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ERIC SOUBEIRAN

HOW NATURAL RESOURCES DEPLETION CHALLENGES RENT APPROPRIATION CHANGING THE COMPETITIVE LANDSCAPE OF THE FIRMS ?

ACKNOWLEDGMENTS

This thesis is the result of close to 5 years of work during which the world has experienced a dramatic acceleration of climate change and environmental challenges. Originally this work was meant to formalize what my professional practice taught me many times: there is no magic hand. It finally landed with a perspective that could help to rethink one of the central pilar of management: competitive advantage. Through that process, I learnt the rigor of research, the abyss of the unknown that humbles, the gratitude to be able think freely and the necessary resilience of always challenging your thoughts but relentlessly keep going. This work would not have been possible without the support of dozens of people that directly or indirectly allowed me to experience, test, practice, learn. I will never be able to thank them all, but I would like to express my deepest gratitude to:

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ABSTRACT

1.1. PITCH & ABSTRACT

How Natural Resources depletion challenges rent appropriation, changing the competitive landscape of the firms?

While the depletion of Natural Resources challenges the viability of our economic model, mainstream economists continue to focus on resource appropriation as a rent building mechanism. Firms started adapting to this challenge, protecting their license to operate as well as developing new differentiating strategies that reshape the field of competition challenging the Ricardian model.

This change is surprisingly largely ignored by the management literature and notably one of the most influential strategy frameworks, the Resource Based View (RBV) of the firm and the Natural Resource Based View of the Firm (NRBV). The RBV indeed falls short in explaining how companies may both gain a maximum value from the resource and maintain a sustainable competitive advantage through long term use of the resource.

Using an inductive and interpretative qualitative methodology designed around 2 revelatory case study, our work analyses the conditions and characteristics of the strategies developed by companies to secure a sustainable use of the resource and their implications. It helps us to forge the concept of Pre-Competition that complements the Resource Based View (RBV) of the firm and enables it to apprehend the consequences of the increasing Natural Resource scarcity.

Pre-Competitive strategies will enable companies to build sustainable competitive advantage, interacting with their socio-economic ecosystem while preserving Natural Resources. It has therefore several structuring implications for the RBV, the NRBV and the Resourcing research fields. Pre-Competition appears a preliminary necessary step to secure the a sustainable use of the Natural Resource prior to the rent making logic of the RBV. It has also material consequences for corporate executives, regulators, and a potential to renew the customer-supplier relationship.

Abstract:

Natural Resources define by the United Nation as "natural assets (raw materials) occurring in nature that can be used for economic production or consumption"[1] are depleting at an alarming rate and this calls for immediate action and adaptation of economic models to safeguard our lifeline.

Natural resources have long been considered by mainstream economists as infinite while corporates are facing an increasing and acute issue of sustainable access to Natural Resources. The potential scarcity or complexity of access to the resource means that they can become an element of the competitive advantage and rent creation for firms.

Within this framework, the Resource Based View (RBV) of the firm seems to provide a relevant framework to appreciate this dynamic as it focuses on how resources are used and assembled with the objective to create a sustainable competitive advantage. But interestingly this strategic framework did not originally consider Natural Resources.

Several attempts have therefore been made to develop a Natural Resource Based View (NRBV) of the firm. Like Hart (1995) we agree that management theory has largely "ignored the constraints imposed by the biophysical environment". Given the importance of the ecological challenges the world is facing, this position has rightly been judged by Hart as inadequate and we share this analysis. Hart analyses that in the future it is inevitable that businesses will be constrained by dependent ecosystems and nature. This is striking that 25 years later this statement remains largely accurate as indeed management theory "used a narrow and parochial concept of environment that emphasizes political economic, social and technological aspects" (Shrivastava & Hart, 1994).

While the RBV is a coherent framework to envisage how Natural Resources contribute to build a competitive advantage, it does not address the way to ensure their long-term availability and prevent their exhaustion. This competitive advantage could therefore rapidly disappear proving that it is not sustainable. Applying the RBV to Natural Resource creates a paradox : a short term use of Natural Resource to maximize rent appropriation leads to resource depletion and ultimately to the end of competitive advantage as the resource is no longer available.

[1] Glossary of Environment Statistics, Studies in Methods, Series F, No. 67, United Nations, New York, 1997.

Our study will show that the RBV is built on a non-explicit "underlying" assumption: the search for rent appropriation linked to the resources they aim at controlling. This underlying assumption is instrumental in the fact that firms may take the most out of the resource they control to maximize their competitive advantage. In that context, Hart like mainstream economists fails at integrating the impact of Natural Resources' scarcity and propose convincing ways to manage increasingly scarce resources to ensure their long-term availability. Combined with the verify well documented market failures link to the difficulty to apprehend externalities, more than 25 years after Hart, one can wonder if the mechanism behind rent appropriation are note contributing or accelerating the Natural Resources depletion. Rarity that is one of the core triggers of sustainable competitive advantage in a Ricardian logic is fundamentally challenged in the case of Natural Resource. When depletion equals rarity this very assumption of the VRIN condition of the RBV becomes at the same time the cause of an unsustainable competitive advantage.

Our work will therefore demonstrate how by challenging rent appropriation as an underlying assumption we can offer a decisive enrichment to the RBV to apprehend the new era in which we are living, the "Anthropocene" (Crutzen P.J. 2006).
We will also demonstrate how the RBV and NRBV of Hart fails at considering the evolution of the firm's collaboration models linked to the increasing scarcity of Natural Resources.
On this basis and using and inductive qualitative revelatory approach our work develops 2 cases centered around freshwater management. Those cases will help us to show whether and how actors include Natural Resources in the buildup of their competitive advantage.
In that context, we found that new strategies that we call "Pre-Competitive" are emerging and we show how such strategies challenge the current Ricardian paradigm of the RBV. Pre-Competition is not the negation of competition but under 3 identified conditions and following 3 specific characteristics will allow corporate to build a sustainable competitive advantage and preserve the Natural Resource they are benefiting from. This could help to move from resource exploitation to resource preservation. We therefore propose an adaption of the RBV and NRBV incorporating Pre-Competition as a preliminary necessary step to secure the a sustainable use of the Natural Resource prior to the rent making logic of the RBV.
This contribution can help companies to develop new business models interacting with their socio-economic ecosystem redefining the frontiers of competition to preserve Natural Resources. It has also important consequences for corporate executives' capabilities, regulators and to renew the customer-supplier relationship.

1.2. DESIGN OF THE THESIS

Big Issue

- Demonstrating the impact of Natural Resources depletion and the current limit of the management theory to apprehend it

Literature Review

- How the Literature apprehends the relation between Natural Resource, Appropriation and Rent
- Demonstrate the relevance of the Resource Based View and its limitation to study this relation
- Demonstrate that rent appropriation is an in-house assumption of the RBV that can be challenged and how by challenging this assumption we could enrich the RBV

2 case study

- Focusing on a key Natural Resource: Fresh Water
- Demonstrate how new strategies develop by corporates challenge the rent appropriation mechanism, a key in house assumption of the RBV
- Define the context in which this rent appropriation mechanism fails at guaranteeing sustainable rent creation.
- List the various "capabilities" being developed by corporate to overcome that challenge offering a structuring evolution of the RBV that we will be naming as "pre-competition"

Forging Pre-Competition

- Characterizing from the case study the concept of Pre-Competition
- Identifying the conditions of emergence of Pre-Competition
- Demonstrating how this can provide a solution to the current ecological challenges
- Demonstrating why how this could complement the RBV, the NRBV and create a link with Resourcing
- Identify the boundaries of our work and open to potential new research avenue

2. PRESENTATION OF THE "BIG ISSUE"

2.1. CONVICTION

During the 20 years of my professional career, I had the chance to occupy several management positions in France, India, the Netherlands and the UK. In each of my assignments I faced the constraint that Natural Resources could create in the license to operate of the businesses and or projects I was managing.

In 2006 while working for the British company Rexam, finding enough and good quality water in Bangalore for our pharmaceutical device factory to cool production equipment was complex and required significant and unbudgeted investment to soften the water impacting our project's ROI, this combined with already stringent restriction during the dry season. The availability of water has since then turned into a constitutional crisis in the Indian Federation between the state of Karnataka, Tamil Nadu and Puducherry escalating to the Indian supreme court and leading to massive farmers protest on every side of the border to access to the resource now become scarce. Each state "believing that it needs the water to sustain extensive farming that has increased"[2] over time *(KV Lakshmana, Hindustan Time, Sept 2016)*. This recurring crisis escalated to the highest jurisdiction in the country whose ruling was challenged by the highest executive authorities of the country demonstrated how access to Natural Resources could become explosive for the very foundation of the largest democracy in the world.

In 2010, I was given the responsibility to build the first dairy factory of Danone in the Northern part of India. Our objective was to launch an innovative range of products designed for Base of Pyramid Consumers (BOP) and enriched nutritionally. This range of products was to be sold at an affordable price (below Rs. 50 i.e., below 0,10 Euro) which involved a fundamental redesign of all our processes to lower the breakeven point. However, one point was central to this equation: the Milk quality and availability. The Haryana state in the Northern part of Delhi is a very dry state where urbanization and the usage of chemical fertilization and inefficient waste and wastewater treatment systems as well as old pipe systems is affecting dramatically the quality of water. 70% of Delhi water is unfit for human consumption[3] (*Hindustan Times Malavika Vyawahare March 25, 2017)* similarly most of the ground water in Haryana state is

[2] Cauvery row: BJP to boycott all party meet on SC order | Latest News India - Hindustan Times
[3] World Water Day: 70% Delhi water unsafe for drinking, says study | Latest News Delhi - Hindustan Times

polluted and unfit for consumption *(Bishnoi, M., & Arora, S. (2007). Potable groundwater quality in some villages of Haryana, India: Focus on fluoride. Journal of Environmental biology, 28(2), 291.)* When developing Milk production "rule number one is if the cows don't drink, they don't milk. Rule number two: even if they do drink, they'll milk more if the water's right"[4]. *(Hugh Maynard in Milk production linked to water quality, quantity).* Water quality is essential first for the cow to have a good level of production and the very health of the animal itself and second to have the right quality for the milk. In India this challenge coupled by a lack of cooling infrastructure for the milk proved to be extremely complex and costly to solve as was obliging us to focus our sourcing on large professional farms and/or transport the milk from far. Counter intuitively in a market where demand exceeds offer large organized systems guaranteeing the level of quality can also sell at a premium price vs. small holder farmer. This was indeed a key blocking point as this issue did not allow us to source milk from small holder farmers and therefore from the communities where our Base of Pyramid product was supposed to be sold. This situation did challenge the economic model of our Base of Pyramid business model. This was the same situation in Europe in the 70's when dairy French dairy corporations had to import milk for their need. The quality of water was not the sole issue as the lack of cooling infrastructure was also an element of the problem. But we can nonetheless see how the availability of good quality raw material can challenge the very essence of a business model.

The overspecialization of the agri-food industry and the standardization of crops has huge environmental consequences. Today 30% *(IPBES, 2019[5])* of the soils are degraded and the human food system is focused on 9 plants and 5 animal species. This causes a significant systemic threat to the agri-food system.

The example of the current Banana crisis is in this regard self-explanatory. Bananas fuel many economies worldwide: they are the biggest export of Costa Rica, Ecuador, Panama and Belize and the second most valuable export for Colombia, Guatemala and Honduras. The banana industry has had to face several risks of extinction. In the 50s the banana most commonly eaten around the world was the Gros Michel strain, a shorter, straighter, sweeter fruit but a fungus known as Tropical Race 1 (TR1) wiped out Gros Michel plantations across Latin America. Scientist developed a new variety named Cavendish. It could be planted in soil where the disease had been present. And so production of Cavendish bananas was embraced as the savior

[4] Milk production linked to water quality, (mcgill.ca)

[5] UN Report: Nature's Dangerous Decline 'Unprecedented'; Species Extinction Rates 'Accelerating' - United Nations Sustainable Development

of the industry. Millions of acres were planted, and the industry was saved. So spectacular was the success of the Cavendish that it has become the only banana many of us have ever tasted. But it is precisely the speed and success of the Cavendish that is now endangering its very existence and with it the one of a 30bn Euro industry[6]. The cloning of that original plant has made every single Cavendish banana genetically identical.

Each banana tree grown now is effectively a part of that original plant – and every one of the fruits on the plant a clone of every other Cavendish banana. And so, when the disease returned in a new, genetically modified, form – laying waste to Cavendish banana plantations just as TR1 had obliterated Gros Michel farms a century ago – there was nothing anyone could do to stop it. A recent interview Ioannis Stergiopoulos of the University of California said: "The global banana industry could be wiped out in just five to 10 years." "The Cavendish banana plants all originated from one plant, and so as clones they all have the same genotype – and that is a recipe for disaster." [7]

Such issues are not only affecting developing countries but can also affect the very mechanism of demand and offer and during the last decade we have seen how the volatility of raw material prices created economic uncertainty for the agri-food sector. I have directly experienced that as milk sourcing director between 2012 and 2017. With a price of milk reaching in France 24,3 Cents Euro/Liter at its lowest in 2009 and 41 Euro/Liter in 2014 at its peak to reach 29.7 Cents Euro in Mai 2016. Such astute volatility created strong social unrest in the whole dairy sector. The liberalization of the milk market initiated by the European Union in 2008 exposed the European milk price to a multiple of global factors such as the impact of rainfall in New Zeeland, Climate Change, El Ninio or to Chinese change in governmental milk regulation irrespective of the fact that only 4% of the milk effectively traded on the commodity market. On a lighter note, I was amused to see during the crisis how very serious dairy economists turned into meteorologists, Gulf Stream experts or specialist of Chinese internal politics!

High volatility was not only a reality for milk. Here is what the FAO *2017. The future of food and agriculture – Trends and challenges. Rome. States*:

> *Food price fluctuations around the trend, and increased volatility and uncertainty, received substantial attention in the wake of the food price inflation crisis of 2007–08.*

[6] The quest to save the banana from extinction (phys.org)

[7] "Global banana industry could be wiped out in just five to 10 years", leading scientists | Australian Food News (ausfoodnews.com.au)

> *Typical measures of volatility suggest that food price volatility in the last 50 years reached its highest level during the 1970s. However, the price fluctuations since 2000 have been above the levels observed in the previous decades (Díaz-Bonilla, 2016, p.41), when price levels were also below the linear trend line. When taking into account the drop in the FAO index in 2015 and 2016, it seems that volatility has continued to increase. These deviations indicate levels of volatility approaching those observed during the 1970s.*[8]

More importantly what I experienced was that this lack of predictability of the price and its disconnection with the cost of production had serious consequences for all the economic actors. First it threatened hundreds of millions of small holders' farmers to fall below the poverty line with all the social and political consequences that can be envisaged. It is important to remember that up to 80% of the food produced globally is produced by small holder farmers[9]. In the more structured part of the value chain, it did not allow agents to plan correctly because they had no visibility on their capacity to cover their cost of production affecting their investment strategy. Such situation increased the level of perceived risk of the sector and therefore increased the premium of the financial institution to lend to the agri-food sector. For consumer facing companies in Europe the extreme uncertainty triggered complex relationship with the farmers at a time when consumer demand was changing requesting for more traceability, quality, and a better knowledge of the impact of agriculture practices promoted by large corporations. The extreme uncertainty was blocking all potential dialogue around sustainable farming transition which can be easily understood when short term survival is no longer guaranteed.

