also reinforces the choice of adductive research and theoretical sampling. All interviews were conducted via video calls on Zoom except for two that were conducted via Facetime and a WhatsApp call. Although conducting interviews via Zoom might represent a loss of quality in the interview process because of the lack of face-to-face contact with the interviewees, this platform has allowed me to gather information from experts located in continental Ecuador, the Galapagos Islands, New York, the Peruvian Amazon, Thailand, and Chile. It would have been unimaginable to combine the diverse perspectives of an international cohort of experts if the interview process was limited to in-person meetings. It is important to emphasize that all but one interview were conducted in Spanish and the results are translated by me. The transcripts are available upon request.

These selected sources and types of information have been considered the most relevant to the study because of two factors. First, the fact that different stakeholders with reliable and verified knowledge of the projects are available and willing to participate. Aggregating and interpreting their different points of view, the different inputs, and the different interests of stakeholders of different backgrounds is crucial to the understanding of the appropriate methods of valuation employed in each project. The second factor for choosing these research methods is the combination of public and private information available for processing. The amount of data that can be collected for this thesis allows for an objective and unbiased interpretation of the different interests from the parties involved and the possible discrepancies in interests and valuations. The reliability of the interviewees is one of the foundations of the analysis of the selected cases studies.

The interviewee subjects were carefully selected from their respective stakeholder groups in order to minimize the level of respondent bias and to generate a trustworthy pool of commentary that could be reliably interpreted. For the purposes of this thesis, fortunately, all but one interviewee agreed to have their names and professional positions shared.

For the Yasuni ITT case, I have interviewed:

1. The technical director and most senior valuation expert that designed the groundbreaking proposal in 2007 while working directly with the government. Now, he is a professor and a technical director for different valuation projects. – Public and academic sectors
2. A mechanical engineer that has vast experience when working with oil spillage and environmental remediation of oil spills in the Amazon, who has worked with the government in the past to consult on renewable energy projects in the Amazon. – Public and private sectors
3. The most senior activist for the defense of the human rights of uncontacted indigenous tribes in the Amazon and co-founder of the most relevant civil-rights group in the country. – Civil society sector and environment sector
4. The three-term president of the national entity of Ecuador that coordinates environmental NGOs and current coordinator of the largest NGO for the rights of nature in Ecuador. – NGO and public sectors
5. The leader of a think tank specialized in public policy implementation strategies that also works with NGOs specialized in the rights of nature. – Private and NGO sectors
6. The former delegate for the Spanish agency for international cooperation and development, and a human and women's rights expert of indigenous populations in the Amazon. – International community and environment sectors
7. The UNDP multi-agency coordinator for Ecuador at the time of the case. – International community sector

For the Galapagos marine reserve expansion through sovereign debt repurchase case, I interviewed:

1. The most senior political figure of the Galapagos, a governor of sorts, called the Minister President of the Governmental Council. – Public sector
2. The lead analyst for the structuring of the debt repurchase proposal and projected environmental impacts. – Academic sector
3. A multi-stakeholder negotiations expert that lives in the Galapagos Islands and is directly involved with the project. - NGO sector
4. The lead economic analyst for the environmental judicial court of Valdivia, Chile. – Public and environment sectors
5. The original creator of the proposal that led to the creation of the current marine reserve, and president of the insular fishermen union. – Private and environment sectors

6. A top-level financial advisor, international wealth manager, and senior member of the alternative investments division of one of the most prestigious wall-street banks. – International community sector

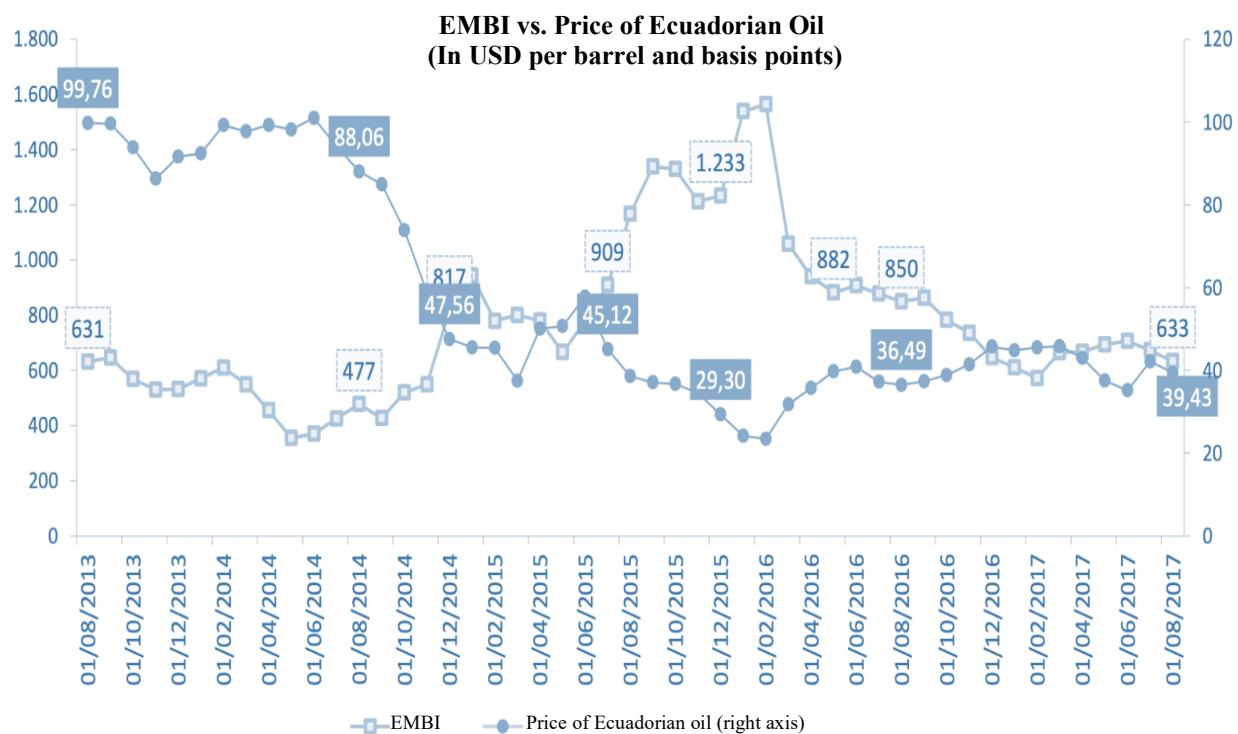
Finding participants from different backgrounds that represented all the different stakeholder groups relevant to the case studies was the most difficult challenge when gathering data for the project. This element of the report is crucial for the data interpretation process to avoid having to assume the interests and opinions of any specific stakeholder group. Although the data set is small, the sample population for each group is a strong representation of each stakeholder category and a solid representation of the overall views of each party. This fact is supported by analyzing the professional occupations of each interviewee, the consistency across responses from different interviewees, and the overall broad consideration for different points of view within members of their same stakeholder group presented in each interview. The interviews were unstructured and conducted in an open-ended format to allow interviewees to respond in length and explore the questions posed according to their field of expertise. Yes or no answers and binary questions were avoided in order to extrapolate as much knowledge and context from each interview. The results of the interviews are analyzed in the forthcoming sections of this report and are summarized in Appendices 1-5. The answers are short summaries of the inputs rather than direct transcripts. The interviews amounted to more than 13 hours of conversation and over 120 pages in transcripts.

Case Studies

Yasuni ITT:

The ‘price’ of the Amazon Rainforest can be calculated according to different methods of valuation. Although the price range varies from region to region and country to country, there are some clear examples that we can use as references to determine the actual market price per square meter of rainforest. For example, the Yasuni National Park, part of the amazon rainforest, is considered to be one of the most biodiverse locations on earth, if not the most biodiverse place on earth. To put this into context, in 0.01 km² of the Yasuni forest, there are more species of trees than in all of Canada and the United States combined. This park has the highest concentration of amphibians and reptiles in the world and contains approximately 10% of all animal species in the world (Larrea, Petroleo o Conservacion en el Yasuni?, Ecuador). There are many other statistics that are worth mentioning but to keep things short let us move towards the definition of the market price of this natural wonder. Ecuador, a third-world country, also known as a developing economy, has a strict economic dependency on oil exports (Bass, et al., 2010). In fact, the country risk index has a direct and almost perfect inverse correlation with the price of oil. We can observe the striking nature of this relationship in Exhibit 3, generated by an independent Ecuadorian consultancy agency named Multienlace, using data aggregated between 2013 and 2017 from the Ecuadorian Ministry of Finance and the EMBI index elaborated by J.P Morgan.

Exhibit 3: Oil Price and Country Risk Inverse Correlation (Multienlace, 2017, p. 3)



The government of Ecuador found approximately 1 billion barrels of oil in the Yasuni natural park, comprising an area that would affect an estimated 80% of the park. While the size of the oil reserves represented only 12 days of global oil consumption, the conservation initiative was described as a global opportunity for a post-fossil fuel future (Presidency of Ecuador, 2007). The

Yasuni-ITT initiative was launched to protect the rainforest. Ecuador demanded 3.6 billion USD from the international community, or approximately half of the projected revenue flows that could be calculated based on the price of oil at the time. A form of contingent valuation of sorts, considering that the international community was tested and asked what their willingness to pay was in order to preserve a natural wonder. Each member of the international community would theoretically contribute with varying amounts to the initiative according to their interests (and capabilities) to help the fight against climate change, or, alternatively, as Kahneman & Knetsch mentioned, to determine the cost for their purchase of moral satisfaction. The average price for a barrel of oil in 2007 was approximately 72 USD (Macrotrends, 2021). After doing the math, 3.6 billion USD divided by the size of the park (9,823 km²), the price per square meter of pristine, prime, amazon jungle equates to approximately 0.37 USD (about 7 Euros per person in the European Union to buy the entire park). Although one could continue to find different specific examples to try to find a market price per square meter of the Amazon rainforest, it would be necessary to improve the research methodology to account for the cost of externalities and subsidies that are caused by deforestation, or by association, with the preservation of the rainforest, in order to understand the true impact on society caused by the protection, or decimation, of this natural habitat.