From Natural Resources availability, the impact of specialization on the environment and the inability of offer and demand to balance, I was stroke by the fact that most of the theoretical framework I was taught during my economic studies were not operating. It seems that they were assuming that economy was linear, and that Natural Resources availability was not constrained and/or were at the core of a fight for competitive advantage but that the price mechanisms would allow a so called "efficient" and timely balancing of the system. But behind equation were real lives affected, strikes in front of our factories, industries threatened struggling to survive.

[8] The future of food and agriculture: Trends and challenges (fao.org)
[9] Factsheet_SMALLHOLDERS.pdf (fao.org)

Those evolutions were obviously not only linked to an "invisible hand" that would balance resource allocation "efficiently", but they were linked to the direct interactions between our usage of Natural Resources and their depletion.

At the same time, I was confronted with some of the situations presented above, I felt extremely ill equipped to think and envisage how to manage the availability of Natural Resourced in my managerial practice.

The world faces a serious and unique challenge. Developing countries rightly ask to catch up with the living standards of developed countries. If the Earth's Natural Resource were infinite, catching up by developing countries, continued growth in high-income countries, and further global population growth, would be relatively straightforward. To catch up developing countries could invest in technology, infrastructure, and human capital, and step by step, would narrow the income gap with today's high-income countries. That has been the trajectory of Japan and Korea and is the one taken by China, India or Brazil.
Yet the Earth's Natural Resource base is not infinite. There is a global "adding-up" constraint that is not easy to apprehend at a country per country level. As mentioned by Rockström and Sachs Oehmann, Schmidt-Traub, 2013 in their background paper for the "*High-Level Panel of Eminent Persons on the Post-2015 EU Development Agenda"* p2 [10] "Until recently, there were always the perception of under-utilized primary resources on the planet: for example, new lands, new fossil-fuel reserves, and newly mined groundwater. Moreover, the world's ecosystems could absorb the waste of human activity: carbon dioxide from fossil fuels, nitrogen runoff from fertilizers, and even toxic pollutants dissipated by the oceans and rivers".
With such a perception, humanity could improve the productivity without fear and continue to live in a linear fairy tale which if I step back is the one, I have been educated in some of the most prestigious business institutions. Now, however, the planet is counting 7.2 billion human beings and soon 9 to 10 billion demanding primary resources the fairytale may soon turn into a nightmare.
Like many I was having "the foot stuck on the accelerator heading towards the Abyss" Ban Ki Moon Sept 2009[11]. But my life and work experiences convinced me that global sustainability

[10] Rockstroem-Sachs-Oehman-Schmidt-Traub_Sustainable-Development-and-Planetary-Boundaries.pdf (post2020hlp.org)
[11] 'Our foot is stuck on the accelerator and we are heading towards an abyss' (irishtimes.com)

has now become a prerequisite for development at all scales, from the local community to nations and the world economy. At the center of this intuition sit Natural Resources.

With this conviction I thought that a new way of doing business was required and that in the limit of my capacities wanted to contribute to it. First by accepting the role of Vice-President for Nature & Water Cycle for Danone in order with several my colleagues to start changing our business model towards sustainable development using our business as a force for good. At the same time, I found important to try to formalize my thinking and contribute to the necessary evolution of the management theory and I decided to engage into Doctoral journey.

2.2. BIG ISSUE

2.2.1. Our linear fairy tale is dead. The planet has limits!

The strong evidence of the impact of human and industrialization are accumulating. Against this backdrop, The Stockholm Resilience Center introduced the planet boundaries framework in 2009[12] with 28 renowned scientists. This framework determines 9 planetary boundaries within which humanity can continue to develop and thrive for generations to come. The boundaries determine tipping points that, if crossed, would drive abrupt large-scale change in earth systems. Among the 9 planet boundaries 4 are already crossed:

- climate change: temperature had risen by 0.7°C since 1970 mostly due to fossil fuel emissions and remaining below the 2°C Paris agreement seems to be extremely challenging. Scenario project now a global warming close to 4°C.
- loss of biosphere integrity: population of wild animal have halved since 1970.
- changes to biochemical flows of nitrogen: even if N and P are essential to life the exponential increase of industrial N&P emissions kill lakes and soil.
- land use change: forest conversion to cropland and fields to cities. 62% of the world's biomes are intact.

The resources on which humanity has based its development are therefore declining at an unprecedented rate. This must question our resource allocation strategy and more generally our

[12] Planetary Boundaries: Exploring the Safe Operating Space for Humanity (stockholmresilience.org)

development models. Mechanically, one can legitimately question how this should affect the management of corporations and the management theory itself.

As a management practitioner I am stroke by the narrative still developed. Economy should be a war and the appropriation of resources should be a rational behavior end therefore be considered as a strategic element of a competitive advantage.

If a resource scarce world becomes the norm, several topical questions can be asked:

- What if preserving resources rather than using them would be the most rational economic behavior?
- What is short term profit maximization would not the most rational economic behavior?
- What if managing resources in collaborative manner would become the most rational behavior?
- What if developing alliances to manage resources would become the most efficient way of ensuring long-term sustainability of a firm?
- Would that be the end of competition or resetting the frame of competition?

Our big issue will lead us to study how the reduction of Natural Resources and the way companies manage them affect their strategy building exercise and should remodel their interaction in a multi-faceted stakeholders world.

Before looking at the possible theoretical frameworks that could help to frame this discussion let's see what the current grey literature public opinion reveals of our big issue

2.2.2. Natural loss and climate change. The two sides of today's ecological crisis and a risk for society and economy

The World economic forum estimates that half of world GDP is highly or moderately dependent on Nature, representing 44 trillion USD of economic value generation[13]. Ecosystem services provided to the global economy through drinkable water, water for industrial processes, food, fresh air, heat absorption, productive soil, forest, and ocean that soak up carbon could be valued close to 125 trillion USD. But such services are not truly valued which therefore does not allow us to properly assess the impact of its loss.

[13] Half of World's GDP Moderately or Highly Dependent on Nature, Says New Report > Press releases | World Economic Forum (weforum.org)

2.2.2.1. Nature Loss, the example of the food and land use system

We collectively have been used to live in a society of abundance and indeed despite an unprecedent rate of population growth, on the surface the need for change is not obvious. The specialization of agriculture coupled with the progress of chemistry and technology allowed to increase yield and meet the growing need of humanity. Global trade of agri-commodities has boomed Between 1990 and 2014 only the trade value of agriculture commodities increased from nearly 415 billion dollars to 1.7 trillion according to the FAO. During the green revolution, the occurrence of famine and chronic food insecurity have significantly reduced (*De Waal, A. 2018. 'The End of Famine? Prospects for the Elimination of Mass Starvation by Political Action.' Political Geography 62: 184-95.)*

Thomas Malthus argued in his famous essay on the principle of population in 1798 [14] that there was no longer enough land in the world to feed a rapidly growing world population, threatening poverty, and famine. But an agro-industrial revolution soon transformed the economies of Europe and North America, and his fears proved unfounded. Similarly, the green revolution therefore delivered its promise but at what cost for our natural ecosystems?

As the 2019 Ellen Mac Arthur Foundation report titled "*Cities and Circular Economy for Food"*[15] shows, for every dollar spent on food 2 dollars is incurred in environmental health or socioeconomic impact.

Similarly, The Food and Land Use coalition (FOLU) highlighted in September 2019[16] during the UN Climate the environmental, health and inclusion challenge that the agri-food industry is now facing.

The environmental challenge: according to the report, "Food and Land Use is by far the single biggest driver of environmental damage. It contributes approximately 30 percent of the greenhouse gas emissions. It has a major impact on the continuing deforestation of tropical forests, grasslands, wetlands and other remaining natural habitats accounting for a huge part of the biodiversity loss".

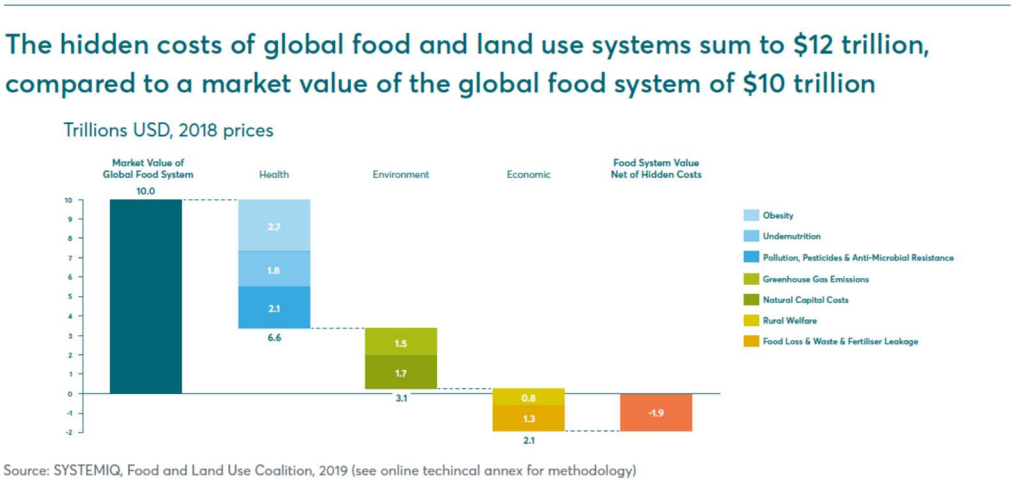
The health challenge: poor diets are compromising the health of billions of humans. One in five children under the age of five is stunted through undernutrition while at the same time, more

[14] Microsoft Word - malthus.doc (esp.org)
[15] Cities and circular economy for food (ellenmacarthurfoundation.org)
[16] Global report - Food and Land Use Coalition

than two billion adults are overweight, of whom 680 million are obese. If current trends continue, half the world's population will suffer from malnutrition by *2030 (HLPE. 2017. Nutrition and food systems. A report by the High-Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome)*[17].

The Inclusion challenge: the economic models we have built is creating astute social issues raising a major concern of value sharing. While the world spends 989 bn dollars in food subsidies hundreds of millions of people cannot make a decent living from their work. They suffer from low levels of assets, particularly human capital, little connectivity to key markets, and a lack of tools to manage risks, making it hard for them to invest in their future. Power imbalances along global value chains further diminish opportunities for growth and diversification. Two-thirds of the 740 million people living in extreme poverty (on less than $1.90 a day purchasing power parity 2011) are agricultural workers and their dependents. *(World Bank. 2018. Poverty and Shared Prosperity 2018: Piecing Together the Poverty Puzzle. Washington, DC: World Bank)*[18] However at the same time indigenous peoples and local communities protect and manage more than 40 percent of the world's remaining ecologically intact landscapes. If we cannot find a way to remunerate their role there will be no reason for them to continue to steward those key assets for humanity. Following the same logic as the Ellen Mac Arthur Foundation, the FOLU report estimates that the hidden costs of global food and land use systems sum to USD12 trillion compared to a market value of the global food system of US 10 trillion.

Figure 1: The hidden cost of food

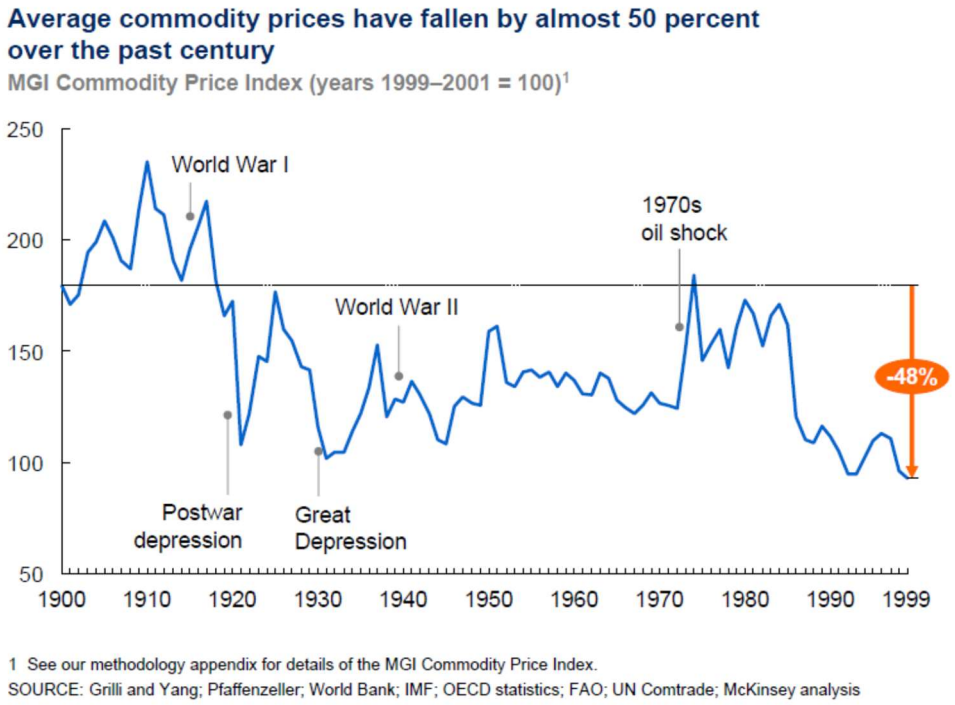


[17] Nutrition and food systems. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security. September 2017. HLPE Report 12 |Policy Support and Governance| Food and Agriculture Organization of the United Nations (fao.org)
[18] Poverty and Shared Prosperity 2018 (worldbank.org)

2.2.2.2. The link between climate change and Natural Resources has very tangible economic impact

During the 20th century, the conventional wisdom was that the market forces will always come to help a resource constrained world and proved to be right. Despite the acceleration of economic and population growth, the increase in productivity, improvement of resource allocation, innovation and technological helped to answer this challenge and at the same time decrease the price of Natural Resources (Dobs, Richard et al 2011). See below.

Figure 2 : Average commodity price



1 See our methodology appendix for details of the MGI Commodity Price Index.
SOURCE: Grilli and Yang; Pfaffenzeller; World Bank; IMF; OECD statistics; FAO; UN Comtrade; McKinsey analysis

However, in the past ten years, demand from emerging markets, particularly in Asia, has erased all the prices decline of the previous 100. As stated by Dobs, Richard et All (2011) several factors are combining to enter a highly volatile market over the next two decades. Up to three billion people could join the middle class, boosting demand at a time when obtaining new resources could become more difficult and costlier. The stress on the resource system is likely to be compounded by increasing links between resources that mean that price shocks in one can swiftly transmit to others. In addition, environmental deterioration, driven by higher consumption, is making the supply of resources—particularly food—more vulnerable.

Natural Resources are the biomass (wood and crops for food, energy and plant-based materials), fossil fuels (coal, gas and oil), metals (such as iron, aluminum and copper) and non-metallic minerals (including sand, gravel and limestone) that are used in the economy.
Based on a material resources database that covers almost five decades (1970 to 2017) and 191 countries, existing trends forecast global material use to reach 88.6 billion tons in 2017 more than three times the amount from 1970 – with high-income countries consuming ten times more per person than low-income countries.

Several commodities have faced an astute volatility impact. In 2014 severe shortage of rainfall in India had drastic bullish effect on commodities such as cotton, rice, palm but also on the hydro-electricity price and fuel prices in the subcontinent calling for an adaptation of the corporate strategy.
This status also drives significant geopolitical move. China as early as 1996 realized that its economic development may be impacted by its limited access to Natural Resources accelerated by a degradation of its environment. This was the first stone of the new belt road. Since then, the Chinese investment in Africa moved from US 40bn per annum to more than US 200bn in 2014. This creates an increased dependency of the African economy with some alarming signal as stated in the article of Michel de Grandi in the newspaper Les Echos in 2017 titled *African in the trap of Chinese trade*[19].

In Florida climate change has brought an increased frequency of hurricanes but also disease threatening the whole industry of orange and forcing brands such as Tropicana or Minute Maid to develop alternative location for their sourcing strategies. As explained in a 2013 Guardian article *"Florida might need to consider redesigning its license plates. The state's plates feature a pair of ripe oranges above the famous "Sunshine State" slogan, but the region is in the midst of the worst orange harvest crisis since records began in 1913 "*[20].

The questions that corporates must adapt to climate change is now often described as a make or break. In a recent interview to the Guardian[21] the governor of the bank of England Mark Carney stated that *"firms ignoring climate crisis will go bankrupt"*. Stressing that the transition to net zero carbon emission would change the value of every asset raising the risk of shock for

[19] Matières premières : l'Afrique dans le piège chinois | Les Echos
[20] Feeling the squeeze: Florida faces worst orange harvest crisis in a century | Florida | The Guardian
[21] Firms ignoring climate crisis will go bankrupt, says Mark Carney | Climate crisis | The Guardian

the financial market. "*Some assets will go up and others will go down the question is how abrupt the transition will be".* The transition has already started. In the US the valuation of Coal companies collapsed by 90 % and the banks exposed to such asset where extremely weakened.

Considering climate change impact and the risk it may derive on the company's businesses had led the French energy company Engie to declare after the COP 23 its exit from the coal industry. While 15% of its revenue were derived from coal energy Isabelle Kocher Engie CEO declared to Frederic Simon from Euractiv.com in Nov 2017 [22] *"We have decided to stop producing electricity from coal. When we started this plan in early 2016, we were at 15% of our electricity being generated from coal at Engie. This has led to very concrete actions from the company such as closing factories because in those territories in which where we do not need that capacity. It also means disposing significant asset base."*

In its yearly financial results ENGIE announced the completion of the sale of its entire stake in Glow in Asia-Pacific, and the signing for the sale of its shares in coal-fired power plants in the Netherlands and in Germany. After this sale, coal will represent 4% of ENGIE's global power generation capacities, down from 13% at the end of 2015 when the Group announced that it would gradually close or dispose of its coal assets and no longer build any new coal plants. In the past 3 years, ENGIE has reduced its coal-based electricity generation capacity by approximately 75% *(ENGIE 2019 Half Year Results Press release[23]).*

2.2.3. Corporations already adapt to this reality

As mentioned in McKinsey Global Institute Report (2011)[24] Resource Revolution to meet the world's energy, material food and water needs *"for much of the 20th century, private-sector companies have been able to plan their strategies and business models on the (often implicit) assumption that the implications for real costs of resource prices would be constant or fall. As a result, they have tended to focus on raising labor and capital productivity, given the increasing cost of labor and competition for capital".*

However, companies now need to increase their strategic and operational focus on resource productivity. Companies that succeed in improving their resource productivity are likely to

[22] Engie: 'Sortir totalement du charbon, aussi vite que possible' – EURACTIV.fr
[23] ENGIE 2019 financial results | ENGIE
[24] MGI_Resource_revolution_executive_summary.pdf (mckinsey.com)

develop a structural cost advantage; improve their ability to capture new growth opportunities, especially in resource-scarce, rapidly growing developing markets; and reduce their exposure both to resource- and environment-related interruptions to their business and to resource price risk.

But this is not only about less it can also be about better. One can therefore observe how green innovation is structuring the growth agenda of many sectors. Green electricity is now cheaper than fossil electricity. Electric cars reach a momentum. Organic products have grown by 23% in 2016 reaching the highest growth rate of the food category. We also see the increasing interest in circular economy topics that imply to rethink the pre-competitive aspects of many areas of economic models.

The food and agriculture sector are at the crossroad of major transformations. Several studies show that for every dollar of food produced the impact on health and the planet ranges from 1.6 to 2 dollars. A fundamental adaptation of our system is required to meet the challenges of the 21st century.

The Food and Land Use Coalition in its 2019 *Growing Better Report*[25] lays out, for the first time, *"the scientific evidence and economic case that by 2030, mankind can help bring climate change under control, safeguard biological diversity, ensure healthier diets for all, drastically improve food security and create more inclusive rural economies"* stating that this can be done reaping a societal return that is more than 15 times the related investment cost. To do so it underlines 10 necessary adaptation that would deliver USD 5.7 trillion of economic prize by 2030 and USD 10.5 trillion by 2050 based on avoided hidden costs. It also maps USD 4.5 trillion of annual opportunity for businesses associated to the 10 critical transitions 4 of them having during and massive impact on the structuration of the food industry. We are summarizing below the top 4priorities.

[25] Global report - Food and Land Use Coalition

Table 1 - Summary of 2029 FOLU Report

	Base Scenario	Accelerated Scenario
Healthy Diets	Converge diets to planetary diets including predominantly plant based	Redesign product portfolio based on planetary diets
Productive & Regenerative Agriculture	Combining traditional techniques such as crop rotation of grazing system with advanced precision farming	Scale up payment for ecosystem services Shift procurement from buying commodities to investing into sustainable supply chain
Diversifying protein supply	Development of alternative protein will complement the transition to planetary diert	Increase R&D and diversification of products portfolio.
Local loop and	80% of food consumptions will be in cities a circular approach will become key	
Protecting and Restoring Nature	Stop of deforestation and 300m hectares to be restored	Establish a full transparency in supply chain

This analysis shows how the current evolution of the Natural Resources availability, and the demographic pressure will force a whole industry to structure differently. The report also highlights the importance of cross cutting efforts for government, business & farmers, investors, multilateral organizations, and civil society. For business and Farmers, it highlights the need to organize pre-competitively to support reforms and set new standards with true cost accountings. Like many other reports the FOLU system is showing that new businesses are now emerging challenging the traditional economic wisdom.

2.2.4. New business models are emerging

A Natural Resource driven shock impacts the frontier and articulation of traditional business models and is challenging the traditional perception we have of the roles of economic actors and the way they can create value for us.

Below we will be illustrating 5 shifts that are very informative on the areas of redefinition of rent creation:

- starting with the role of economic actors and how public and private partnership could redefine them.
- looking at how the efficiency of the offer/demand price signal can be challenged considering the externalities
- looking at how fully circular model challenge the linear accumulation of resource
- describing how new financing models could help bridging the gap between long management of Natural Resources and short-term investment horizons in the so called "tragedy of the horizon".

Table 2: Disruptive Models

		Common understanding	Disruption
1	Resource Management	Offer/Demand	Public Private Partnerships
2	Price	Offer/Demand	True Value including externatlities
3	Time Horizon	Short term maximization	Long term regeneration of resources
4	Accumulation	Owned	Shared
5	Value Chain	Linear	Circular
6	Financing	Collateral	External value

2.2.4.1. Collaboration vs. Competition: example of the energy market

The impact of fossil energy on climate change is now clearly documented leading to the birth of multiple legal frameworks to promote so called green energy. But despite a clear push for renewable energy the capacity of public money to drive the change through taxation and from private money to finance the transition has had limited scale effect until a new architecture of the roles of public and private parties appeared. Wiser, Ryan H., and Steven J. Pickle (1998) highlighted the importance of new models of cooperation between the public and private sectors in what is commonly names power purchase agreement (PPA). It highlights new roles & responsibilities for each actor to ensure an efficient project financing strategy. The public sector must focus on providing stable renewables policy that can reduce renewable energy costs dramatically by providing revenue certainty that will, in turn, reduce financing risk premiums, the private corporations taking offtake commitments. Thanks to these 2 elements the financial market is fully enabled to finance the transition and taxpayer, or private equity money are no longer required unlocking scale up and replicability.

Thus, private corporations joining forces, collaborating to create scale and attract potential investors redefining the frontier of what is competitive and what is pre-competitive seems to be the most rational way of operating to decarbonize our economy.

2.2.4.2. Water resources management: materializing externalities

The Nature Conservancy (TNC) is a Washington based NGO. In order to foster good water stewardship, it has developed and championed the concept of water funds [26] trying to build coalition to value good nature stewardship in a watershed and materialize positive externalities to finance nature protection.

The lands around our water sources serve as vital infrastructure for cities around the world. These lands collect, store, and filter our water, and when managed well, provide a number of additional benefits to people and nature.

Many of the world's forests and grasslands are degraded or removed, threatening water supplies. Without these protective systems, lakes and rivers are exposed to soil run-off, nutrients

[26] TNC Water Funds Toolbox

and other pollutants carried across the land by rain and snowmelt. When sediment and nutrients wash into our waterways, businesses, communities, and governments are forced to pay higher costs for water treatment. In vulnerable communities that lack access to water treatment, people face increasingly dirty, unhealthy water.

Nature-based solutions used to improve water quality and quantity—such as reforestation and improved farming practices—can be cost-effective investments to address these issues. In fact, many large cities and private companies may be able to pay for nature-based solutions through savings in annual water treatment costs alone.

Working with partners around the world, The Nature Conservancy is developing water funds that enable downstream water users to jointly invest in upstream land conservation and restoration, to secure improved water quality and regulate water supply. Over the past 15 years, the Conservancy has helped established 29 water funds worldwide and currently has another 30 in development. This economic model allows a coalition of actors to valorize the nature-based solution developed by the water fund and materialize a positive externality for all.

2.2.4.3. The tragedy of the horizon in agriculture

Mark Carney the former governor of the bank of England and chairman of the Financial Stability Board (FSB) stated in a famous address to the Lloyd's in 2015[27] *that "Climate change is the tragedy of the horizon. We don't need an army of actuaries to tell us that the catastrophic impacts of climate change will be felt beyond the traditional horizons of most actors – imposing a cost on future generations that the current generation has no direct incentive to fix. The horizon for monetary policy extends out to two to three years. For financial stability it is a bit longer, but typically only to the outer boundaries of the credit cycle – about a decade. In other words, once climate change becomes a defining issue for financial stability, it may already be too late".*

Such situation is also valid for agriculture as one of the key contributors to climate change and water scarcity acceleration. The green revolution has over specialized agriculture models with complex supply chain and an intensification of mechanization and use of pesticides and fertilizers. This model had tremendous impact on soil health and biodiversity to an extend that soil productivity is now decreasing in many places. But it is not too late to solve this issue. Cost

[27] Speech by Mark Carney at Lloyd's of London, Tuesday 29 September 2015 (bankofengland.co.uk)

efficient models promoting regenerative agriculture practices exist but their implementation takes more time than the horizons of traditional investors limiting therefore their implementation. The example of sugar cane developed by the Brazilian Balbo Group exemplifies this tragedy but also the solutions. Traditional industrial methods of sugar crop cultivation rely on expensive pesticides and fertilizers and often lead to natural degradation. The Balbo Group developed regenerative agriculture which emulates natural processes aims to close nutrient cycles returning organic matter to the biosphere, thus enhancing soil and avoiding the need for costly chemicals. The farm has developed its own harvesting equipment with low pressure tires to avoid harmful compaction that simultaneously cuts cane and shreds by-products returning them back to the soil. As a result: a complete elimination of chemical inputs, mechanical irrigation no longer required and a 20% increase in productivity. But these outstanding results could only materialize after 3 to 5 years of transition during which the land productivity has reduced while carbon matters in the soil were restoring. This horizon of time could have been perceived as extremely challenging by financial investors and despite their strategic rationality would never have been financed without the commitment of a privately-owned company.

The practical examples used above tend to challenge the generally accepted economic wisdom on the fact that competition is not necessarily the most rational behavior that externalities if integrated in the economic equation could guarantee economic efficiencies and that the long term time of agriculture could prove short term investment strategies irrational. But what theoretical framework could help us to cast a new light on our vision.

2.2.4.4. Accumulation vs. services: the great success of “Blablacar”

Since the 1950s, the “good life” has been portrayed and popularized by marketers with the emerging of the middle class. Whether as a product, or as the backdrop for goods and services, the dominant version of living well is based on consuming as much as possible. The picture below illustrates perfectly this paradigm.

Figure 3 : The Good Life 1.0

We indeed see a family with 2 kids and all the household equipment of model family form barbeque to bicycle, golf clubs and even and individual boat. Our economic system where GDP growth has become a metrics of success driving aspiration has fully endorsed this social perception of success.

The 2017 "The Good Life 2.0"[28] Havas/World Business Council for Sustainable Development (WBCSD) report highlighted rightfully that this picture remains the dominant perception. Without any alternative and credible proposal of an enviable future this is no surprise that the wave of consumerism in Asia mimic the above picture with probably more electronics ! Very recently several articles highlighted how Chinese consumers flocked into luxury stores as a way to overcompensate for the shopping starved during the quarantine period. Hence he Hermes store in Guangzhou, for instance, hauled in $2.7 million in sales the day it reopened in April. A term was born: revenge buying syndrome (Times of India Nupur Amarnat May 6 2020 The revenge buying Syndrome[29]).

However, this system has a limit as first the type of life depicted by marketers would only be within reach of less than 15% of US citizens.

The promise of marketers seems not to fulfill and the smile on the face of the family above would be a mirage. Thus, an increasing number of consumers are questioning what a good life

[28] The Good Life 2.0 Playbook (US Edition) (wbcsd.org)
[29] The 'revenge buying' syndrome: Here's why people will throng shops post the lockdown - Times of India (indiatimes.com)

would mean. The report questions them on what truly make them happy. Are they working hard to achieve more or get more stuff? Have we traded meaningful time of our family to spent with total strangers? The Havas 2016[30] Prosumer study carried for Millennials top rank 3 things when asked what makes them happy Being with my family for 64%, experiencing new things for 54.9%, spending time with Friends 54.9%. Having enough money only ranked number 5 with a score of 45.1%.

One of the illustrations that the report is taking is the fantastic success that car sharing services have experiences recently among millennials.

What could be more emblematic than a car to represent the old paradigm? Commercials are still very much emphasizing the thrilled of owning a big expensive car and driving it solo. However, this trend has been challenged by business models such as blablacar and the new generations.