In an interview between local media and the previous president of Ecuador, Rafael Correa, the underlying argument presented was that the poor countries should not bear the cost that the rich and developed countries have placed on the planet. The president stated that: “After all, how many virgin jungles and unprotected tribes does a country like Germany have?” (El Telegrafo, 2013). Zero is the correct answer. Why Germany? They were the largest international donor and expressed great disappointment once the initiative was abandoned and the natural exploration and exploitation of oil started to take place in 2013. Don’t feel bad for Germany though, at the end of the day, approximately 0.37% of the total global commitment necessary to preserve the ecosystem was achieved. Yes, you read that right, less than 1%. There are no winners in this zero-sum game. The international community lost an incredible opportunity to protect a unique ecosystem that is vital for the health of the planet and an opportunity to put in place a futuristic economic system to value sustainability over non-renewable natural resources that are the leading cause of climate change. The attitude of the crooked Ecuadorian government is just as reproachable; just because you can does not mean you should. The failure of the international community to come to aid does not equate in the obligatory obliteration of one’s own national equity. The claim that the government was crooked is substantiated by public information and the fact that both the former president and vice-president have been condemned to prison sentences for corruption charges. Rafael Correa is exiled in Belgium pending a deportation and capture order requested to Interpol, while Jorge Glass, the former vice-president, is serving his sentence in a maximum-security prison. Also, a large portion of the high-level public officials from the administration have been convicted to prison terms related to corruption and are either in jail or have fled the country with a pending prison sentence upon arrival. Actually, the general national comptroller of the former administration was arrested on corruption charges, along with most of the members of his team, on April 13, 2021.

The most surprising result from the interviews related to this case was that members of all stakeholder groups unanimously agreed that the main cause for the failure of this project was the arrogant and treacherous attitude of the former president and his cabinet towards the international community. Furthermore, all interviewees stated that, without having any factual information to this second claim, they believed that the president never wanted the project to succeed because he believed that he could obtain more personal and financial gains from state-sponsored oil exploitation processes directly related to a bundle of concessions and debt issuances with the Chinese government. Again, there is no evidence to prove this, but it is a very interesting coincidence that all stakeholders (including the representative of the public sector) unanimously mentioned this without being asked about the subject or being led towards that answer. The specific question interviewees answered was ‘In your opinion, what was the main reason for the failure of the project?’. The Yasuni ITT case is fascinating to study because of all the research that is available regarding the structuring of the project. At first sight, all stakeholder groups had their interests aligned, and still, the project failed because of the hidden interests of the high spheres of the political world in Ecuador. Carlos Larrea (public and academic sectors representative), the technical director of the Yasuni ITT project at the time of the development of the project, and Juan Carlos Galarza (private and public sectors representative), a mechanical engineer specialized in renewable energies, with vast experience in reparation costs of oil-spills in the Amazon, explained in detail the extraction process necessary to obtain oil from the Yasuni park. They both described it as ‘madness’ and ‘completely non-sensical’ (Larrea, Yasuni ITT: Public and Academic Sectors, 2021). Galarza stated that:

“First, the quality of the oil in the park is the worst out of all the available oil fields in Ecuador. It is necessary to pump 9 barrels of toxic underground water to obtain 1 barrel of low-quality oil. The second reason is the fact that all the toxic water needs to be repumped underground and massive liquid storage and repumping facilities are necessary. The third reason is that approximately 50% of the national park is a flooded-marshland Amazonian ecosystem and any spillage of oil or toxic water would diffuse across all the water systems of the park (which happens to be one of the largest fresh water sources in the region). The fourth reason is that the extraction process would require ‘absurd’ amounts of deforestation to create access to the oil rigs. The variable depth of the marshlands, and the inaccessibility of the terrain make it extremely complicated to build roads, pipelines, and power grids. Fifth, the environmental impact would be tragic not only to the park and the wildlife, but also to all the indigenous communities, isolated and non-isolated, that live in the park and its vicinities. (Galarza, 2021)

According to Larrea and Galarza, satellite imagery shows that there is no infrastructure in place to process the toxic water extracted from the oil and that this must consequently mean that there are intense amounts of toxic substances being dumped into the rainforest. Galarza also stated that the oil is being extracted using precarious pipeline systems that take the oil to tankers that are then driven to the Napo river and then ferried in barges closer to the populated centers in the Amazonian region. Then, the oil is mixed with oil from other Amazonian wells, to account for the poor quality of the oil extracted from the Yasuni park, and then finally transported to the coastal regions to be

shipped off to the international market and sold at a discount because of the poor quality of the oil. Larrea claimed that, in his professional opinion “there is no possibility for this operation to be profitable in the medium and long term, and quite possibly in the short term as well” (Larrea, Yasuni ITT: Public and Academic Sectors, 2021). However, they mentioned that there is a need for additional research to prove this. Research that would be impossible to conduct because of the opposition from the central government to stop exploiting the Amazon jungle for non-renewable resources because of the marked economic dependency on oil.

This case becomes more interesting to analyze as you incorporate the opinions of different stakeholders. Maria Moreno de los Rios (international investor and NGO sectors) has a unique perspective on the case because she specializes in social impact and development and the protection of vulnerable communities in developing countries through NGOs and at the time of the development of the Yasuni ITT proposal she was part of the Spanish Agency for International Cooperation and Development. This agency was extremely interested in participating in the initiative but, just like Germany, desisted because of the impossibility to come to terms with the demands in the management of funds imposed by the central government of Ecuador. She has vast experience regarding the interactions between the indigenous tribes in the Yasuni park and surrounding forests and the government. In her interview, she explained that the strategy of the government was never to preserve the land but rather to generate a rift between the Huaorani indigenous leaders in order to fragment the opposition to exploit the jungle. The central government did this through bribes and informal retributions in exchange for support of the oil extraction project developed for the national park. She explained that “An indigenous community that started as one was split by political interests. As of today, a group of female indigenous Huaorani leaders has organized and filed multiple lawsuits in international human rights courts against the government of Ecuador for the previous and ongoing destruction of the forest” (Moreno de los Rios, 2021). Eduardo Pichilingue, an expert in uncontacted indigenous tribes in the Amazon, the former spokesperson for the ministry of the environment, and one of the founders of Yasunidos, had an extremely personal discussion about this case study. He started by explaining how Yasunidos started as an initiative to involve the general population in the initiative. It exploded in popularity and gained international praise as it became the most important citizen initiative that not only collected funds in the form of microdonations but also challenged the central government by gathering signatures for a petition to hold a national referendum that would force the entire Ecuadorian population to vote on the preservation of the national park (Ecuador has a mandatory voting system in place). This initiative was terminated by the government by assigning a corrupt public servant as the president of the national electoral council and using direct intimidation towards members of the Yasunidos representatives. The tactics included wire taps, police harassment and tailing, personalized attacks by the president in the national broadcasts that were held every Saturday, and systematic bullying (Colectivo de Investigación y Acción Psicosocial Ecuador, 2015). Yasunidos has also presented this case in the InterAmerican Court of Human Rights which is currently reviewing it. The second part of the interview with Pichilingue was related to the effect of the extractivist process on the uncontacted tribes in the Amazon and in line with the declarations made by Moreno de los Rios. He mentioned that there was a multicriterial

analysis regarding ranges and fuzzy logic conducted in the development of the Yasuni ITT proposal but that this was never enough to substantiate the horror and the losses occurring in the Amazon. Pichilingue had been working with the Taromenane (uncontacted) and the Huaorani (voluntarily isolated) indigenous tribes since the early 2000s. In 2003 and 2006 there were two massacres of the Taromenane by the Huaorani who were supported by oil companies that provided bribes, weapons, and helicopters that made it possible for the Huaoranis to track and kill the Taromenane. He concluded that “the logic behind this was that without uncontacted tribes the official designation of their land as intangible zones would be removed by the central government and it would be a free-for-all for the oil companies” (Pichilingue, 2021). Based on this precedent, Pichilingue anticipated that opening up the Yasuni park to extractivist processes would bring new waves of violence between indigenous tribes because of the interests of national and international special groups. Indeed, in 2013, as soon as the oil exploitation was allowed in the park, there was another Taromenane massacre by a group of Huaoranis carrying firearms and bribes provided by Repsol. The uncontacted tribes only carry wooden spears as weapons and have no other method of self-defense. These massacres are even more tragic when you consider the fact that most of the victims are women and kids who spend the day in the communal house and are not foraging in the forest. Ecuador has a vast history of foreign and national oil companies wreaking havoc in the Amazon (ibid).