Figure 4 : Change in consumer behaviors

Scientific papers show this ubiquitous relationship that new generations have with car ownership like Klein and Smart, 2017. Millennials and car ownership: Less money, fewer cars that the trend results from a new relationship with cars but also the fact that millennials earn less money in relative terms than the previous generation.

Today accumulation of goods is one of the main markers of capitalism and society and

[30] MILLENNIALS: THE CHALLENGER GENERATION - Dare! (havas.com)

increasing number of business model do challenge that thinking to move towards service and are currently disrupting the status quo. Let us take the example of the car industry. The Ford T became the icon of the consumption society and studied as an economic model in itself. Look at where we are now with the arrival of car sharing system such. Who could have imagined such a situation only a few years ago? This move towards service is touching many fields while titrisation allowed industrial companies to rent their own factories rather than owing them. Such a trend can also touch art with the for-instance Rise Art[31] which is renting work of arts for a fee and where one can change its living room decoration. Owning would no longer be a sign of success and emancipation.

2.2.4.5. Circularity: the new models in the fashion industry?

Textiles and clothing are part of everyday life, clothes are worn by almost everyone. Globally, the USD 1.3 trillion clothing industry employs more than 300 million people along the value chain: the production of cotton alone accounts for almost 7% of all employment in some low-income countries.

In the last 15 years, clothing production has approximately doubled driven by a growing middle-class population across the globe and increased per capita sales in mature economies. The latter is mainly due to the 'fast fashion' phenomenon, with quicker turnaround of new styles, increased number of collections offered per year, and – often – lower prices.

The current system for producing, distributing, and using clothing operates in an almost completely linear way. Large amounts of nonrenewable resources are extracted to produce clothes that are often used for only a short period[32] after which the materials are largely lost to landfill or incineration. It is estimated that more than half of fast fashion produced is disposed of in under a year[33]. This linear system creates important negative societal and environmental impacts at local, regional, and global scales. The economic value of these negative externalities is difficult to quantify, although the recent "Pulse of the fashion industry report" estimated that

[31] https://www.riseart.com/about/rentals
32 Global Fashion Agenda and Boston Consulting Group, Pulse of the fashion industry (2017), p.19

33 McKinsey & Company, Style that's sustainable: A new fastfashion formula (2016)

the overall benefit to the world economy could be about Euro 160 billion in 2030 if the fashion industry were to address the environmental and societal fallout of the current status quo.

Many untapped opportunities have been identified in this system. First because very frequently garment could be re utilized and/or repaired just like in the past but also because fibers have the possibility to be recycled and reused. On this basis several business models have emerged. Vigga[34] a Danish baby and maternity clothing company has developed a subscription-based model for clothing. For less than 50 Euro a month the Vigga's customers can ensure they always have the right size of cloth for children. Once the baby grows out of the clothes, a new package arrives with clothing in a larger size The customer returns the smaller sized clothing to the company, where it will be washed using an environmentally friendly process and put through a rigorous quality control before being shipped out to another customer. The clothes are recycled through a circular system, where every garment is used several times, ensuring a low environmental impact. This concept is now extremely successful in Denmark and is now replicated in Germany and Sweden. It challenges many paradigms that made the success of the fast fashion. It allows customers to access robust eco-friendly and high quality clothes at an affordable price point and ensure resources are reused while drastically limiting waste. Following a similar circular logic Patagonia has developed a platform named worn wear (https://wornwear.patagonia.com/) to incite its communities to repair an reuse clothes. Patagonia justifies this on its website highlighting "*that Buying a used garment extends its life on average by 2.2 years, which reduces its carbon, waste and water footprint by 73%. (ThredUp, 2018)"*[35]*;* The Californian firm went as far as launching in 2011 a full and remarked campaign during the highly commercial black Friday buying a full page in the New York times

34 https://www.ellenmacarthurfoundation.org/assets/downloads/4_Products_Accessing_Mar19.pdf

[35] Source: Euromonitor International Apparel & Footwear 2016 Edition (volume sales trends 2005–2015); World Bank, World development indicators – GD (2017

titling “Don’t buy this Jacket”. This campaign seemed like a counterintuitive strategy for a company that relies on profits to exist, but the campaign struck a chord with customers – profits jumped 30% in 2012 and Yvon Chouinard its founder argued that the jump was due to a capture of new customers rather than increased purchases from existing customers.[36]

Figure 5 : Patagonia - Don't Buy This Jacket

2.2.4.6. Financing: The Intrinsic Exchange Value of Natural Asset

Externalities remain one of the key market failures and several financial institutions have tried to address. Specific markets like the voluntary carbon market are trying to monetize the positive impact of carbon positive actions and have reached real momentum while several regulations or scheme have tried to regulate carbon emission through a carbon tax and trading schemes like the ETS system in the European Union. Such systems are mainly creating taxation mechanism

[36] https://www.bloomberg.com/news/articles/2013-08-28/patagonias-buy-less-plea-spurs-more-buying

for negative externalities and pollution rights rather than a true valorization of the externalities themselves.

Recently disruptive ideas have been emerged following that logic. For instance, the Intrinsic Value Exchange (IVE) is trying to address this situation with a radical proposal: what if nature positive externalities became tradable assets.

The principle is extremely attractive and is based on very simple principle. Investing in nature is appreciating and can therefore generate not only revenues through potential ecosystem services but also is increase in asset value as protecting nature does increase its performance and resilience.

Intrinsic Value Exchange (IVE)[37] does aims at developing tradeable investment class based on natural assets (e.g., forests, coral reefs, groundwater, biodiversity, and soil), in the form of a Natural Asset Company, so that the full value of nature can be included in our economic system (as illustrated in the diagram below). This project and idea are now under assessment by the New York Stock Exchange as a potential new class of assets as well as government such as Surinam, Costa Rica[38].

[37] IEG (intrinsicexchange.com)

[38] NYSE and Intrinsic Exchange Group Partner to Launch a New Asset Class to Power a Sustainable Future | Business Wire

3. LITERATURE REVIEW

3.1. OVERVIEW

During the presentation of our big issue we highlighted how in a resource constrained planet (Rockström, 2009) where the impact of human being is now changing the our ecosystem balance calling for new geological era called Anthropocene (PJ Curtzen 2006), the management of Natural Resources has now become a strategic consideration for firms, states and their leaders as well as management literature (Haigh & Griffith 2009; Porter, 2011, George et All, 2015, 2016). The grey literature is full of examples of the interrogations currently taking place and challenging very central assumptions of management theory as rent seeking, competitive advantage and appropriation.

Through our own management practice, we also highlighted using several examples how the increasing scarcity of Natural Resources and environmental challenge lead to a shift in corporate practices and the emergence of new models of collaboration shading a new light on how the competitive advantage of firms can be formed.

In this debate, we will study how the scientific literature is looking at the relationship between Natural Resources availability and the capacity to build a sustainable competitive advantage.

After defining Natural Resources looking at the grey and scientific literature, our literature review will first show how the impact of Natural ecosystems and their resources availability over time has been largely ignored by the management research field.

To apprehend this impact, we start by looking at if/and how the rent theory is taking into consideration the scarcity of Natural Resources. We then study if/how the organization theory tackles this issue, starting with industrial organization and the seminal work of Michael Porter to then expand our review to the Resource Based View (RBV) of the firm (Barney, 1986, 1991; Wernerfeld, 1984) that rather than taking an exogeneous view on how to build sustainable competitive advantage is offering to look inside the black box.

We will then demonstrate why and how the resource-based view (RBV) of the firm represents a relevant framework for the understanding of such evolution as it focuses on how resources

are used/assembled and not only on "the" what. This demonstration will be even more relevant in a context where we know that the usage of Natural Resources can lead to their exhaustion.

We will also show that a key explicit "in house" assumptions (Alvesson, 2011) exists within the RBV framework: the fact that it is built on a rent appropriation mechanism. We will show how such an "in house" assumption is structuring the 4 RBV VRIN conditions of Valuability, Rarity, Inimitability, Non-substitutability and how without the rent appropriation the framework does not work.

At that stage of the argumentation, we will analyze the potential controversies triggered by the RBV and what we can learn from them. We will especially show that although the RBV seems well suited to address the question of the role and place of Natural Resources in the building of a sustainable competitive it fails to apprehend the very impact of Natural Resources depletion. Only one of its spin off the Natural Resource Based View (NRBV) of the Firm (Hart, 1995) very imperfectly tackle that issue.

More structurally, we will demonstrate how the current "in house" Ricardian assumptions fails at offering an applicable perception of rarity in the context of depleting Natural Resources and the management of time horizon so important in the regeneration of Natural Resources. Finally, we will also show that the true value of Natural Resources is currently not priced efficiently and that the very well know market failure linked to externalities undermine the very essence of an efficient rent appropriation mechanism.

Such limitations justify the usage of an extensive view of the RBV inspired by the work of the resourcing theory (Feldman, 2009). Indeed, Feldman highlights *that "to become resources, things or qualities have to be put into use"* p140. This assertion is perfectly in line with the definition of Natural Resources proposed by the United Nations and that we used in our Big Issue. This is also the logic followed by Karim & Mitchell (2000*) "A resource is something that a firm possesses, which can include physical and financial assets as well as employees' skills and organizational (social) processes. A capability, in contrast, is something a firm is able to perform, which stems from resources and routines the firm can draw".*

Therefore, resource becomes resource when it is used but its usage can impact its availability if it limits its capacity to regenerate. The intrinsic link between a resource and its usage is therefore key in the constitution of a sustainable competitive advantage.

Finally, after justifying our usage of an extensive definition of the Resource Based View including Natural Resources, our literature review will show that none of these theoretical frameworks provide an articulated way to consider the observed new strategies of collaboration linked to the environmental constraints and increase scarcity of Natural Resources. It will also show that in both industrial organization theories and the RBV the creation of competitive advantage results from the capacity for an organization to appropriate the rent and that although not directly specified as a constitutive factor of competitive advantage in the RBV framework, appropriation is nonetheless essential to its dynamic. We will although see that although the long-term rent appropriation process has been challenged by researchers (Hamel et al, 1989), the appropriation mechanism itself has not been challenged by the literature.

However, in a resource scarce world one could question the impact of the appropriation mechanism. Would developing strategies to manage the potential scarcity of the resource not become a determining characteristic for many firms to ensure their license to operate and sustainable competitive advantage? How to describe such characteristic? What are the consequences on the Resource Based View framework to remove the hypotheses of appropriation? We will therefore in this work propose and test an empirical definition of a new theoretical construct and use the Resource Based View framework to determine how in a Natural Resource constrained world the strategies defined by this new construct could become the most rational way of creating sustainable competitive advantage.

3.2. DEFINING NATURAL RESOURCES

To start our literature review, let us first study the central concept of our research: the definition of Natural Resources. A commonly used definition of Natural Resources is the one developed by the United Nation in the Glossary of Environment Statistics 1997 and frequently cited . This definition states that:

"Natural resources are natural assets (raw materials) occurring in nature that can be used for economic production or consumption".

The United Nation then gives us further precision stating that such assets:

"provide use benefits through the provision of raw materials and energy used in economic activity (or that may provide such benefits one day) and that are subject primarily to quantitative depletion through human use. They are subdivided into four categories: mineral and energy resources, soil resources, water resources and biological resources

It is worth noticing that the definition is extremely close to the one developed by Howe as early as 1979 in his work titled "Natural Resource Economics". Howe indeed talked of *"naturally occurring resources and systems that are useful to humans or could be under plausible technological, economic, and social circumstances"*. In the same vein Rees 1985 defines Natural Resources as meeting 2 conditions (1) an availability of technique to enable extraction (2) resulting goods and services that have a demand.

A resource is therefore primarily defined the way it can be used. A distinction is very commonly made by scholars (Hosteling 1931, Solow 1997, Erreygers 2009) between renewable and non-renewable resources. This distinction present in the UN Glossary cited above as it defines renewable Natural Resources as Natural Resources that, *"after exploitation, can return to their previous stock levels by natural processes of growth or replenishment".* Conditionally renewable resources are those whose "*exploitation eventually reaches a level beyond which regeneration will become impossible".* Such is for instance the case with the clear cutting of tropical forests. While non-renewable resources are defined as exhaustible Natural Resources such as mineral resources that cannot be regenerated after exploitation.

Therefore, several types of Natural Resources exist, and a taxonomy is frequently used and encompasses the following in Howe 1979 work:

- Agricultural land
- Forest land and its products and services
- Natural land areas preserved for esthetic, recreational, or scientific purposes
- Fresh and saltwater fisheries
- Mineral resources, including mineral fuels and nonfuel
- Nonmineral energy sources of solar, tidal, wind, and geothermal systems
- Water resources *(nb – the resource that will illustrate our research work)*
- Waste-assimilative capacities of all parts of the environment

At this stage, those definitions lead us to several structuring remarks: first a Natural Resource becomes one when its extraction can generate a source of benefit. There is therefore a link between the notion of resource and the benefit (advantage) that can be generated from its exploitation. This very statement can very easily lead to the question of whether the benefit should be equitably shared or if when appropriated, resources could become the trigger of competitive advantage.

Second it is worth like J. Paiz (1998) to highlight that resource can be thought both in terms of stock and in terms of flow of natural commodities being produced from this stock. The stock and its evolution will determine the exhaustible or non-exhaustible nature of the resource and the flow the type of benefit that can be derived from the resource itself.

However, the distinction between renewable and non-renewable resources is conditioned by the capacity of the natural cycle to regenerate the resource. As J. Rocktstöm 1999, is demonstrating in the 9 planetary boundaries, several essential boundaries guaranteeing the sustainability of our living systems have already been exceeded limiting therefore the potential capacity of generating benefits in the future. As seen in our big issue presentation, the functioning of the biosphere and the Earth is being radically disrupted due to human activities, evident in climate change, toxic pollution, and mass species extinction (Wright 2018). Financialization and exponential growth in production, consumption and population now threaten our planet's life-support systems. These profound changes have led Earth System scientists to argue we have now entered a new geological epoch – the Anthropocene. This concept forged by Curtzen in

2006 in Earth System Science in the Anthropocene p 13 states that *"human activities have also grown to become significant geological forces, for instance through land use changes, deforestation and fossil fuel burning, it is justified to assign the term "Anthropocene" to the current geological epoch. This epoch may be defined to have started about two centuries ago, coinciding with James Watt's design of the steam engine in 1784"*.

In the Anthropocene era our economic model is not only exhausting exhaustible resources, but it is also turning renewable resourced into exhaustible ones outpacing their capacity to regenerate.

Taking the nomenclature described by Howe 1979, our thesis will be focusing on a key exhaustible resource fresh water where the risk of exhaustion has been largely documented by J.Rockström 1999 in his work.

Now that the definition of Natural Resources we will use in our work is clarified as well as the role played by the central concept of usage on its sustainable availability, let us study how this concept has been considered in strategic management literature.

3.3. How Natural Resource have been considered in the Management Literature?

3.3.1. Natural Resources are largely absent from the classical economic competitive model

Natural Resources have been largely absent from the classical and neo classical economic growth models as mentioned by G Erreygers 2009. George et al 2015 admit that :

> *"Management scholars have paid only scant attention to the physical, and Natural Resources and their idiosyncratic characteristics"* p 1598

After the seminal article of Hoteling in 1931 very little was written on the topic. When the neo classical growth models were developed in the 1950's very timid attempt was made to incorporate that dimension as Solow himself recognized in 1974

"I read some of the literature, including Hotelling's classic article—the theoretical literature on exhaustible resources is, fortunately, not very large—and began doing some work of my own on the problem of optimal social management of a stock of a nonrenewable but essential resource." (Solow 1974a, 1–2)

We will have to wait 1972 and the work of the Club of Rome when Meadows, Donella H., Dennis L., Randers, Jorgen, et al. published "The limits to growth". This book modelized the impact of exhaustible resources in growth trajectory. During the same period Solow's contribution has been instrumental in incorporating Natural Resources into the neoclassical thinking.

Solow's reasoning first considers:

1. the Hoteling rules stating that the price of an exhaustible resource would be led to a 0 demand at the same time as the resource is exhausted as price will sour.
2. he also incorporated the seminal work of John Rawls on Social Justice between generations and
3. he finally studied in detail the conclusion of the Limits the Growth model developed by the Club of Rome offering therefore a pathbreaking perspective that sustainable consumption should be interpreted as interest-on-capital therefore maintaining the stock of resource existing for the next generation.

Simply stated, the invisible hand does not allow to balance exhaustible resource. The 70s provided a framework of thinking for Natural Resources and when embedded into a neoclassical perspective it became an asset from which a benefit could be derived. As an asset it is therefore subject to potential appropriation to create a rent and subsequently a competitive advantage.

At later stage it is to be noted that Erreygers (2009) attempt to map exhaustible Natural Resources has been integrated into the neoclassical growth model and is therefore highlighting two interesting dimensions the notion of generational justice and the notion of stock of resources including therefore the dimension of time that we will be reviewed later in our work.

Going back to our chronology, it is also in the 70's that a new theoretical framework was developing and will offer and interesting point of view on our problematic : The Resource Based View of the firm.

3.3.2. The Resource-Based View, a relevant framework to link Natural Resources and competitive advantage.

What could constitute the competitive advantage of the firm has been long debated (Penrose 1959: Peterarf, 1993; Porter, 1985, Barney, Dyer, J. H., & Singh, H., 1998). Despite this strong attention of management scholars, a precise definition of competitive advantage is still missing. As noted by MA (2000) *"competitive advantage is perhaps the most widely used term in strategic management, yet it remains poorly defined and operationalized".*

While reviewing the link between resources and competitive advantage we identified several viewpoints:

For the Industrial Organization (IO) thinker and Porter (1980, 1985) competitive advantage is created by favorable terms of trade in product markets. In that context sales revenues will exceed costs. Porter states that "competitive advantage is at the heart of a firm's performance in competitive markets". Competitive advantage means therefore having low costs, differentiation advantage, or a successful focus strategy. Porter hence states that "competitive advantage grows fundamentally out of the value a firm is able to create for its buyers that exceeds the firm's cost of creating it."

Another school of thought holds that advantage is revealed by "super-normal" returns. Peteraf (1993) defines competitive advantage as "sustained above normal returns." She defines imperfectly mobile resources as those that are specialized to the firm and notes that such resources "can be a source of competitive advantage" because "any Ricardian or monopoly rents generated by the asset will not be offset entirely by accounting for the asset's opportunity cost" (i.e., its value to others).

Barney (2002: p9) explains that a firm experiences competitive advantages when its actions in an industry or market create economic value and when few competing firms are capable to engage in. Barney link competitive advantage to performance:

> *"a firm obtains above-normal performance when it generates greater-than-expected value from the resources it employs. In this final case, the owners of resources think they are worth $10, and the firm creates $12 in value using them. This positive difference between expected value and actual value is known as an economic profit or an economic rent."*

Reviewing only those 3 contributions it is interesting to note that the notion of competitive advantage is confronted with several obstacles such as a clear definition of the notion of value and how it is assessed (gain to trade, value vs. others, increase in value for the owner), the notion of rent and most importantly for our work it is unclear whether competitive advantage is about winning against other or having enough resources to stay in the game which introduces the notion of sustainable competitive advantage. One can however define that a competitive advantage is forged via a capacity to create more value than others in a sustainable manner. What remains is therefore to determine what is at the inception of this competitive advantage building mechanism.

As seen through Porter (1980; 1985) the Industrial Organization theory clearly states that a competitive advantage will come from either cost management or differentiation of products to create rent and that is is mainly dependent on the management of external factors. Without challenging that aspect, the Resource Vased View (RBV) is considering that other ways exist to create competitive advantage in the way companies are assembling resources or capabilities looking "inside the black box".

Our literature review work allowed us to study the seminal work of Edith T. Penrose (1959), whose theory of the growth of the firm was incredibly revealing and forward looking. For Penrose a resource may be classified under several headings, for examples land and equipment, labor (including worker's knowledge and capabilities), capital (organizational, tangible and intangible) but the resources can be sub-divided as far as useful for the perspective to be studied. Penrose then analyzed how the productive service available from its resources can be a fundamental driver of firm "heterogeneity". Her competitive advantage perception is derived from the way resources are used or assembled rather than the resource itself. In complex organization one can indeed experience that external factors are not the only factors to influence the creation of a competitive advantage. As early as 1959 Penrose pointed out the importance

of resources on the ability of an organization to develop a competitive advantage. She wrote for instance “the size of the firm is best gauged by some measure of the productive resources it employs”. The work of Kor & Mahoney (2002) helps us to identify the disruptive thinking of Penrose listing key ideas of her demonstration.

- Firms’ growth can be studied as a dynamic process of the management interacting with resources. She argues that the experience of the management will greatly influence its ability to use the resource fully.
- Services of resources are drivers of firm heterogeneity. She argues that “strictly speaking it is never resources themselves that are the “inputs” in the production process, but only the service the resource can render”. A point that will be quite instrumental in our findings later.
- Excess capacity of productive services of resources are drivers for growth.
- Unused productive services of resources can be a source of innovation.

Despite this visionary work, with the great influence of the industrial organization view it is only in the 1980 that researcher looked more systematically inside the firm, the way capabilities were developed and assembled to give birth of what has been named the Resource Based View of the firm (Wernerfeldt, 1984; Barney, 1991).

The gradual emergence of the Resource Based View began to redirect attention inside the organizations (Hoskisson, Hitt, Wan, & Yiu, et al 1999). In 2011 Barney et Al reflected on how the RBV was progressively developed highlighting what they estimated as the major contribution in its development. Lipman & Rumelt (1982) explained the concept of inimitably and causal ambiguity essentials to the RBV that we will review below. Barney in 1986 highlighted the importance of “organizational culture”. During the same decade, Wernerfeldt (1984) emphasized the importance of focusing on the firm’s resource rather than on its products. He was the first one in his article to use the terms of Resource Based View.

Against this backdrop, it is “only” in 1991 that J. Barney presented a detailed definition of resources and a list of 4 criteria that would determine the conditions on how economic value is created and sustained, providing a new theoretical framework for explaining and predicting sustainable competitive advantage. According to the Resource Based View (Rumelt, 1984; Wernerfeldt, 1984; Barney, 1991; Amit and Schoemaker, 1993; Peteraf, 1993) economic rent is a consequence of firms holding resources that are Valuable, Rare, Inimitable, Non-substitutable.

Let us look at what the VRIN conditions tell us:

1. A resource is defined as *valuable* when it enables a firm to conceive or implement strategies that improve its efficiencies or effectiveness. As Barney is highlighting using the famous SWOT framework this is the case when firms exploit opportunities and reduce threats.
2. A resource is considered as *rare* when it is not easily available for all firms. It can therefore constitute the backbone of a competitive advantage. The ability to bundle resources in a way that can create competitive advantage can itself creates the rarity.
3. A resource is *imperfectly imitable* when a resource cannot be easily imitated. It is easy to understand that valuable and rare resources can determine the foundation of a competitive advantage. However, this competitive advantage may not be sustainable if it could be easily imitated and/or if the resources could be easily acquired (Lippman and Rumelt, 1982). According to Barney this imperfection could be triggered by 3 reasons :
    - "Unique historical conditions" a firm being also an historical and sociological heritage. For instance, a firm that would have inherited from outstanding and unique natural footprint may benefit form a sustainable competitive advantage.
    - "Causal ambiguity" when the link between the firm's resource and its sustained competitive advantage are not well understood it is de facto very difficult to imitate.
    - "Social complexity" when the relations between managers of a firm, its stakeholders and anchoring in a complex sociological environment are at the center of its competitive advantage.
4. A resource is Non-Substitutable when it cannot be substituted either through the form of a same resource organized differently but having the same effect or different resources that if assembled could deliver the same effect.

Conner (1991) juxtaposed the Resource Based View with the industrial relation economics to demonstrate that the Resource Based View was proposing a "new theory of the firm". The word theory was then used and in 1996 when Miller & Shamsie, won the prestigious Academy of Management Journal's annual best paper award for their test of the resource -performance link while measuring resources directly.

The RBV emphasizes the role of resources and capabilities in forming the base of competitive advantage. A resource is something that a firm possesses, which can include physical and financial assets as well as employees' skills and organizational (social) processes and/or control. A capability, in contrast, is something a firm is able to perform, which stems from resources and routines upon which the firm can draw (Karim & Mitchell, 2000; Winter, 2000). The resource-based view takes therefore and interesting view when it assumes that competitive advantage can be sustained only if the capabilities creating the advantage are supported by resources that are not easily duplicated by competitors. As Hart 1995 stated "A firm's capabilities result from bundles of resources being brought to bear on particular value-added tasks {e.g., design for manufacturing, just-in-time production)".

With this very central role of the resource in the firm's and the importance of its assembly on the formation of a competitive advantage and in the context of Natural Resource depletion one can see how the RBV is interestingly positioned to provide a framework of analysis in the Anthropocene era.

This is why several scientific papers have applied empirically the Resource Based View to Natural Resources to test its relevance. The empirical test applied to several sectors dependent from Natural Resources ranging from horticulture with Galdeno-Gomez (2007) to Forest industry in Scandinavia with Lahtinan, Haara et al (2008) and sometime has even been used to highlight how ski resorts should develop strategy of adaptation to climate change with Tashman and Riverra (2016)!

Galedeno-Gomez (2007) therefore analyses the relationship between environmental and economic performance within firms of the fresh fruit and vegetables sector in Spain. He demonstrates that the adoption of environmentally friendly practices in the agricultural sector can create "environmental differentiation" and therefore drive profitability and market share. The knowledge and adoption of such practices and how they are implemented is a real capability which corresponds very well to the way resources are "assembled" to paraphrase Penrose. And it is true that adoption of new practices and the technical assistance needed to achieve that are instrumental in the transformation of the agriculture sector in particular.

Lahtinan, Haara et al (2008) using the case of the large and medium-sized sawmills within the Finish Forest industry. They therefore developed a methodology of assessment using a

multicriteria decision analysis (MDCA) of the RBV framework comparing the relevance of different resources for the success of business operations. Based on the pairwise comparisons "raw materials" systematically came as one of the top 3 critical resources with and underlines importance of the right types of resources (size and dimension) and suitable quality.

Such papers show the relevance and applicability of the Resource Based View of the firm to think and modelized the impact of Natural Resources in the building of competitive advantage. We have also seen how the RBV is providing a framework that interestingly complement the IO theory offering a new Theory of the firm that like Connor (1991) became a "creator of positive" rather than an "avoider of negative" focusing on how the resources are assembled in a creative and productive manner.

At this stage we have seen that in the very definition of the Natural Resource the notion of benefit derived from the usage of the resource extracted is inherent. Reviewing the still ill-defined notion of competitive advantage we showed how the Resource Based View of the firm could provide a useful framework to analyze how a competitive advantage could be forged from Natural Resources usage. However, we will see that the structuring Ricardian assumption on which the RBV is forged is preventing it to fully encompass the challenge of the Natural Resources Erosion and therefore limits greatly its capacity to build a sustainable competitive advantage.

3.4. THE RESOURCE-BASED VIEW IS BUILT ON AN "IN HOUSE" ASSUMPTION : THE RENT APPROPRIATION.

3.4.1. The Resource Based View (RBV) and The Ricardian Rent.

One of the core concepts in the building of competitive advantage is the one of rent and the capacity of economic actors to appropriate it as a source of competitive advantage. Bowman (1974) even suggested that strategy could be viewed as a "continuing search for rent".

The rent theory was developed by David Ricardo (1809, 1814) and based its reasoning on that the rent of a land is defined by the excess of resource that the use of the site can derive if used in its most productive way vs. the marginal cost of use of this same land. Ricardo formulated this law based on the principles put forth by Adam Smith (1814).

"The rent of land, therefore, considered as the price paid for the use of the land, is naturally a monopoly price. It is not at all proportioned to what the landlord may have laid out upon the improvement of the land, or to what he can afford to take; but to what the farmer can afford to give." An Inquiry into the Nature and Cause of the Wealth of Nations, p124

As seen previously the generation of above normal rates of return (i.e. rents) is the focus of analysis for competitive advantage (Porter, 1985). Several types of rent may be distinguished, first rent may be achieved by owning a valuable resource that is scarce (Ricardo 1817). Resources yielding Ricardian rents include ownership of valuable land, locational advantages, patents and copyrights. Second monopoly rents may be achieved by government protection or by collusive arrangements when barriers to potential competitors are high (Bain, 1968). Third entrepreneurial rent may be achieved by risk taking and entrepreneurial insight (Rumelt, 1987). Our thesis will primarily focus on the first type of rent, i.e., the one linked to resource scarcity.

We detailed the 4 main conditions proposed by the RBV to build a competitive advantage, resource shall be rare, valuable, non-substitutable and non-imitable. Looking at how those principles are crafted one can argue that those 4 conditions can ensure an asymmetric appropriation of the resource to forge a competitive advantage, a rent. The RBV placing rarity at the center of the competitive advantage is in that aspect fully Ricardian. However, as

Grant (1991) highlights "the returns to a firm from its resources and capabilities depend not only on sustaining its competitive position over time, but also on the firm's ability to appropriate these returns." This is the basis of a key "in-house" assumption (Alvesson & Sandberg, 2001).

3.4.2. Rent Appropriation: an "in house" assumption of the RBV

We will see below how the appropriation mechanism is essential in the 4 assumptions of the RBV as without it the capacity to build a sustainable competitive advantage would be significantly compromised.

First the RBV tells us that a resource is *valuable* when it enables a firm to conceive or implement strategies that improve its efficiency or effectiveness. A new piece of equipment that could help to execute more effectively a specific task is therefore valuable but if the company is not able to secure its access when required the value of this equipment and the capability it represents would be significantly lowered so would be its capacity to secure a sustainable competitive advantage. The same logic is very frequently scrutinized by large corporations between "the make or buy" choice strategies.