Sigrid Vasconez, a sustainable development and environment specialist and public policy and governance consultant, provided commentary regarding the structure of the project. She was working at a public policy implementation think tank at the time of the Yasuni ITT development. According to her, the main problem with multicriterial analysis, now and then, is that there is a big gap between the results obtained and the policy that should be ideally implemented based on the data retrieved. The decision makers relegated the analysis of soft parameters and externalities to the back of their priorities when considering the viability of the project. Her opinion was that “the final decision was based on personal interests and the opportunity to benefit from hidden commissions based on the assignment of public tenders to special interest groups related to the oil companies and the Chinese government” (Vasconez, 2021). The president started to impose new conditions on the timetable of disbursements of funds and started to change the controlling entities and mechanisms on spending once Germany and Spain were ready to participate in the Yasuni ITT initiative. His ‘demands’, like mentioned at the beginning of the case study, were simply impossible for the international community to accept. It was almost like he was doing this on purpose for the initiative to fail. If you combine these out-of-place demands with the fact that he declared war on the national initiative to create a referendum and that the consignment of oil fields was already made before the due dates for the fund contributions, it starts to become evident that the Yasuni ITT initiative was internally boycotted. According to Vasconez, what the multicriterial analysis failed to consider was a political-economic analysis that accounted for the lack of institutionalization and the impact of foreign powers in the decision-making process. At the end of the day, the purpose of the multicriterial analysis is to provide an accurate valuation based on the weight and probability of different criteria affecting the success or failure of a project. The challenge is to transform the results of multicriterial and multistakeholder analysis into actionable policy (ibid).

Natalia Greene, representative of the public and NGO stakeholder groups, was involved in the Yasuni ITT project from its inception in 2007 until its failure 2013, when she joined Yasunidos to support the civil society movement. In 2007, she was the coordinator for the Political Plurinationality and the Rights of Nature at an NGO called Pachamama and the president of the Ecuadorian national coordinating entity for environmental NGOs. Her prime role was to socialize the initiative with the general public and to raise civil awareness of the project. She worked alongside Roque Sevilla and Yolanda Kakabatze, the two sponsors and faces of the project (unavailable for commentary on this subject). According to Greene, once the project proposal was finalized it was shared with all the sponsors of the project and the office of the president and the unanimous consensus was that this was a perfect example of a win-win trade-off situation. She explained how this proposal was so novel for its time (this was in 2007, it was not until 2013 that the International Energy Agency announced the need to keep fossil fuels underground to prevent global warming) that gaining the absolute trust and confidence of the international community was a key risk factor. She stated that “the success of the project was the failure of the project”. Greene said that the president never believed the initiative would succeed, and when it did, he did everything in his power to sabotage it. This was the ‘white elephant’ in the room as she called it. She cited two clear examples of premeditated obstruction in international negotiations. The first when she, Roque Sevilla, and Kakabatze were at the Copenhagen Climate Change Conference in 2009 and they were ready to sign an agreement stating the terms of funds management through a third-party internationally monitored trust that would regulate the disbursements made by the international community. At that moment, prior to the signing of the treaty, they received a call from Alexis Mera, the then judicial secretary to the presidency (person in charge of approving legal regulations and the viability of projects, basically the highest-ranking legal aide and right hand of the president, now serving a 9-year jail term in maximum security prison for corruption charges related to Odebrecht) who simply said that the entire Yasuni ITT project was a ‘no-go’ without further explanation. The second example of sabotage was the belligerent attitude of the president towards the international community once they were willing to collaborate and had stated their interest to provide funding but were hesitant about the controlling mechanism for the spending of the funds. This is when Rafael Correa, the former president, as absurd as it sounds, exclaimed in the weekly radio broadcast to the international community:

“You know what, sirs?: go give orders at your house, change your donations into little tiny pennies and stick them up your ears because we are not taking orders from no one, because this money belongs to the people of Ecuador. I gave the order to cancel the signing of the approval to operate a trust for the funds under those shameful conditions. There are people that do not understand that the times have changed and that here we have sovereignty and dignity. But look at the abuse, at the arrogance. They are the donors and we are the poor little people, the useless, the corrupts, the inefficient. So the money goes to a trust and they have the controlling majority and decide in what to invest. If it is like that, keep your money and in June we exploit the ITT. We are not stopping here.” (El Universo, 2010)

After this event, the international negotiations collapsed and the entire national commission board for the project resigned. Greene mentioned that it was revealed afterwards through a study that the government had spent more funds financing the studies and viability of oil extraction, known as the Plan B, than what it had spent in the Yasuni ITT initiative, known as Plan A. Therefore, putting into question what the real Plan A and plan B were for the government (Greene, 2021).

A detailed externality and soft parameter analysis was conducted in 2011 to disprove the governments fervor to initiate an extractivist process. The direct cost of remediating spillages, the direct cost of infrastructure necessary for the project, and a basic bottom-markers approach for the cost of indirect damages related to the physical and social destruction of the ecosystem through deforestation and contamination were considered. This publication was a groundbreaking initiative because of the scope of the parties involved. The technical elaboration was done by the UNDP and the FAO (United Nations Development Program and the Food and Agriculture Organization of the United Nations). There was an international collaboration of academic experts in various fields of research from top universities and an involvement of the public, private, NGO, and citizenship groups that are presented in the interviewee sample. Traditional financial analysis was combined with multi-criterion fuzzy logic and scenario analysis to compare the outcomes of exploitation vs. conservation in ‘real’ dollar terms. Seven dimensions and the relevant KPIs were analyzed, shown in Table 2, and in line with Giuseppe Munda’s ideal problem structuring model presented in Figure 1. For the exploitation scenario, traditional discounted cash-flows and net present value were the main estimators of value. Results were projected considering different scenarios according to the sophistication of the equipment used for oil drilling and a breadth of NPV results were calculated. For the conservation scenario, an NPV analysis was conducted for the direct income received from the international community in exchange for preserving the forest (CO2 emissions compensations). This income projection was complemented by a statistical options pairing selection methodology for alternative choices and a range of fuzzy logic indicators in order to account for the qualitative parameters identified. The report concluded that when a project has consequences that affect more than the financial and economic dimensions, a cost benefit analysis is not consistent enough. Additionally, the study concluded that the ‘USD’ returns of preserving the Yasuni forest far outweighed the possible returns achieved from exploitation, especially as time went by and the time horizon was increased. Three of the interviewees used in my thesis participated in this report. It was co-authored by Carlos Larrea, and Natalia Green and Eduardo Pichilingue were consultants for this project (Vallejo, Larrea, Burbano, & Falconi, 2011).

Table 2: Impact Matrix for Multicriterial Analysis – Yasuni ITT (Vallejo, Larrea, Burbano, & Falconi, 2011, p. 46)

Dimension	Criterion	Specific KPI
Economic	Net present value (NPV) (extraction)	Oil price
		Extraction cost (with and without externalities)
		Extraction profile
		Financing
Economic	NPV (non extraction) (CO2)	Proven / probable oil reserves
		Discount rate
		Market price per ton of CO2
		Volume of CO2
Economic	Productive diversification	Revenue profile
		Discount Rate
		Ecotourism, change in energy matrix
		Economic vulnerability
Environmental	Biodiversity	Affectations to biodiversity
	Climate change	CO2 emissions Deforestation
Equality	Employment	New jobs generated
	Human capabilities	Education Health
Cultural	Respect for culture of non-contacted indigenous tribes	Subsistence, cultural change
Social	Potential ecological conflicts Social participation	
International political positioning	Negotiations about climate change, biodiversity, regional integration	

The project failed and continues to fail despite all stakeholder interests being aligned. Carlos Larrea (the most senior interviewee when it comes to this case) explained how this project is still valid and current and could easily be relaunched if the central government were to act in the best interests of the country. There would not be a need for considerable amounts of additional work since the price of oil and carbon permits can still be indexed. He candidly recounted how his team achieved the German parliament to unanimously approve support towards the project (and that this was an extremely rare feat because of the 500+ members of the Bundestag), and for the Spanish government to commit to ongoing support for a decade, and how the international community was loving the initiative, that the academic community resoundingly approved the project (multicriterial analysis), and that even a citizen campaign was launched and ongoing for everyday people to make donations (a real life application of contingent valuation and willingness to pay studies). And at the end, all of this was lost because of self-sabotage from the central government. Moreno de los Rios, at the time working for the Spanish Cooperation Agency of International Development,

commented that the government went from being a participant in the process to becoming the sole enemy and detractor of the initiative in a 3-year period, even before the funding deadlines had expired. None of the interviewees was able to attribute any other reason than personal interests and greed from the president and his minions as the leading cause of project failure.

Galapagos Islands marine reserve expansion:

The Galapagos Islands are an archipelago of volcanic islands located approximately 1,000 miles off the coast of Ecuador. The islands are a melting pot for marine life and biodiversity as they are located in the middle of three tectonic plates and are surrounded by three different oceanic currents. They are part of the UNESCO World Heritage and are best known for having been the inspiration for Charles Darwin's theory of evolution. The natural geographic isolation has allowed for a unique development of flora and fauna including many endemic species such as the only marine iguana, the wingless cormorant, and giant land tortoises among others. UNESCO describes the Galapagos Islands as a 'living museum and showcase for evolution' and 'one of the richest marine ecosystems in the world'. In 1998, the government of Ecuador declared a marine reserve around the islands of 133,000 km². There is a novel initiative that was started in 2020 to triple the size of the protected marine reserve, up to 445,953 km², and to designate responsible fishing areas available for local fishermen. The purpose of this project is to protect the marine biodiversity, to preserve the stocks of wild tuna fish, and to increase the population of endangered and endemic species that have migratory routes in the protected areas. Similar to the Yasuni ITT initiative, a full stakeholder analysis has been conducted and thoroughly socialized by the MASGalapagos foundation. The difference between the two types of analysis is that the Yasuni ITT proposal combined fuzzy logic and multicriterial analysis of quantitative and qualitative data to normalize parameters into a mathematically coherent result and the analysis for the Galapagos initiative was more focused on the impact of the proposal on the different marine species and the different types of fishermen in absolute terms of population and production. The impact of the MASGalapagos proposal on the different stakeholders has been studied in order to consider the effects of the expansion of the marine reserve on the marine wildlife population by specific type of species, on the local fishermen, on the local authorities, on the central government, and on the continental fishermen. A variety of scenario analyses realized with the help of advanced software specifically designed for marine ecosystems has been combined with traditional financial analysis to determine the best possible outcome. All the details of the multi-stakeholder analysis are publicly available through the MASGalapagos website. The direct impact to the ecosystem and social structures was not quantified as thoroughly as in the Yasuni ITT initiative. The future indirect costs or benefits of the changes pertaining to the health of the marine ecosystem were not quantified, the benefits of conservation were loosely presented as 'other' impacts that would result in positive externalities with no further discussion on the subject.