A resource is considered as *rare* when it is not easily available for all firms. To build a competitive advantage it therefore becomes key to appropriate this resource to enjoy the expected market asymmetry. The best trained IT specialist can become a rare resource leading companies in the Silicon Valley to deploy a lot of creativity in their retention strategy a trend frequently described as a war for talent. If the companies would have no possibility to retain such resources and despite their rarity this factor would become too hazardous to build a sustainable competitive advantage.

A resource is *imperfectly imitable* when it cannot be easily imitated. This assumption of the RBV does not work without the appropriation. The famous "savoir faire" if not appropriated could be lost. This is the very reason why a company like Chanel of Hermes in order not to lose certain handcraft knowledge decided to purchase small artisanal companies without integrating them but with the objective to maintain such competencies alive. Chanel[39] is currently investing

[39] https://www.leparisien.fr/seine-saint-denis-93/paris-aubervilliers-le-site-chanel-prend-forme-11-10-2019-8171100.php

in a 26,000 sqm “atelier” in Aubervilliers to welcome and protect those imperfectly imitable savoir faire. A way to appropriate and secure such “savoir faire”.
A resource is *Non-Substitutable* when it cannot be substituted either through the form of a same resource organized differently but having the same effect or different resources that if assembled could deliver the same effect. We can find again here find a very clear link between the appropriation and the non-Substitutability conditions of the RBV. Without the appropriation mechanism this resource is available and substitutable. The very specific taste of Nutella is derived from a variety of hazelnuts produced in turkey that is non substitutable. Ferrero decided to take over the largest Turkish hazelnuts manufacturers to ensure its competitive advantage is protected.
As seen above it is clear that without appropriation the RBV principles seems quite inoperant in a rent building perspective. Thus, if appropriation is an “underlying assumption” triggering a competitive advantage, a firm must appropriate for itself the resource or at least be able to extract a superior rent than its competitors. The lack of analysis of this “underlying” assumption has been highlighted by Barney himself (2001).

“As has already been suggested, resource-based theory can be used to evaluate the competitive potential of the different strategic alternatives firms face. However, this logic, as developed in the 1991 article and as it has evolved since, does not address how the economic rents a strategy might create are appropriated by a firm's stakeholders. It might be the case, for example, that implementing a particular strategy generates real economic rents for a firm but that those rents are fully appropriated by a firm's employees, its customers, or even its suppliers.” Barney, 2001 p.53.

This citation is therefore clearly highlighting that the mechanism of appropriation and their implication for the creation of competitive advantage have not been clearly addressed. A good example of that is how the mobile phone manufacturers (Alcatel, Nokia…) have slowly seen the value of their competitive advantage appropriated by downstream players with the development of digitalization.

3.5. THE RENT THEORY AND RESOURCE APPROPRIATION DO NOT FACTOR THE PLANET RESOURCE SCARCITY

The rent theory is instrumental in the building of the industrial organization theory and focuses on studying how external factor management create the conditions of rent creation. This perspective introduces what is called production factors heterogeneity. Heterogeneity implies that certain factors are superior to others and this superiority can trigger the competitive advantage of the firm that would appropriate such factor for itself. Therefore, appropriating and capturing such factors becomes a key objective of the firm's agenda (Peteraf, 1993).

As shown previously if the mechanism of rent creation and appropriation is richly described by the management literature, after several desk research we have not identified meaningful work studying the appropriation of Natural Resources within the framework of the rent theory and the risk it may cause to the long-term availability of the Natural Resources.

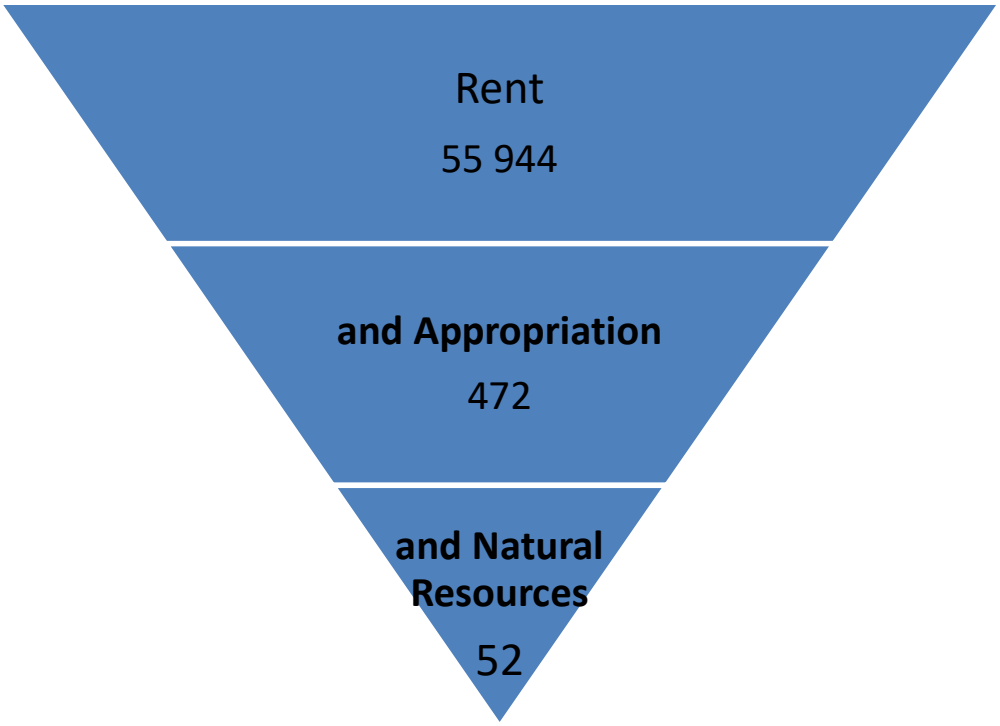
To study how management literature studied this relationship we launched a Boolean search using Ebsco-Host in September 2020 with the terms Rent, Appropriation and Natural Resources. This Boolean study filtered only peer reviewed articled. We can see in Tab 1 that the terms of Rent with 55 944 articles and Natural Resources with 72 219 articles are widely utilized by scholars while the term of appropriation is reported in 17 065 articles. The table also shows that crossing 2 terms drastically reduces the number of incidences from 2551 combining Rent and Natural Resources to 472 combining Appropriation and Rent down to 326 Combining Natural Resources and Appropriation.

Table 3 : Results of the Boolean study Rent/Appropriation/Natural Resources

	Rent	Appropriation	Natural Resources
Rent	55 944	472	2551
Appropriation	472	17065	326
Natural Resources	2551	326	72219

Crossing the 3 terms is giving an even more self-explanatory results as the number of occurrences falls to 52.

Figure 6 : Results of Ebsco-Host Boolean Research / September 27th, 2020



We have reviewed the 52 articles identified as result of the Boolean search performed. Looking at the key words and the executive summary of those articles. This review allowed us to identify 4 main categories.

The first one focused on the extraction industries, the second on land appropriation, the third one on the political aspect and inclusiveness, and the fourth category had no evident common aspect. In this review 2 articles retained our attention specifically as they seemed to offer a close enough link to our problematic.

Bust let's first look at the various categories identified.
The first category identified includes 19 articles and treats of the relationship between Natural Resource and rent in the extraction (mining, oil and gas) industries with many articles highlighting how from an evident situation of monopoly or quasi monopoly one can end with a highly suboptimal paradox of "rent curse" as such quasi-monopoly led to defocus on productivity and efficiency and sometime issues like bribery.

The second main category we identified includes 13 articles and treats of the topic of land appropriation and/or land grabbing and the consequences of this situation and for some of them the potential solutions to overcome a situation that is endangering the livelihoods of millions of small farmers across the world.

The third category treats of the geopolitical aspects linked to rent appropriation and Natural Resources both in terms of political gain but also inclusiveness and totals 9 different articles.

Finally, a fourth category corresponds to 11 articles that covers unrelated topics.

The 2 articles that retained our attention as potentially covering the connections around Natural Resources, Rent and Appropriation.
The first one is from Casarin, Ariel et Al, 2020 *The Forgotten Competitive arena: Strategy in Natural Resources based industries.* It studies the specificity of Nature Resource industries via the standardized nature of their products, their emphasis on process-based innovations, the presence of dual physical and financial derivative markets, and the importance of nonmarket forces (government and stakeholders). Such specificities are setting apart those industries vs. other industries and therefore recommend looking at specific rent building mechanisms. However, the article does not cover the link between the exhaustion of Natural Resources and the Rent Appropriation. In the conclusion the authors write:

"because valuable Natural Resources are generally not only rare but also subject to depletion, it would be worthwhile to study the comparative effects of government-induced versus voluntary firm-level strategies to regulate excessive exploitation of Natural Resources, as well as transition mechanisms to more renewable sources" p.34

They are not challenging the in-built assumption and the rent mechanism as a key factor of competitive advantage building. They finally conclude that:

"The lack of research on Natural Resource industries may lead to the use of inappropriate or, at best, incomplete analytical frameworks, limiting the utility of strategic management classes for students who later pursue careers in Natural Resource industries" p 37.

We could not agree more!

The second article is Jakob, Michael et Al, 2014 *Green growth, degrowth, and the commons*. In this article the authors do study the potential link between rent appropriation and competitive advantage but in the logic of managing the stock of common goods and state that the logic of growth or degrowth is inadequate to guide welfare policies. Although they are touching the relation between Rent, Appropriation and Natural Resource, they do not really challenge the mechanism of appropriation as a source of rent and potential exhaustion of resource.

On the whole, through this Boolean study filtering 52 peer reviewed articles, we clearly identified that none of the article covers the link between Rent and Appropriation and their consequences in the context of exhaustible Natural Resources management.

This corroborates our initial intuition that appropriation is an underlying assumption of the rent theory never really studied by the research literature. Using the typology suggested by Alvesson (2011), we could even identify appropriation as an "in house" assumption meaning that this assumption exist within a specific school of thoughts most frequently unspoken and/or challenged.

If Rent, Appropriation and Natural Resources have not been jointly studied let us now see how our theoretical framework the Resource Based View has considered this link. Aware of such limitations Hart (1995) developed a complementing approach the RBV, the Natural Resource Based View (NRBV). We will next see that even this attempt fails at apprehending the consequences of Natural Resources Appropriation.

3.6. THE RBV & NRBV FAILS AT APPREHENDING THE CONSEQUENCES OF NATURAL RESOURCES APPROPRIATION

3.6.1. How NRBV is considering Natural Resources and why it is not sufficient?

At this stage of our literature review we identified how the Resource Based View offers a valuable perspective on how capabilities or resources and their assembly contribute to the construction of competitive advantage.

We highlighted how the management theory has long debated the importance of internal company capabilities (Prahalad & Hamel, 1990) vs. external factors (Porter, 1985) to build and sustain a competitive advantage and demonstrated that in that context the RBV offers a relevant framework to apprehend Natural Resources utilization in the Anthropocene[40] era.
We then demonstrated how the RBV is structured on a key Ricardian "in-house" assumption linked to appropriation and we will see later how this part is critical in the mechanism at stake in Natural Resource depletion. Like Hart (1995) when he introduced the Natural Resource Based View (NRBV) of the firm we also demonstrated that management theory has largely "ignored the constraints imposed by the biophysical environment". This statement remains accurate as indeed historically management theory "has used a narrow and parochial concept of environment that emphasizes political economic, social and technological aspects" (Shrivastava & Hart, 1994). Given the importance of the ecological challenges the world is facing, this position has been judged by Hart as inadequate and we share this analysis.
Hart analyses that in the future it is inevitable that businesses will be constrained by dependent ecosystems and nature.

"In other words, it is likely that strategy and competitive advantage in the coming years will be rooted in capabilities that facilitates environmentally sustainable activity – a Natural Resource-based view of the firm". P 991

We share this statement but believe that the Natural Resource Based View is incomplete as it does not consider the main consequences faced by firms confronted with an increasing scarcity

[40] the Anthropocene is a geological era following the Holocene « where the impacts of human activities on earth and atmosphere, is central in geology an ecology […] To assign a more specific date to the onset of the "Anthropocene" is somewhat arbitrary, but we suggest the latter part of the 18th century, although we are aware that alternative proposals can be made ». (PJ Curtzen 2006 p.16)

of Natural Resources. Hart also does not study how this phenomenon can challenge the Ricardian appropriation mechanism so crucial in the Resource Based View as mentioned by Barney himself in his 2011 paper answering Prem and Butler's (2001) critics. Finally, he does propose convincing ways to manage increasingly scarce resources to ensure their long-term availability.

Introducing the Natural Resource Based View (NRBV) of the firm Hart suggested a new framework composed of 3 "interconnected strategies": pollution prevention, product stewardship and sustainable development.

- Pollution prevention: seeks to reduce emission using continuous improvement methods focused on well-defined environmental objectives. This could lead to cost optimization and productivity and for Hart can be well integrated in Total Quality Management processes and focuses on production and operations.
- Product Stewardship: the environmental impact could also be derived from the whole value chain i.e., from upstream sourcing to utilization and waste. A full Life Cycle Assessment approach with the objective of minimizing the impact of a product from its design to its usage and disposal is therefore necessary. Several legislations progressively took this element into consideration changing the framework of action of corporations that need to adapt to this new framework. Hart highlights that the most efficient strategy could then become pre-emption of some resources taking BMW as an example when it pre-empted the "take back" policy by controlling the major de-assembling/ dismantling firms. In his demonstration, Hart still think that capture and control of resources is the best way to (a) gain preferred or exclusive access to important of limited resource (b) establishing rules and regulations that are uniquely tailored to the firm's capability.
- Sustainable development: this dimension is somewhat surprising in the reasoning of Hart as it builds on a possibly idiosyncratic unbalanced between a North that "eat resources" expropriated in the south. It would create a tangible link between material consumption in the North and environmental degradation in the south. To rebalance and build a competitive advantage firms could be encouraged to develop strategies creating a business in south, managing resources locally in a sustainable manner enhancing the social acceptability and reduce the risk of reject by local community or context.

Mc Dougal, Wagner & McBride (2019) further highlight that the Natural-Resource-Based View has been an abstract phenomenon, primarily used by academics to explain competitive sustainable operations. Their paper attempts to go beyond this, responding to the need for an explanation of the practical existence of the four Natural-Resource-Based View resources in industry. Assuming a critical realist qualitative approach, in-depth interviews with sustainability experts in UK agri-food were undertaken. Findings demonstrate the existence of pollution prevention, product stewardship, and clean technologies and align with Hart's conceptualization of sustainability as competitive resources. Whilst the fourth resource, the base of the pyramid, cannot be empirically verified, the fifth resource of local philanthropy is uncovered and contributes to the growing body of knowledge surrounding competitive social sustainability. Findings also challenge the hierarchal presentation of the natural-resource-based view to implicate a more cyclical uptake. Thus, in offering the first empirical explanation of the natural-resource-based view, this paper overcomes a theory-practice gap to elucidate the feasibility, orchestration, and value of resources in competitive and sustainable operations.