There are two particularly interesting aspects about this case. The first one is the financing mechanism. The second one is that although the projected results are favorable to all the parties involved, many stakeholders are at odds with each other because of fake news, a lack of public

information campaigns, and conflicting political interests. According to Mauricio Castrejon, one of the interviewees and lead analyst for the MASGalapagos foundation, the financing of the project “answers one of the most common questions posed by detractors of the project: ‘if the current marine reserve is underfunded and unsupervised, how are they going to control an area that is three times its size?’ ” (Castrejon, 2021). The financing mechanism is a debt swap between multiple parties. The Ocean Finance Organization and The Nature Conservancy are trying to obtain 635 million USD to buy 1 billion USD of outstanding 2030 Ecuadorian government bonds that are currently traded with a discount of 40 cents to the dollar. The objective is to refinance the debt outstanding with the government at terms that are more favorable for Ecuador and to commit a portion of the savings to the conservation of the marine reserve. The total amount of debt due by the Ecuadorian government is currently 1 billion USD in principal and 500 million USD in interest payments. The new proposal would mean that Ecuador would see 120 million wiped off their principal outstanding debt, 103 million off of their outstanding interest payments, and 412 millions of what should have been paid to bond holders reinvested directly in the conservation of the marine reserve. This would represent direct saving of 635 million USD when considering the amount that would be destined to conservation through this proposal. The alternative would be to pay 1.5 billion USD to private bond holders and invest nothing in conservation and keep the marine reserve at its current size. This information is summarized in Table 3.

Table 3: Debt Repurchase Proposal to Finance the New Marine Reserve (MASGalapagos, 2021, p. 37)

Benefits in millions of USD:

Concept	Amount
Free reduction of principal payments	120
Savings on interest payments	103
Subtotal	223
Reinvestment in conservation of marine reserve	412
Total	635

Debt Structure Comparison in millions of USD:

	With Proposal	Without Restructuring
Amount to pay	1,225	1,500
Reinvestment in marine reserve	412	0
Total debt serviced	816	1,500

There is one ‘but’ to this proposal, the government needs to accept the terms of the deal or else a third party is not authorized to repurchase outstanding sovereign debt. Undoubtedly, this looks like a logical proposal that would benefit all stakeholders mentioned in the process. We can observe that this process gets more complicated after conducting a series of interviews with representatives of different stakeholder groups.

In order to make the interviewee composition as similar in structure to the Yasuni ITT participants, I decided to add interviewees that are not directly linked to the Galapagos marine reserve expansion project but that represent different stakeholder groups related to the project conceptualization as such. In the Yasuni ITT case analysis, separated by almost 15 years to this case analysis, there are experts that were both directly and indirectly related to the project. For the Galapagos set of interviewees, the interviewees that are indirectly representative of stakeholder

groups are Francisca Henriquez, the lead economist for the third circuit environmental court of law in Chile, and an anonymous top-level financial advisor, international wealth manager, and senior member of the alternative investments division of one of the most prestigious wall street investment banks that has asked to remain anonymous because of contractual obligations. Henriquez is the leading expert in Chile when it comes to ecosystem valuations through novel economic techniques in legal disputes. The anonymous source is a representative of the international institutional investors who are interested in sustainable investments (just like a sovereign debt swap involving an ONG and a world heritage site). The other interviewees are directly related to the project. Mauricio Castrejon is the leading analyst for the MasGalapagos multi-stakeholder analysis. Carlos Zapata is a multi-stakeholder negotiations expert that lives in the Galapagos islands, comes from a fishing background, and works with the FUNDAR NGO, Marco Escarabay who represents various local fishermen associations from the Galapagos, and Norman Wray who is the most senior political figure in the insular semi-autonomous government. The central government does not have representatives available for comment as they have not publicly addressed their willingness to accept this proposal for reasons to be discussed in the subsequent interviewee analysis and the fact that there are national presidential elections happening on the month of April 2021.

Interestingly enough, just like in the Yasuni ITT case, all interviewees had a concurring answer when asked about the main challenge for the Galapagos initiative to be successful. The main challenge, according to our interviewees, is the difficulty of achieving all stakeholders to work together with the central government and the underlying power structures that are associated with either supporting or opposing the stance of the central government. The anonymous representative of sustainable institutional investors repeatedly emphasized throughout his interview the generalized inability of central governments, in general, to manage capital efficiently. He argued that central governments should privatize these types of initiatives to the greatest extent possible because free markets, successful investors, transnational corporations, and advanced private institutions have a better chance of being more effective than any public sector or governmental initiative. He mentioned that focused approaches and specialization ultimately yields better results and that governments usually have an opposing approach to his personal views. Thus, highlighting the reluctance and skepticism of institutional investors to get involved with central governments.

“After all, if the proposal is so good, why isn’t the Ecuadorian government taking on the initiative by themselves, or broadly and publicly supporting it, or putting up the funds to sponsor it? It is the Ecuadorian government that will get a 635 million USD break from a bad deal they got themselves into. There is certainly a reluctance from institutional investors to work with central governments of high perceived risk countries that require a high tolerance for political instability”

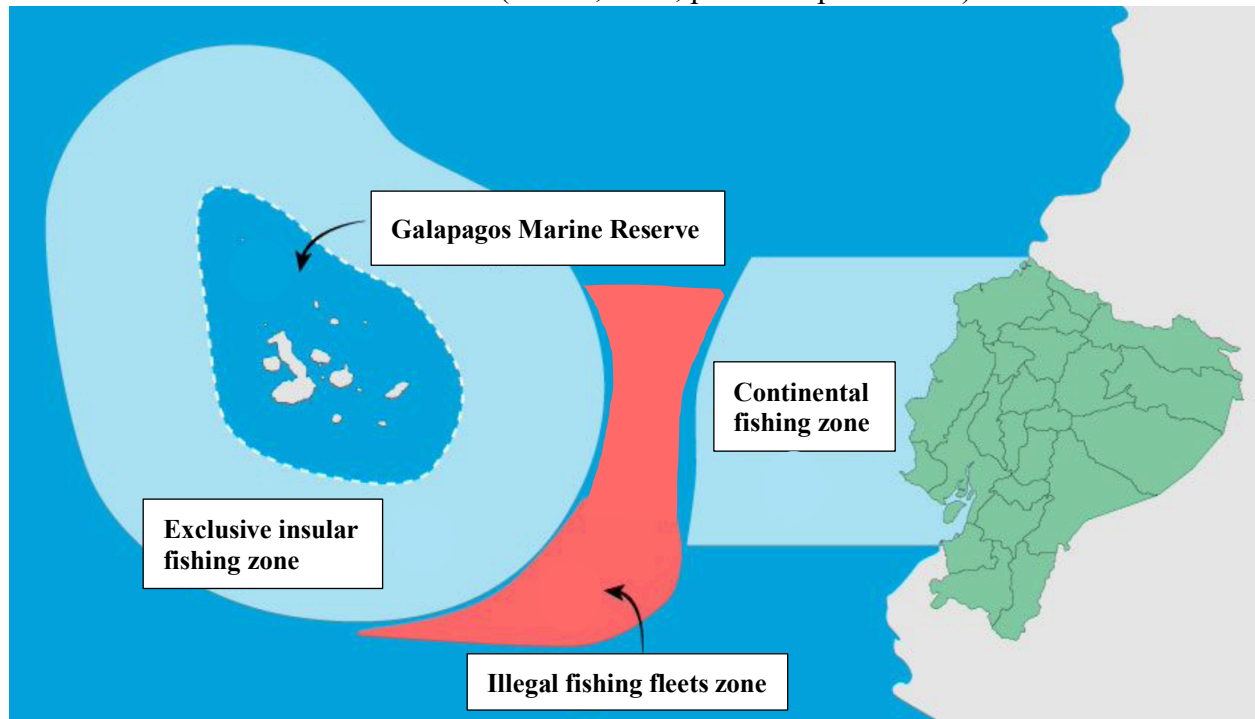
(Protected Source, 2021)

Francisca Henriquez had more of a conciliatory approach when discussing the key challenges for the success of an initiative such as the one under scrutiny. Her opinion was that the biggest challenge is the gap that exist between the academic sector and policy implementing bodies of governments. She noted how the methods and methodologies of ecosystem valuation and qualitative metric valuations has been evolving favorably over the years. Particularly through the

use of proxies estimated from constantly updated and aggregated international databases and the use of the Total Economic Value described earlier in this report. She noted that “There is an ever-growing need to quantify the economic, social, and environmental value of the destruction, or preservation, in formal judicial processes where the plaintiff demands reparations for damages that have never before been measured” (Henriquez, 2021). The most important limiting factor towards the application and dissemination of externality and soft parameter analysis is the process of transmission of knowledge from the academic researchers to the actual politicians who are in charge of materializing research into action. Many times, politicians fail to do so out of a genuine lack of awareness, contradicting political interests, or sheer ignorance. Correcting this problem is not only the responsibility of the central government but also of the academic sector, the private sector, and the citizen initiative groups. Each stakeholder group must demand accountability from the other groups while being involved in a circular process of social involvement (ibid). Mauricio Castrejon, having been the main analyst for the impact analysis on the marine wildlife and ecosystems, explained that the most important challenge was not around pricing or valuing the marine reserve. He clarified that although this could be done, the proposal had such an important financial component and weight on the debt repurchasing process that the rest became secondary. Not only secondary, but actually the externality analysis was in the backstage when compared to the debt process and the required multi-stakeholder negotiations. Castrejon stated that the dynamics of the islanders are extremely unique because their political system operates with more sovereignty than the rest of provinces in Ecuador. This has caused a generalized opposition of the locals against the central government (led by the socialist party for the past 15 years). Not only this but the local fishermen have a generalized negative opinion of the continental fishermen who often operate in illegal fishing zones and using illegal fishing methods (according to Castrejon, Zapata, and Escarabay). Castrejon’s final opinion was that having the central government accept the proposal was going to be the crucial part of the negotiation because of the fact that it is highly influenced by the continental fishermen unions and the growing popular claim, and absolutely unfounded fake news, that agreeing to the debt repurchasing methodology would represent a loss of sovereign control (one of the central points of the socialist political campaign). In brief, there is abundant skepticism between and across stakeholders about the management of the 412 million USD that would be destined to manage the expanded marine reserve. The continental fishermen do not trust the insular fishermen, the insular fishermen do not trust the central government or the continental fishermen, the NGOs do not trust the central government, the central government wants to appear tough without giving in to international pressure to manage funds through trusts, and the average citizen does not understand the totality of the proposal or the dynamics between stakeholders. Although there are talks about structuring a multi-stakeholder committee that would supervise the allocation and use of funds through a network of controlled trusts, this process is at a standstill because the central government did not commit to the proposal and elections are happening in April. Regardless of if the new government would approve or decline the proposal, one of the main goals of The Ocean Finance Company and creators of the proposal was to secure the approval from the incumbent government and not the newly elected government. The reasoning behind this is the fear that the new government will have special interests in the handling of the proposal and bring forward new demands and control structures to the ones already

proposed. “The end-question in this situation is not ‘if’ the government should accept the proposal but rather ‘who’ and ‘how’ would manage the reinvested funds in order for all stakeholders to agree to move forward” (Castrejon, 2021). It is important to note that Castrejon, Zapata, and Escarabay live in San Cristobal, the capital of the Galapagos Islands. Carlos Zapata started the conversation by remarking that the project proposal has not been shared in the appropriate manner because he sees excessive misinformation in different interest groups, particularly, the local and continental fishermen and society in general. He first explained that this proposal has generalized support from Ecuadorian citizens because they associate it with stopping illegal Chinese and Japanese fishing fleets that have been decimating the marine ecosystem of the Galapagos for the past 15 years. The most notorious case was in 2017 when the Fu Yuan Yu Leng industrial fishing boat was captured by the Ecuadorian army, which found close of 150 tons of illegally fished and dismembered endangered species (MASGalapagos, 2021). This sparked national uproar and raised awareness about the extent of industrial fishing off of the coasts of Ecuador. Since this event, the illegal fishing fleets have found a loophole to exploit the ocean and, despite continued public outrage, there is no legal measures that the Ecuadorian government can take. The general public directly associates the new proposal to expand the marine reserve with closing the loophole exploited by the illegal fishing fleets. The truth is that it has nothing to do with that. As we can see in Exhibit 4, a map of the current designated fishing zones for continental and insular fleets, the illegal fleet operates in the red / orange zone that lies in international waters and narrowly avoids the Ecuadorian sovereign territory. This unprotected zone lies in between the continental and insular underwater currents that are vital for the subsistence of marine ecosystem and is a hot zone for illegal fleets to capture endangered, exotic, and local marine wildlife. While most civilians believe that the proposed project is to enclose this gap between the marine zones, myself included before starting the project, the actual proposal aims to regulate and expand the current insular exclusive economic zone and does not address the current marine territory exploited by illegal fleets. Zapata then continued to explain that another problem in communication is that many local Galapaguian fisherman have no idea about the proposal and by default tend to oppose any proposals set forward by the central government or supported by the continental industrial fleets.

Exhibit 4: Ecuadorian Marine Zones (Noboa, 2020, p. Online publication)



The most interesting part of Zapata’s analysis, in my opinion, was the juxtaposition of the effect of the different stakeholder groups’ interests with the mechanism necessary to manage the hypothetical conservation fund set forward by the proposal. Who would be in charge of managing the funds? Both the continental and insular fishing unions would want a seat in the table. The central government will in all likelihood not accept to cede control to a foreign NGO. The army and the navy who patrol the oceans and coast will want a piece of the cake. And the NGO and investor group financing the proposal would be highly skeptical to rely on a central government that is riddled with debt, instability, and allegations of corruption to manage the fund. An international multistakeholder trust with a board of directors would have to be created for the proposal to move forward (Zapata, 2021). Marco Escarabay, the leader of the Galapagos fishermen association and a lifelong fisherman started by saying that he was the person in charge of creating and pushing forward the original proposal in 1998 to create the existing marine reserve in the islands. Curiously, he had no idea what the new project proposal entailed. I sent him the official deck of slides from MASGalapagos developed by Castrejon. Escarabay mentioned that he had heard of the proposal but that nobody had approached the local fishermen union for opinions, suggestions, or participation. He mentioned that he and his colleagues are scared that the new proposal would be a step back when redesignating the current protected marine zones. His main desire was that the current marine reserve stays untouched and that the new project should aim to create new zones, protected or not, that would not alter the current marine reserve. He disliked the idea of creating new areas for responsible fishing in the existing marine reserve in order to achieve consensus on the area to be newly expanded. He also brought forward the intention of the local fishermen union to preserve the ecosystem and to update the current fishing mechanisms and processes for the betterment of the islands. He clamored for help from the central government and

private investors when modernizing the mechanisms necessary to improve conservationism in the region. He humbly accepted that his life is the ocean and that they are willing to help and participate in any possible way (Escarabay, 2021).

The most senior interviewee for this case was Norman Wray. He represents the public sector stakeholder group as he is currently the Minister President of the governmental Council of Galapagos. It is a very particular political denomination because of the autonomic nature of the island's regime, but all else aside, he is in the highest political position regarding the islands other than the president of the central government. I have decided to include his interview at the end of the case analysis because it brings together many of the different criteria mentioned by other interviewees. Wray explained that the financial implications of this case are so evident that they often trump the value explained by soft parameters and externalities even when these are just as important, if not more. He further developed that expanding and preserving the marine reserve would, first, contribute to reducing the amount of foreign debt issued by the country, second, preserve the marine wildlife and ecosystem, and third, ensure the prosperity of the island and continental population as well. According to Wray, the Galapagos Islands are the only equatorial marine ecosystem that is not experiencing an accelerated reduction of marine wildlife populations. Although this phenomenon cannot be scientifically explained as of today, he noted that preserving an 'oasis' of wildlife that is vital to sustainable oceanic ecosystems is invaluable. Furthermore, he explained how the success of this project would lead to the fishing fleets being able to certify their product according to sustainable practices validated by international organization and elevate their market value and positioning in the European Union, which happens to be the largest customer for the products exported from the Galapagos Islands, and where sustainability is valued the most (Wray, 2021). The 'spill-over effects' as he mentioned, would be numerous and not priority to detail to greater lengths. The most important part is getting the proposal approved. Wray listed three main challenges to overcome the catastrophic failure that would entail blocking this project. The first challenge is the will of the president, he has the final word when it comes to approving the initiative and his opinion must not be affected by third-party interest that are already poisoning the political debate through 'schizophrenic' discourse. The second and third challenge are in line with what other interviewees have mentioned. To establish a mechanism to manage the funds in a manner that is transparent and approvable by all stakeholder groups and to align the interest of all of the stakeholder groups in order for the proposal to succeed. An example provided by Wray of how hard this challenge is becoming was detailed when elaborating on how the continental fishing fleets hold extreme lobbying capacity and have sided with certain power groups inside the military branch of the navy to pressure law makers. Wray contextualized this by stating that the national assembly (a mix between a parliament and a congress), after analyzing the MASGalapagos proposal, issued a report where they agreed with all the benefits and positive externalities related to the initiative, but, in the conclusion of the report they manifested that any attempt to manipulate the current marine reserve is an attack on sovereignty and therefore illegal. Hence, the use of the adjective schizophrenic to describe the opposition movements. His interview reinforced the overarching problem of different stakeholders reaching an agreement to push the proposal to expand the marine reserve forward (ibid). The risk of such a logical and sound initiative to fail is