Therefore, the detailed analysis of what could be considered as the most advanced attempt to incorporate the consequence of Natural Resources utilization in the Resource Based View is deceptive when put in perspective with the astute ecological challenge we are facing. Hart in his attempt is not challenging the Ricardian rent appropriation concept and is therefore restricting the impact of managing the Natural Resource scarcity increase to either cost avoidance, optimization, or access to market. A rather limitative view!

Worst, by placing rarity at the center of the VRIN dynamic as a trigger of sustainable advantage we can even reach contradictory situations. Indeed, the increase scarcity of Natural Resources create their rarity but if used at the same rate this rarity factor far from helping to build a sustainable competitive advantage could become the indication of a resource exhaustion and therefore the soon to come destruction of any competitive advantage and rent creation mechanism.

Therefore, be it on the Resource Based View or in the Natural Resource Based View the gap highlighted by Barney (2001) remains valid twenty years later! Let's remember what Barney wrote the *"logic, developed in the 1991 article as it has evolved since, does not address how the economic rents a strategy might create are appropriated by a firm's stakeholders" p53.*

Our thesis will therefore aim at studying how the availability of Natural Resources may challenge the appropriation mechanism intrinsically linked to the rent building exercise in the RBV.

3.6.2. Consequences if the "in-house" assumption is not met

While the RBV is a very relevant framework to apprehend the way Natural Resources can be assembled to form a competitive advantage we also touched upon its limitations to provide a framework that think and prevent Natural Resources depletion. One of the key factor is the fact that at the heart of the RBV model lies the assumption that competitive advantage must be derived from rent appropriation this appropriation mechanism linked to the logic of maximization of usage of rare resources to it benefit.

At this stage of our work, one can wonder what the consequences could be if we were to relieve that assumption from the RBV framework namely the 4 conditions highlighted by Barney that a resource must be valuable, rare, imperfectly imitable and non-substitutable (VRIN). Would the RBV framework still be operating?

To illustrate that thinking let's try to identify the consequence of relieving this underlying assumption using the work of the UCLA professor Jared Diamond (2006) in his seminal book Collapse.

In his book Diamond describes the evolution of the Easter Island civilization and how this civilization collapsed following a series of factors among which the overexploitation and depletion of Natural resources proved to be the major one.

Let us then review the 4 criteria of the RBV to test the relevance of our approach.

Good arable land provides higher yields in agri-based society. In an island with little possible exchange owning (appropriating) such lands gave a significant advantage. Those people therefore constituted the local aristocracy. They therefore proved to be highly valuable, our first criteria RBV criteria. The social organization of the island and the fact that the resource was not accessible to all created its high value.

In an Island of only 171km2 covered by strong wind and erosion good arable land proved to be extremely scarce and therefore were rare our second RBV criteria.

To gain arable land but also to build boats for fishing and for heating the local society the population slowly deforested the land accelerating deforestation and increasing erosion of the

soil. In such a constrained environment, the well exposed arable lands were therefore imperfectly imitable.

Finally, as the populations could not move and lived in a very strong isolation in the pacific rim the Easter Island could not substitute this critical resource.

While the populations were growing the appropriation mechanism and the short-term interest of the owners of a finite resource led to a rampant destruction of the local ecosystem and lead to a complete social and demographic collapse of the society. The Easter Island once prosperous a lost approximately 90% of its population.

The mechanism of appropriation coupled with a time horizon where the consequence of short-term Natural Resource exploitation was not factoring the impact of the long-term availability of the resource created the exact right conditions for Natural Resources depletion.

While the environmental crisis urges organizations to consider the limits set by the biosphere, Hardin as early as (1968) warned the scientific community about the 'Tragedy of commons. Elinor Ostrom (2008), studied the 'common-pool resources', 'resources [that] are sufficiently large that it is difficult, but not impossible, to define recognized users and exclude other users altogether'. Overfishing, deforestation, massive carbon dioxide emission or decrease of groundwater are among the most discussed endangered common-pool resources.

As the literature points open access as the reason for common-pool resource exhaustion and monopolization, scholars try to find out alternative governance systems to control their access and make them sustainable. As such, private property, state or community-based governance could constitute viable governance systems (Feeny, Berkes, McCay, & Acheson, 1990). In order to systematize this thinking, Ostrom (2009) has developed a framework based on observations made on forest and fish management. Ostrom encouraged other scholars to continue this cumulative work by multiplying the case studies of good governance systems, typically focusing on industries that include forestry, fisheries, watersheds and pastureland (Hudson, Rosenbloom, & Cole, 2019).

However, coming back to the Easter Island illustration can we really consider while Natural Resources are getting scarcer and scarcer that as Ostrom is stating the issue is now to find a way to manage resource that are easily accessible and sufficiently large? What theoretical framework exist to manage Natural Resources that are getting scarcer outside the paradigm of rent appropriation to build a competitive advantage? How can the framework of competition evolve?

At that stage we have demonstrated how the Ricardian postulate of the RBV and the NRBV is preventing it to apprehend on of the key challenge of our times, the Natural Resource depletion. But the Resource in itself has been an object of study by scholars? Several scholars studying closely the resources propose a relevant extension of the RBV looking at the usage of the resource in a very Penrosian way as a key element of competitive advantage formation. If a resource is not only a capability internal to the company as proposed by the NRBV or a factor of production in a restrictive RBV view, then this call to complement this theoretical framework and the way it is used to determine sustainable competitive advantage. Therefore, our thesis will not look the RBV in a restrictive manner but will use the work done by several scholars (Warnier 1993, Carton & Parigot 2021) injecting the resourcing theory assumption in the RBV could help to overcome some of the limitation stated above. Let us see how.

3.7. How Resources are considered in the scientific literature and how the resourcing theory can complements the RBV to apprehend the Impact of Natural Resources as sources of competitive advantage ?

As seen earlier, the scientific literature offers different perspectives on the resources of the firm and their impact on the capacity to build a competitive advantage. The industrial theory offers an external focused way of looking at resources while other frameworks will look at “inside the black box”. When looking at an “outside in” perspective the Resource Dependence, the RBV and the Resourcing theory appear as the 3 main frameworks of analysis. its impact on the capacity to create a Ricardian rent.

The Resource Dependence Theory (RDT) is looking at organization as dependent from the contingencies of an external environment (Pfeiffer and Salancik, 1978). As Pfeffer and Salancik (1978: 1) state, “to understand the behavior of an organization you must understand the context of that behavior—that is, the ecology of the organization.”. To manage this resource dependence the vision offered by the RDT is not looking at the resource itself and its characteristics but rather at the way to reduce dependence and uncertainty looking in details at 5 types of solutions:

1) mergers/vertical integration,
2) joint ventures and other interorganizational relationships,

3) boards of directors,
4) political action,
5) executive succession.

This framework certainly offers a structuring perspective also applicable in items 1 and 2 to Natural Resources as vertical integration and Joint Ventures could be a solution to gain access to the resource but would not help to apprehend the impact of Natural Resources depletion in the perspective of a Ricardian rent.

As seen earlier the Resource Based View (RBV) in its restrictive definition offers a static way of looking at the impact of resources in the construction of a competitive advantage. It therefore failed to embed the Natural Resource perspective for 2 main reasons:

1. The origin of the RBV is anchored in the understanding of how soft resources (managerial capabilities) this probably triggered and over-emphasis of the RBV on non-physical resources s (Bansal & Knox-Hayes, 2013; George et al., 2015). In an approach that we could call restrictive the RBV therefore does not consider that physical resources are resources but in a more industrial organization way of looking at it more a production factor or even "ordinary resources" as stated by Warnier Weppe & Lecoq 2013.

2. A second limit inherent to the RBV /VRIN framework is the notion of rarity. In a Ricardian perspective a resource that is rare can help to build a competitive advantage as it can generate rent. This cannot be compatible with the fact that if a resource is overexploited and finite its very usage would increase its rarity and at the end destroy the capacity to generate sustainable competitive advantage. The way we use the resource proves to be critical in the capacity to maintain a competitive advantage. This point well analyzed by Carton and Parigot, 2021.

The restrictive perspective of the theory seems therefore too limitative and disconnected from the context in which organizations are operating when using Natural Resources. Our work will therefore use an extensive point of view applying first considering that external physical resources can be part of the RBV like Hart 1995 and second that the usage of the resource itself is key to understand the rent building mechanisms

Following a Penrosian framework that consider that an organization is a bundle of productive resource controlled by a firm (Penrose 1959) the resourcing approached developed by Marta Feldman (2009, 2011) calls for considering an extensive way of approaching our proposal to extend the scope the Resource Based View (RBV).

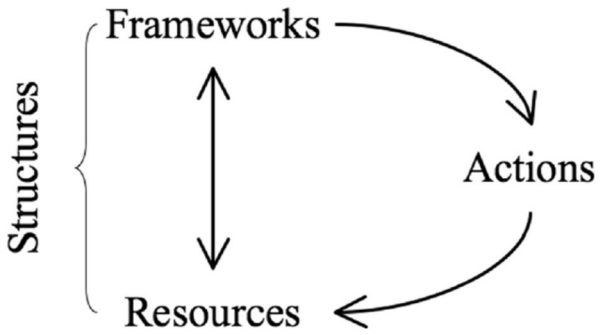
In her analysis Feldman focuses not on the exogenous nature of resources but on the endogenous resourcing cycle. One of her key developments for her is that "resources are not exogenous and fixed, but rather generated as they are brought into use" Feldman 2009 p138. Feldman mentioned therefore the concept of "resource in practice". This vison is of course perfectly in line with the definition of Natural Resources we decided to use in our work.
Some work goes even beyond that consideration like Hobfall 2002 who considers that if a resource is having an innate value that is permanent it can only be conserved , by not using it because its value is depleted by its use. We instead suggest that to "become resources, things or qualities have to be put into use, that they then realize context-specific values contingent upon how they are placed in use, and furthermore that putting them into use is not a zero sum proposition." Feldman 2009 p140

Just like the way capabilities are assembled and used described by Barney (1991) could generate a competitive advantage, Natural Resources when they are put in practice can lead to similar outcome by the resourcing theory.

Feldman (2009) explains that the resourcing is in fact a recursive cycle. *"In keeping with earlier work on this topic (Feldman 2004; Howard-Grenville 2007), we call this resourcing, or resourcing in practice, to denote the importance of practices that bring things into use as resources. From this perspective, the value of a resource is not a fixed property but is dependent upon how it is used in relation to a particular framework."* p 139.
What Feldman demonstrates is that the actions that people take create a link between the resource and its framework and this is thanks to this linkage that the resource is fully realized. In his article, Feldman (2009) clearly explains that his theorization is drawing *"not only on structuration theory, but also on the growing social science literature regarding frames and framing" p158*. Frameworks emerge from an institutional context, and they directly affect decision making processes and the way resources are used. But where Feldman is also bringing a structuring view is that the way the resources are used are also influencing the framework.

The case he used with Grand Rapid Budget process is very eloquent on the link between action resources and frameworks. In Grand Rapid a new process of involvement of the population was initiated through direct involvement and participatory meetings and using a questionnaire. But rather than creating trust *some community members felt that the preset structure of the survey indicated that staff members already knew what kinds of budgeting decisions they would make and read the actions that emerged as biased decisions reflecting the will of the city managers rather than the will of the community p.154*. The decisions did not generate a resource of trust they created another potential resource that they had not intended to create: community anger. This forced the city of Grand Rapid to rethink and re-organize its budgeting process adapting therefore the budgeting framework.

Figure 7 : the Recursive Cycle for Structures. Feldman 2009 p.140



When applied to Natural Resources this framework seems incredibly accurate especially in the case of exhaustible resources. Indeed, such resources if they are used in the context of a Ricardian rent appropriation can quickly exhaust overtime and therefore impact the frameworks and structures. The examples developed by Jared Diamond in Collapse (1994) and that we relayed in our work are perfectly illustrating this recursive relationship. The social structure of the Easter Island did not allow the population to share and manage the resource properly while the natural framework had its own limits that was exposing it to depletion. The overexploitation

of the wood and arable land gave for several generation a capacity to maximize the rent provided by the (social) structure, but this action has slowly exhausted the resource influencing therefore the framework with wars and social tensions and the finally the structure with the quasi extinction of the population. This meets very much the view of Feldman (2009) when she describes the actions people take and the framework that is "energized" through those actions. Resourcing becomes therefore *"an endogenous resourcing cycle, meaning that resources are not exogenous and fixed, but rather generated as they are brought into use". P138.*

We can therefore consider that an extensive way of looking at the RBV to fully integrate that the Natural Resource uses in practice can help to secure rent seems quite essential to understand one of the key challenges of our times. The question that we know have to ask ourselves looking at the challenge that Natural Resource depletion causes is the what tare the type of strategies or condition that corporate must secure to reach a sustainable competitive advantage.

3.8 OPENING TO OUR RESEARCH FRAMEWORK

If Natural Resources are key component of the competitive advantage building and if rent appropriation could be detrimental to sustainable competitive advantage, what alternative strategies could be considered by firms?

In a world with limited resources, building capabilities for collaboration, public private partnerships, ecosystem services monetization become distinctive to build sustainable business models. Such new forms of collaboration are brilliantly highlighted by Porter & Kramer (2011) while defining shared value calling for a refoundation of the management theory.

Not all profit is equal—an idea that has been lost in the narrow, short-term focus of financial markets and in much management thinking. Profits involving a social purpose represent a higher form of capitalism—one that will enable society to advance more rapidly while allowing companies to grow even more. The result is a positive cycle of company and community prosperity, which leads to profits that endure. […] The opportunity to create economic value through creating societal value will be one of the most powerful forces driving growth in the global economy. This thinking represents a new way of understanding customers, productivity, and the external influences on corporate success. It highlights the immense human needs to be met, the large new markets to serve, and the internal costs of social and community deficits—as well as the competitive advantages available from addressing them. Until recently,

companies have simply not approached their businesses this way. Porter & Kramer 2011, p15

The environmental crisis challenges the very foundation of the management theory and more specifically the rent appropriation mechanism as capable of creating sustainable competitive advantage (over time). Indeed, appropriating and exploiting the Natural Resource could derive a short-term benefit for the owner of the resource but may also lead to its long-term exhaustion therefore destroying any possibility of sustainable value creation.

Indeed, we see how voluntarist the position should be to move from a traditional Porterian/IO way of looking at the strategy to a potentially more collaborative way of controlling and appropriating resources with the ultimate aim at preserving and maximizing their long-term availability and capacity of renewal within the planetary boundaries as defined by Rockström (1999).

This way we believe like Conner (1991) that the RBV in its ability to apprehend the firm as a "creator of positive" rather than an "avoider of negative" and focusing on how the resources are assembled in a creative and productive manner is a relevant framework to apprehend the evolution of the Natural Resources and potentially their preservation.

However, our Literature review showed that even the attempt of Hart (1995) developing a Natural Resource Based View (NRBV) did not manage to properly take into account the impact of an increasing resource scarcity and how this drastically questions the rent appropriation mechanism that is core to the formation of sustainable competitive advantage. We have also demonstrated earlier that the connection between Natural Resources, Rent and Appropriation remains an almost virgin field for management research.