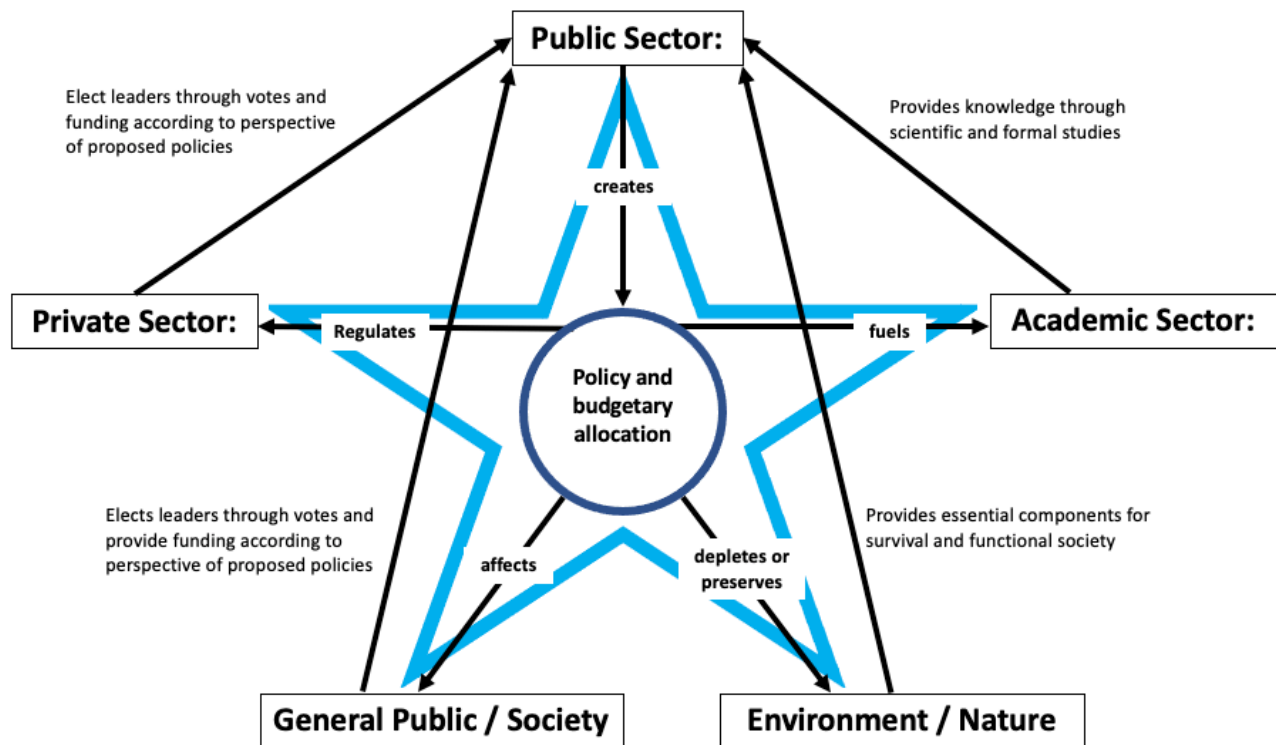
real, especially when looking back into the past. It seems that the skeletons in the closet from the Yasuni ITT initiative are starting to come back.

Discussion:

After analyzing the selected case studies and the interviews presented in this thesis, the practical application and effectiveness of externalities and soft parameter valuations in multistakeholder processes has parallelly complemented the literature review and shown unexpected results that need to be addressed. First and foremost, a real-life application of valuations of externalities and soft parameters was observed in both cases to a different extent. In the Yasuni ITT project, one can observe traditional cost-benefit analysis, contingent valuations, multicriterial analysis to value intangible goods (like biodiversity and socio-cultural protection of uncontacted indigenous tribes), and externalities measurement (through carbon capture and oil spillage considerations) being put into practice to reach a meta-valuation that expressed the ‘truest’ value of the project considering a variety of stakeholders. In the Galapagos debt repurchase case, a traditional cost benefit analysis was combined with a land-usage and marine wildlife analysis employing cutting edge technologies. In this case, the depth of consideration of soft parameters and externalities is limited because of the formidable direct benefits attributed to the financial benefits associated with the debt repurchase. In both cases, there is a clear distinction between the interests of different stakeholder groups. Also, the uniqueness and pristiness of both ecosystems and the associated biodiversity is evident in both examples.

The relationship between stakeholder groups in both cases is further explained in Exhibit 5. In this exhibit we can observe how all the stakeholder groups, the private sector (corporations, institutional investors, and foundations), society (indigenous people, NGOs, and civil society), the environment / nature, and the academic sector (researchers, knowledge generators, and universities and institutes), provide inputs and data to the public sector. The public sector stakeholder group (governmental institutions, politicians, decision makers, and international organizations) is in charge of taking crucial decisions that become policy and regulate the flow of capital which in turn affects the rest of the stakeholder groups. This star model is representative of the negotiations and relationships presented in the case studies of this thesis because it represents how all the stakeholder groups stated their interests and the value associated with them but the final decision was in the hands of the central government. The central government in turn, had / has the role to approve the initiatives that would represent the future path taken. The contributions of the academic sector and the interest of the international community in the two cases were fully aligned with the objective to preserve the ecosystems.

Exhibit 5: Star model of multistakeholder relationships in environmental projects



In the Yasuni ITT case, all stakeholder groups seemed to have their interests aligned at first until the public sector stakeholder group used its decision-making power and influence on processes to oppose the interests of the rest of stakeholder groups. The relationship between stakeholder groups in the Galapagos debt repurchase case is more complex, but still, the government holds the final power to veto or approve the project because of the original contractual obligations to repurchase sovereign debt. The civil society group and the fishermen representing the private sector are geographically fragmented between continental and insular regions, the central government is undergoing considerable cycles of change and has not made any public announcements positioning themselves in favor of any interest group, and the institutional investors / international community have voiced their concerns according to the implementation processes at different levels of the project's structure. The power dynamic between the government and the rest of the stakeholder groups is certainly a striking similarity that is expressed in the star model by showing how the government has the power to control the budgetary allocations and the policy implementations that are crucial for environmental projects because of the inseparability between natural resources and public ownership.

The combination of the literature review with the case studies allows for an understanding of the positive effect that the consideration of soft parameters and externalities have on traditional economic valuations. The value of the project significantly increases in both cases through the inclusion of a larger and more complete representation of the overall population. The extent of the scope of the valuations is consistent with the long and short term models presented in Exhibits 1 and 2 in the soft parameters sub-section of the literature review. There is a higher extracted value

and an increased need for the analysis of soft parameters and externalities as the time horizon and consideration of stakeholder groups expands. In allusion to the framing conceptualizations by Callon, we can see how the Yasuni ITT initiative is a situation where externalities are considered to be the norm and are considered since the very beginning of the project through the use of soft parameters. The opposite framing approach is employed in the Galapagos debt repurchase case. Externalities are considered to be an unavoidable by-product of the initiative that will be dealt with as the seepage of overflows becomes more evident in the future. Another clear link to the literature review is the representation of the tragedy of the commons in both cases. Albeit considering a somewhat simplistic and reductive interpretation, the amazon jungle in the Yasuni ITT case, or the commons, is being slowly destroyed because of the prioritization of the personal benefit each oil well is producing over the value provided to society as a whole by the ecosystem. In the Galapagos debt repurchase case, the same argument can be made when considering that the natural stock of fish is being depleted because of the prioritization of the direct benefit received by each fishing boat from overfishing instead of the value of sustainably preserving the current fish populations in order to secure food stocks in the future.

The unexpected conclusions reached after the consideration of the literature review and the case studies is related to the degree of power that the public sector, and particularly the central government, had in both cases. It could be somewhat inferred that since both cases analyze ecosystem valuations, and the exploitation of natural resources, that the government would have a final say in the approval of the projects. However, the end result was not in line with initial expectations because of the amount of evidence and data supporting both initiatives. The project was unanimously viewed as a win-win in the Yasuni ITT case. In the Galapagos debt repurchase case, the financial benefit is so large that the approval would seem obvious at first sight. Generally speaking, the ultimate interests of all stakeholder groups in both cases seemed to be aligned: preserve unique ecosystems, reduce the unsustainable exploitation of natural resources, and obtain net financial gains. The influence and persuasion of the rest of stakeholder groups on the government was not enough to tilt the balance in favor of any of the initiatives. Thus, concluding in the failure of the Yasuni ITT project and the jeopardization of the viability of the Galapagos debt repurchase project. The star model in Exhibit 5 captures the interactions between the stakeholder groups involved in the two projects to explain this surprising and paradoxically illogical power dynamic of the central government. The 5 stakeholder groups form an iterative cycle where policy and budgetary allocations approved by the government affect the rest of stakeholder groups positively or negatively. All of the stakeholder groups participate and contribute in their own capacity and in their own manner to try to perpetuate or reverse the cycle set in motion by the previous and current public policies in place. The degree of influence and persuasion of stakeholder groups on the government and the public sector was disregardable in the Yasuni ITT case and still unknown and to be resolved in the Galapagos det repurchase case. This interactive dynamic between stakeholder groups is one of the key findings of this thesis and a topic that requires significant further research and considerations before reaching any definitive conclusion or statement of fact.

Further Research & Considerations

Since this thesis is only limited to two case studies and a limited sample population of interviewees, it would be incorrect to derive generalized conclusions from the results presented. This consideration is further highlighted when we consider that both case studies take place in the same country, sharing a specifically characterized central government, a particular interrelationship between stakeholders, and developed in different time periods. The strength and unity of the two cases selected comes from the fact that both ecosystems analyzed are extremely rare and rich in biodiversity and, in theory, this should simplify the decision making process when evaluating the decision option to preserve or exploit them. This fact points in the direction of more specific questions: “Does the analysis presented in this thesis apply uniformly to unique ecosystems? What is considered a unique ecosystem? Does the analysis presented in this thesis apply uniformly to unique ecosystems in developing economies?”, and so forth. Further research and consideration are also necessary to constantly adapt the valuation methodologies that should be employed according to academic and scientific developments as well as practical applications in the field of studies. There is a need for further research in order to determine if the star model of multistakeholder relationships in environmental projects is applicable in a variety of scenarios. As of today, it is applicable to the two cases presented in this thesis but the validity of its structure needs to be determined through further practical and theoretical analysis. Furthermore, studies of cases where the implementation was successful should be contrasted to the studies in this thesis in order to determine if the power structures of the central government presented would still uphold in cases with different outcomes. It could be that the success of a comparable project could be hypothetically problematized by introducing a scenario where the central government opposed the proposal. This would provide more clarity to understand if other stakeholder groups indeed have more power of influence over the results of a project and would consequently subordinate the central government’s theoretical position of opposition. This could separate the two case studies presented in this thesis to a different category and would require a broader analysis of different types of comparable multistakeholder negotiations with different power dynamics.

Going back to the introductory section and Amory Lovin’s work, in these two cases the government had the chance to take ‘the road not taken’ and build a path towards a more sustainable future. If they did, have, or will take the less traveled path remains one of the key questions to be answered. Through the use of soft parameters and externalities to complement economic valuations and the analysis of multistakeholder negotiations, I hope that this thesis helps to light the path in future practical applications and academic studies.

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Appendices

Appendix 1: Profile of Interviewees

Name	Case Study	Gender	Age	Relationship to Project	Current Position	Stakeholder Group
Carlos Larrea	Yasuni ITT	Male	60+	Technical Director	Research Director at the Andean University Simon Bolivar	Public Academic
Juan Galarza	Yasuni ITT	Male	50+	Mechanical Engineer: Ex-Advisor to the ministry of energy on sustainable planning	Private sector consultant	Public Private
Eduardo Pichilingue	Yasuni ITT	Male	30+	Huaorani spatial land distribution Yasunidos founding member Ministry of Environment - coordinator for protection of isolated indigenous tribes	Cuencas Sagradas: human rights watch for indigenous tribes	Civil Society NGOs Environment
Gabriel Jaramillo	Yasuni ITT	Male	30+	Multi-agency coordinator for United Nations Development Program	United Nations Development Program representative in Thailand for sustainability and conservation	NGOs International Community
Natalia Greene	Yasuni ITT	Female	40+	Coordinator for Political Plurinationality and the Rights of Nature at the Fundación Pachamama in Ecuador President of CEDENMA: Ecuador's national coordinating entity for environmental NGOs	Coordinator for Political Plurinationality and the Rights of Nature at the Fundación Pachamama in Ecuador President of CEDENMA: Ecuador's national coordinating entity for environmental NGOs	NGOs Private Environment
Sigrid Vasconez	Yasuni ITT	Female	50+	Grupo Faro - thinktank	Grupo Faro - thinktank Fundación Pachamama	Environment Private Public
Maria Moreno de los Rios	Yasuni ITT	Female	40+	Spanish Agency for International Cooperation and Development	Governance, Equality, and conservation program official for International Union for Conservation of Nature - South America region	International Community Environment
Carlos Zapata	Galapagos Debt Repurchase	Male	30+	Multi-stakeholder negotiations expert - FUNDAR organization	N/A	NGOs
Mauricio Castrejon	Galapagos Debt Repurchase	Male	30+	MASGalapagos lead analyst on marine biodiversity	N/A	Academic
Francisca Henriquez	Galapagos Debt Repurchase	Female	30+	Lead economist for the third circuit environmental court of law in Chile	N/A	Public Academic
Protected Source	Galapagos Debt Repurchase	N/A	N/A	Top-level financial advisor, international wealth manager, and senior member of the alternative investments division of one of the most prestigious wall street investment banks	N/A	Private Institutional Investors
Norman Wray	Galapagos Debt Repurchase	Male	40+	Minister President of the Governmental Council of Galapagos	N/A	Public Sector / Government
Marco Escarabay	Galapagos Debt Repurchase	Male	60+	Original creator of marine reserve proposal in 1998 - current leader of the insular fishermen union	N/A	Civil Society Private Environment

Appendix 2: Yasuni ITT Interview Questions 1-3

Name	Q1 - Do you believe a proper analysis of externalities or soft parameters was conducted? If any?	Q2 - What are some of the alternative valuation methods employed in this specific case?	Q3 - What was / is the main reason for the project success or failure
Carlos Larrea	Yes, the most extensive analysis to date in the history of the country	Multicriterial analysis, probabilistic analysis, traditional financial valuations, binary options choice paths, an advanced fuzzy logics implementation	The president
Juan Galarza	Yes, Although there was not a proper consideration for it because 'Plan B' or the oil extraction was always given a higher consideration	The most relevant one was the indexing of carbon sequestering according to the market price of carbon permits at the time. For the 'Plan B', there were detailed and technical analyses conducted on the viability of the oil extraction	The government
Eduardo Pichilingue	Partly, the intangible value of indigenous tribes and uncontacted indigenous tribes, along with the value of biodiversity, where not adequately quantified	Carbon permits in exchange for monetary compensation	The government
Gabriel Jaramillo	Yes, to the extent possible, there were wide considerations for the analysis of alternative valuations	Indexing of carbon permits, multicriterial analysis	The Government
Natalia Greene	Of course, the most advanced to date, no other case study has implemented such a broad application of analyses combined and socialized with the international community	Multicriterial analysis, option choices by ranges, carbon permit related valuation, stakeholder analysis	The president
Sigrid Vasconez	Partly, very nice mathematical models were employed, but they resulted in nothing good. In retrospect, there was no political-economic analysis that weighed-in these factors in the probability of success.	Multicriterial analysis, option choices by ranges, carbon permit related valuation, stakeholder analysis	The president & a lack of economic-political risk analysis
Maria Moreno de los Rios	Partly, there is a massive challenge when trying to confidently and accurately assign values to the richness of biodiversity or the contributions of indigenous tribes. This was not done successfully. In economic terms, there was extensive analysis conducted.	Carbon capture valuations, scenario valuations for oil production according to technology and possibility of spillages	The president

Appendix 3: Yasuni ITT Interview Questions 4-5

Name	Q4 - What could have been done better?	Q5 - What are the key challenges moving forward?
Carlos Larrea	Many things, none of it matters because the problem did not come from the results of the calculations but rather from the personal interests of the high-spheres of the government	Working to protect larger areas and not just the Yasuni park. Moving forward from research and studies to actual implementation with permanent implications that is not open to manipulation by new administrations
Juan Galarza	Are we talking about the analysis? Considering the true cost-benefit analysis. The true cost and probability of oil spillages was massively understated. The cost and the need for infrastructure and the impact it would have on deforestation was also massively understated. The loss of biodiversity and the affectation to the park overall was grossly underrepresented in the valuations. But still, this was not the cause for the project to fail.	Preserving the pristine areas of the park and remediating the damaged sections affected by the current oil exploitation. Working with a government and bodies of governance that are lack institutional fabric.
Eduardo Pichilingue	To be honest, it was impossible to do better because of the interventions the government had, in many instances people feared for their life when I was working with Yasunidos	Making sure that the rights of the indigenous people are preserved. So far the interest of the big oil companies and foreign governments make it very hard to work in the Amazon
Gabriel Jaramillo	Hard to say, everyone was on the same page but the government and the oil companies. Maybe the project could have been explained better to them, but I do not think that was the case, their personal interests were misaligned	To expand the concept of non-extraction not only for oil fields but for large-scale mining. There is a need for a global consideration in this matter that help to put pressure on governments of less developed countries, as well as providing a legal and economic framework for development. At the end of the day, developing countries need the funds either from the exploitation of non-renewable natural resources or alternative mechanisms of financing
Natalia Greene	Nothing, when it comes to the analytical part this project was a ground-breaking initiative. The key aspects where projecting confidence and trust towards the international community and the president destroyed the hope for any collaboration.	The government, it is going to be crucial to understand if the new administration has sustainable policy or it is affected by international demand for oil.
Sigrid Vasconez	Include a political risk analysis, if we are talking about the valuation methods alone, it was al pretty and well-dressed up, but the probabilities for success were always zero and not as projected because the risk of the president being corrupted by foreign power groups was never considered	Incorporating political-economy into valuation methodologies to account for the risk inherent in project success.
Maria Moreno de los Rios	It is hard to say, what failed the country was the lack of institutionality and transparent governance. Also, there was a very important need for the project to be perceived as transparently managed, because of its novelty, for the international community to trust the Ecuadorian government.	Quantifying the value of what remains intangible, the indigenous tribes, the biodiversity, basic human rights of people who choose to leave differently and in synchrony with nature.

Appendix 4: Yasuni ITT Interview Questions 6-7

Name	RQ6 - What is your perspective of the growing trend of sustainability in valuation methodologies in multi-stakeholder projects?	RQ7 - Do you agree that externalities and soft parameter analysis is a valuable contribution to traditional valuation methodologies?
Carlos Larrea	Its growing, its definitely growing. The evidence is there, the studies are there. Since we started the Yasuni project until now there has been an incredible amount of progress.	Yes of course, I specialize in that. It is a requirement for more accurate valuations. No question about it.
Juan Galarza	There is a lot of interesting projects and initiatives. It has definitely become more mainstream. The problem is that the rate of ecosystem destruction is growing faster than ever before. It is horrific to see how surges in demand in the Chinese market have fostered illegal deforestation and exploitation. You can see what happened with the surge on balsa wood and the increased demand for oil. The illegal exploitation in the forest is violent, uncontrolled, and completely illogical.	When it comes to ecosystems and natural wonders like the Yasuni there is no possibility of creating a valuation that is representative of reality without 'alternative' considerations.
Eduardo Pichilingue	It has been growing, there is a bigger opportunity for international collaboration, particularly in the Andean region. However, the interest of the big oil companies far outweighs the movements for the protection of indigenous people. The amount of funds available is not balanced.	It depends, the term valuation is a bit abstract when it comes to my field of expertise. We still have not found an appropriate way to 'value' the life and knowledge of indigenous tribes and the ecosystems they live in.
Gabriel Jaramillo	It is interesting to observe the improvement on international cooperation and the steps we have taken forward when it comes to this. The growth needs to be transmitted into local governments to ensure that action is taken.	Certainly, it adds another dimension of analysis. It would not be possible to just use traditional cost-benefit analysis and expect better results.
Natalia Greene	There has been a lot of progress. From 2007 to today, we can see a completely new playing field. There are more comparable projects, more NGOs, more funds. Its not enough but what is important is that it is moving forward. Getting civil society involved is crucial.	Yes, I have worked closely with the leading experts in the subject and I have first-handly experiences the value that they have brought to the projects with their analysis. We have to keep working to validate these inputs in more projects and more initiatives.
Sigrid Vasconez	Yes yes, it is important. The trend is growing. As I said before, all the numbers and alternative valuations might look pretty but a growing trend means nothing if we can't see actual implementations.	To a certain extent. They are a valuable contribution if they create value. You can paint the nicest picture imaginable, but if no one is watching it, then what is the use of it? It would be like it does not exist.
Maria Moreno de los Rios	There is still a lot of work to be done when it comes to the indigenous tribes, even though the trend is growing this segment is far behind. Especially when you consider women's' rights and all the work they female leaders of tribes are doing. There is not enough attention being placed on this subject.	Yes I think they are, qualitative research is harder to translate into 'value' but more work is needed when valuing the intangible benefits of the Amazon, the ancestral interactions with nature, the future applications in the field of medicine, in sociology, in religion. In so many more fields. This is still not being quantified in a significant manner that can be translated to the public in general.

Appendix 5: Galapagos Debt Repurchase Interview Questions 1-3

Name	Q1 - Do you believe a proper analysis of externalities or soft parameters was conducted? If any?	Q2 - What are some of the alternative valuation methods employed in this specific case?	Q3 - What was / is the main reason for the project success or failure
Carlos Zapata	No, this is a pure finance play	There should be a contingent valuation methodology approach here to understand the true value of the islands and the ecosystems for the Ecuadorian people	The ability of all stakeholder groups to come together to establish a transparent mechanism to administer the reinvested funds
Mauricio Castrejon	Yes, not on the secondary economic impacts of the decisions to be made. But there is an extensive analysis when it comes to the impacts on the wildlife along the pacific corridor and the projected impact on the local fishing fleets	Advanced scenario analysis through the use of specialized software for marine ecosystems that considers not only the wildlife, but the delicate balance with the impact on fishing fleets total capacity and output	The government and its ability to connect to the different parties involved
Francisca Henriquez	N/A	TEV (Total Economic Value), stated preference methodologies, benefit transfer, proxies, cost transfer, intangible considerations for religious purposes, and many many more	The gap between academic research and the practical application that rests in the hand of public institutions and policy makers
Protected Source	N/A	Economic valuations are going to be the main indicator in this case, particularly for international investors, the preservation of the ecosystems should be quantified according to an appropriate cost-benefit analysis that is specific to the case and conducted by the relevant experts	The reliability of the government and the parties managing the reinvested funds, to the eyes of the international investors
Norman Wray	Yes, it is not the most extensive analysis but it is appropriate for the scope of the project. We have considered impacts among different sectors and involved parties, on the ecosystem, and future spill-over effects	A scenario analysis on the impact of the fishing fleets and the livelihood of the marine species. The most important part in my opinion where not the dollar amount valuations but rather the fact that we are comprehensively explaining what will happen to the ecosystem in the future and how this is good or bad and why this initiative is successful in creating prosperity at different levels	There are three levels to this question. The first one is the government, if it will accept the proposal or give in to third-party interests that are using the concept of 'loss of sovereignty' in a schizophrenic way. So 1. - the will of the president of the republic. 2 - the capacity to structure some sort of 'trust' for the management of funds and 3 - being able to reconcile the different interests from the stakeholders. Particularly the industrial continental fishing fleets and the army. For example, the national assembly (congress) issued a report backing up all the positive aspects brought forward by the proposal, but in the conclusions section emphatically stated that any attempt to manipulate the current marine reserve is deemed a loss of sovereignty and is strictly illegal. No sense. As I mentioned, there is schizophrenic opposition. Particularly when they are discussing the possible usage of the airstrips in the islands for the army of the united states to help with drug trafficking control.
Marco Escarabay	No, I have not heard the proposal	What is the value of nature? You tell me? The ocean is my life, how can I assign a value to it, it mean everything, it has no value	The government, they have interests guided by international actors and the Chinese government instead of the interests of the people

Appendix 6: Galapagos Debt Repurchase Interview Questions 4-5

Name	Q4 - What could have been done better?	Q5 - What are the key challenges moving forward?
Carlos Zapata	Get more actors from different sectors involved, right now the interested parties are very fragmented and it is a big big challenge to bring them all together under the same roof to reach consensus.	To get all the different stakeholders to work together and understand the value of the project. To put personal interests aside.
Mauricio Castrejon	Get more support from the international community in order to pressure the local government to take action, there is still no official prononciation regarding the initiative.	For the government to approve the proposal, without their acceptance the project becomes impossible to execute.
Francisca Henriquez	Include a valuation of the impact to the ecosystem on the local economies. From the information that I have this has not been done appropriately	To close the gap between knowledge generation and policy implementation through structured process that include international frameworks and considerations for economic, social, and every type of benefit provided by nature.
Protected Source	Preconstruct an international third party operated trust before showing the numbers and the amount of money involved. The proposal should be structured better.	To improve the effectiveness of governments managing funds to increase public trust, or alternatively, for governments to allow more privatization within the conservation industry to increase the acceleration of benefits and the growing trend for sustainability.
Norman Wray	Hard to tell right now, we just underwent residential elections. From my perspective there is too much work to be done to objectively explain what could have been done better	Woah, I mean, so many... As stated before, getting the president and the politicians to approve the proposal, to align the interest of different stakeholders, and to create a financing mechanism. But also to preserve the ecosystem when it comes to the biodiversity and populations of species. Galapagos is one of the few if not the only marine area in the equatorial region of the planet that is not suffering an extreme decimation of the marine wildlife population. We cant explain this phenomenon yet but it is so important to understand the importance of this ecosystem to the global migratory routes of marine species. Also, once and if the proposal gets approved, to be able to certify and enforce sustainable fishing practices that will be priced higher and will have more demand in international markets. This aims at creating more prosperity for the country and shifting away from raw material producers and into a finished quality good producers. Our biggest costumer in this sense is the European Union, and being able to conduct this operation successfully will give us a competitive advantage in those markets. It is also important to consider that we must sustain the current fish stocks for future generations and to avoid the accelerated extinction of species like we have seen with the blue-fin tuna in countries like China and Japan.
Marco Escarabay	To start, ask the local people for their opinion, and share and socialize the project proposal. We have not heard about this here in the islands.	To preserve the ocean and the islands. The challenge is not who we need to convince, we know what needs to be preserved, and the time is now. How should we do it? We need support of the international community and international corporations. WE need help to modernize or fishing methodologies, we need help with access to funding, we need help with better education. I do not have the words to explain how urgent the situation is. Another challenge is the inclusion of the younger generations, there is a lack of involvement, a lack of leadership, I should not be the leader of the union of fishermen, but the lack of younger people getting involved has forced me to come back to this role.

Appendix 7: Galapagos Debt Repurchase Interview Questions 6-7

Name	RQ6 - What is your perspective of the growing trend of sustainability in valuation methodologies in multi-stakeholder projects?	RQ7 - Do you agree that externalities and soft parameter analysis is a valuable contribution to traditional valuation methodologies?
Carlos Zapata	Well yes, that is what we do and what we are working on. We are trying to increase awareness.	Yes. If we go back to the contingent valuation methodology we talked about earlier, we can see how the people are defining the value of something that has not been valued before by traditional valuations. And I imagine that there are many more examples, but I think this one paints a clear picture of how alternative valuations help.
Mauricio Castrejon	Honestly, it has been an amazing experience, being able to work with many countries in south and central America to establish migratory routes and the need to preserve the marine ecosystems. This is something that 10 or 20 years ago would be unthinkable. Of course, there is a lot of work to be done and we depend on local authorities, but the progress is significant.	This case is a bit particular because the natural wildlife and natural habitat are so unique that the need to protect and preserve it should take precedence over everything. If you consider the importance of sustaining fish population stocks for future sustainability in the food chain it becomes even more important. But the structure of power lies in the hands of the government and the financial benefit is so evident that non-economic valuations become secondary even though they should be the main focus.
Francisca Henriquez	It is very interesting to observe the new databases that are being created on how to value ecosystems. This allows for proxies to be generated and for the implementation of valuations to grow exponentially. The international community and the sharing of information is going to play a crucial role when it comes to future improvement.	Definitely, in Chile we are working to translate externalities and alternative parameters into implementable decisions and reparations issued by a court of law that is not only constantly updating but also setting a precedent that has been much needed for a long time now.
Protected Source	Well the market speaks for itself. The prices for 'green projects' has grown considerably over the years. It's a self-fulfilling cycle, the capital will go where there are better returns, and if the market is pricing sustainability into its valuations then the numbers will speak for themselves.	Depends on the scope of the project. Not everything needs extensive 'alternative' analysis. Some decisions are more logical and simpler to make. So there is a need for a case-by-case analysis or to put it differently for a consideration on the types of projects at hand.
Norman Wray	It is there for all of us to use and implement, the challenge is standing up to the responsibility we face and implementing these strategies in order to achieve a better future.	Yes of course. This case is special because of the massive financial considerations that at times trump the other aspects of the project. But the value of nature and the ecosystems and livelihood of our island and our countries is just as important if not more.
Marco Escarabay	That is what they say but all I see is more people fishing with more destructive methods. So you tell me.	I hope so, so far the people are just worried about how much money they can make.