One can argue like Schaltegger, Lüdeke-Freund and Hansen (2012) that creating business cases for sustainability "requires an innovative business model which supports the management of voluntary social and environmental activities in addressing the business case drivers". What about an innovative strategic management theory? What about complementing the Resource Based View of the firm with the analysis of the impact of Natural Resources availability on the capacity to build a long-term competitive advantage.

Such new form of collaboration do take place when the largest FMCG decide to join forces to create new Deposit and Returns Scheme financed through a private tax to enhance the usage of recycled plastic flow. By doing so they ensure to increase the collect of material to be recycled and therefore their availability, reduce the cost of investment as they become mutualized and increase the quality of recycled materials. This is for instance the logic that prevailed when the Ellen Mac Arthur foundation launched in 2020 the US Plastic Pact [41]engaging more than 60 of the largest FMCG companies eliminating all single-use plastics packaging which is problematic or unnecessary; ensuring that all plastic packaging is reusable, recyclable or compostable; ensuring that 50% of plastic packaging is effectively recycled or composted and reaching 30% recycled or responsibly sourced, bio-based content in packaging. Strategies that imply collective work in an area that has long been viewed as highly competitive by FMCG companies where a lot of marketers consider Packaging as the 5 P of the marketing mix: Product, Promotion, Place, Price

Such strategies do challenge the traditional strategic management view as it bypasses a short-term reasoning based on the appropriation of rare and valuable resource thus offering an interesting avenue to complement this theoretical framework.

At the end of our big issue and literature review we arrive now at a stage where it becomes clear that studying how the increase in Natural Resources scarcity is or shall modify the process of rent appropriation and therefore competitive advantage building present real interest for management. This will therefore be the core of our research.

To do so we want to use the framework provided by the Resource Based Value of the firm rather than necessarily rebuilding a complete set of theory as we believe the current model is incomplete and therefore does not allow us to apprehend the impact of the ecological crisis. Our problematization will therefore resonates with the work of many scholars and emphasized very well by Alvesson and Sandberg (2011) that highlight *"The dominant view is that a theory becomes influential if it is regarded as true. However, in his seminal study Davis (1971) showed that what makes a theory notable, and sometimes even famous (Davis,1986), is not only that it*

[41] https://www.edie.net/news/5/Ellen-MacArthur-Foundation-launches-Plastics-Pact-in-US--supported-by-60-major-signatories/

is seen as true but also, and more important, that it is seen as challenging the assumptions underlying existing theories in some significant way."2011 p.247

Building on Alvesson and Sandberg (2011) our problematization will therefore contribute to the management literature in 3 ways looking at the impact of the Natural Resources increasing scarcity:

1. challenge the in-house assumption that appropriation represent within the rent theory
2. Address the gap that Natural Resources availability represents in the Resource Based View framework
3. Propose an evolution of the Resource Based View forged on the finding observed through the multiple case study we will perform.

We therefore proposed the following research question

Table 4 : Research Question

Research Question	In a resource scarce world, what usage and rent appropriation strategies corporates are developing towards Natural Resources?

Based on these research question, we will be able to demonstrate how depletion is challenging the traditional perception of rent appropriation mechanism and contribute to the emergence of new capabilities developed within firms to manage revisiting the notion of rent appropriation.

4. DESIGN AND METHODOLOGIES

4.1. RESEARCH DESIGN

Our thesis is using an inductive and interpretative qualitative research design on 2 revelatory cases centered on an essential Natural Resources part of the Planetary Boundaries analysis of Johan Rockström (2009): Fresh Water.

Using specific case studies, we will be able to analyze and compare how Fresh Water availability can be considered in the buildup of competitive advantage of different actors in the ecosystem and how strategies have been evolving longitudinally with the increasing pressure linked to environmental change.

Our thesis aims at developing a new theoretical construct that will help to describe and explain strategies developed by corporates and that challenges the traditional rent appropriation mechanism built in the Resource Based View of the firm. In this regards our approach is cumulative and with an objective to create a taxonomy. We believe that the essential nature of freshwater resource to the balancing of our ecosystem will confer to our case a strong "*revelatory*" potential as explained by Gioia, Corley and Hamilton (2012) and also Langley & Abdallah (2011). On this basis and as described by Garreau (2020) we will forge our theoretical constructs through a coding approach as we will base our analysis on the properties identified describing observed strategies through a mix of interviews and documents gathered on both cases.

In this introduction, we will explain why and how this research design has been selected.

One of our main entry points based on our professional experience is that new ways of considering resource appropriation are currently being developed by executives influenced by the realization that Natural Resources that were constituting part of their competitive advantage are depleting. This phenomenon is by essence multifaceted as it touches several Natural Resources and the multiple capabilities that forge the competitive advantage of corporations.

As Baxter and Jack (2008) states "*qualitative case study is an approach to research that facilitates exploration of a phenomenon within its context using a variety of data sources. This ensures that the issue is not explored through one lens, but rather a variety of lenses which*

allows for multiple facets of the phenomenon to be revealed and understood." Qualitative case study methodology: Study design and implementation for novice researchers. p544

The literature has of course described at length the ins and outs of a qualitative research. Our research will use the recommendation of Robert Yin (2003, 2006). Yin base its case study approach on a constructivist paradigm in the sense that constructivist consider that the truth is relative and fundamentally dependent on one's perspective. For Crabtree & Miller (1999) Constructivism *"recognizes the importance of the subjective human creation of meaning but doesn't reject outright some notion of objectivity. Pluralism, not relativism, is stressed with focus on the circular dynamic tension of subject and object" Doing Qualitative Research p. 10*. Constructivism is therefore considering the social construction of the reality which in the case of the management of Natural Resources is indeed key as their availability has and is still very much considered as infinite by many and their pricing facing the complexity of externalities management. Additionally using qualitative research will have the key benefit of confronting professionals in their management practices to the increasing scarcity of Natural Resources, analyzing and comparing therefore their real experience of the management of a Natural Resource on concrete case studies that affect strategically their activities.

According to Yin (2003) a case study design should be considered when 4 main factors are gathered:

1. the focus of the study is to answer the "how and "why" questions.
2. the behaviors of those involved in the study cannot be manipulated.
3. the contextual conditions are covered because it is believed they are relevant to the phenomenon under study.
4. the boundaries are not clear between the phenomenon and context.

We believe this framework is largely applicable to our case so let us see analyze why the 4 main factors identified by Yin provide a fully congruent matrix for our work.

First condition, the focus of the study is to answer the "how" and the " why" questions. In our research the objective is to answer how the scarcity of Natural Resources is affecting the rent appropriation mechanism and why this could lead to the emergence of new strategies from corporate that we name pre-competitive strategy. We have demonstrated in our literature review

that this link and its consequences have not been studies by the Resource Based Value of the firm despite its central consequence in the life of many organizations. Our research will also analyze and frame how such strategies have become a necessary new avenue of study for the Resource Based Value of the firm. The how and why questions are therefore at the center of our questioning.

Second condition, the behaviors of those involved in the study cannot be manipulated. As our objective is to study a phenomenon of key public interest to help the reframing of the role of corporates in the management of Natural Resources (cf. our Big Issue) and our cases already well established longitudinally sometime for more than 20 years, there is very limited not to say no risk to manipulate the behavior of the interviewees. Additionally, our case will focus on the interview of very senior executives/contributors on a topic at the center of preoccupation it would be quite difficult to imagine that we would be able to manipulate their behavior. Our interview guide and all the interview material will be available and accessible to assert their independence.

Third, the contextual conditions are cover because it is believed they are relevant to the phenomenon under study. The contextual element is of the essence in our research as the perception by executives of the resource rarefication and availability and their consequence on their activities are instrumental for companies to take clear actions of mitigation first as a license to operate and to future proof their business model. Indeed, since the price mechanism is not efficient as it is not including environmental externalities the anticipation of agents of the future scarcity of the resource and/or of their impact on the Natural Resource would be a key contextual determinant of their behavior change. This is by the way why many activists are urging states to impose new regulations for externalities to be internalized in market mechanisms. Again, here the nomenclature suggested by Yin seems relevant.

Finally, Yin tells us that qualitative research is useful when boundaries are not clear between the phenomenon and context. In the above description one can indeed argue that the boundaries are not clear between the phenomenon and its context as the increase scarcity of Natural Resources and the need to protect it or the continuation of its exploitations are quite cumulative and linked to each other. Let’s take soil for instance and the example of the Sumerian civilization, their agriculture technics based on irrigation were one of the root of the power of their civilization. But overirrigation erodes topsoil and increase overtime its salinity to finally

reduce its fertility. This coupled with an increase demography and collapsing of their trading capacity linked to war was a key element of their decline. This evolution very well described by Jared Diamond is by essence linked to the context of its civilization. If we compare with our current context, the linearization of our growth model the post second world war economic model built on accumulation of goods and exploitation of Natural Resources, the green revolution allowed by bio chemical progress, the central part that take fossil energy in the structuration of our economies (and political models) are all proof of a fundamental link between the context in which corporate operate and the way they are assessed as successful and the phenomenon we are studying.

In a letter sent in January 2020 by Larry Fink CEO of BlackRock, the largest asset management firm globally, called for a fundamental reshaping of finance wrote to the key CEOs of its portfolio: *"Climate change has become a defining factor in companies' long-term prospects. Last September, when millions of people took to the streets to demand action on climate change, many of them emphasized the significant and lasting impact that it will have on economic growth and prosperity – a risk that markets to date have been slower to reflect. But awareness is rapidly changing, and I believe we are on the edge of a fundamental reshaping of finance".*[42] This position demonstrates the very proximity existing between the sociological economic and political context in which we operate, and the issues linked to climate change. Both our objective and context therefore advocate for a case study approach.

Then why case studies? Following Yin's, 2003 recommendation, our interest would be to replicate potential findings across cases and to explore differences and similarities. With this we would try to predict similar results across cases based on a theoretical construct ("literal replication") or to predict contrasting results but for predictable reasons ("a theoretical replication"). Such research design will help up to forge the new concept of pre-competitiveness.

To go further, let us use the matrix proposed by Baxter, P, & Jack, S. (2008) to summarize our approach towards a qualitative design.

[42] https://www.blackrock.com/corporate/investor-relations/larry-fink-ceo-letter

Table 5 : Approach towards qualitative design.
Based on Baxter & Jack (2008)

Proposition (Yin 2003, Miles & Huberman 1994)	A tension exists between rent appropriation behavior and the perception of long-term Natural Resources availability
Application of a conceptual framework (Miles & Huberman, 1994)	Resource Based View of the Firm
The research question	How is the increasing scarcity of Natural Resources affecting the rent appropriation mechanism?
Logic linking data to proposition & unit of analysis	2 cases linked to water protection collaboration in areas where the resource is strategic

While Yin (2003) provides a solid justification of why a multiple case study approach is relevant to build the theoretical construct we target, Eisenhardt (2013) is proposing a very robust process of how to conduct a qualitative research study based on 8 different steps that we used in the structuration of our research study and will frequently refer to in the construction of our demonstration.

However, it is important to note that if we believe the steps described by Eisenhardt (2013) provide a robust base to shape qualitative research, our thesis does not aim at building a multiple case comparative study aiming at explaining the different factor of a phenomenon though its variance and therefore trying to identify the variables and occurrences of the phenomenon. Garreau (2020) explains clearly the difference between the explanatory and the descriptive case study approaches "*contrary to the nomothetic comparative approach, the cumulative descriptive view aims at apprehending variations and not to understand the cause of such variation"* p 54.

Using 2 cases in different cultural ecosystem (one in France and one in Mexico) nourished from interviews and longitudinal documents will help us identify potential variations and similarities between cases but not with an objective to be nomothetic.

So if we take the Einsenhardt (2013) paper and summarized in Tab 4 the 8 steps and their respective objective in our case study probably 7 out of 8 will be relevant for us in a cumulative case study with a taxonomy objective and not an explanatory objective: Getting started, selecting case, entering the field, analyzing data, shaping hypothesis, enfolding hypothesis and reaching closure. The necessity to triangulate is probably less relevant in our analysis as this is not to explain different pattern through variation. We will use them to articulate our research until we reach a sufficient level of saturation. Similarly, we will not use the shaping hypotheses step as our work will not focus on developing causal relationships and/or confirm different links.

Tab 4: Eisenhardt (2013) 8 step process

Step	Objective
Getting started	Determining the research question
Selecting case	Identify the appropriate population to limit extraneous variation and limit the possibility of generalization
Crafting instrument and protocol	Allows triangulation and comparability
Entering the field	Overlapping data collection and data analysis can accelerate analyses and pertinence of data collection
Analyzing data	Within Case Provides important longitudinal view and help to overcome first impressions
	Across Case Increase the probability to identify new phenomenon
Shaping Hypothesis	Identify the why behind the phenomenon confirm link
Enfolding literature	Confront construct and finding with existing literature
Reaching Closure	End the process when marginal improvement becomes irrelevant

In the same paper Eisenhardt (2013) eloquently detailed the advantages and potential limitation of a qualitative study to build a new theoretical framework.

As strong advantage she highlights 3 main elements. First through case study the research is increasing the possibility to identify new phenomenon and build new theoretical construct thanks to the capacity of diversity and juxtaposition of phenomenon. Second the researchers increase the likelihood for their theory to be testable as they are directly emerging from cases. Thirdly highlights that such theoretical constructs will increase their likelihood of being empirically tested.

While the various steps identified by Eisenhardt will help us to structure our data collection and analysis and since our work primarily focuses on corroborating and normalizing new strategies that appear in the context of Natural Resource depletions our work will not be linear and in that sense will also strongly be inspired by the methodology developed by Gioia and Corley (2011) that suggested a systemic approach to new concept development and grounded theory articulation to bring rigor to the conduct and presentation of inductive research.
As the author explain, a scientific approach too often led to progressive extension of existing knowledge or orientation it is most of the time very efficient but also lack the originality we need for new construct to emerge. It therefore *"advances in knowledge that are too strongly rooted in what we already know delimit what we can know" p.16.*

While the framework of Eisenhardt can help us to structure our data collection and articulation between cases the framework of Gioia and Croley (2011) can help us to structure the process of revealing and ordering our findings. We can for instance follow the 3 steps described by Gioia & Croley themselves and explained further by Langley and Abdallah (2011)

Table 6 : 3 steps of Gioia method

Steps and description	What scholar say
1st order categories: concept Significant number of codes identified In Vivo in a first description of "what's going on here" Gioia&Corley, 2011 (25 to 100)	*Grouped based on common extract and description based on participants* *"You gotta get lost before you can get found", Gioia 2014*
2nd order categories: themes Stepping and identifying logical links between codes that can help to describe the observed phenomenon (10 to 25)	Through a constant comparison create a first level of linkages and potential find *theoretical saturation (Glaser & Strauss , 1967)*
Aggregate dimensions / Core Categories Organizing the code in a way that can create a theoretical framework	Core concepts that will help to shape the theoretical framework, (Langley and Abdallah, 2011)

Our proximity with the data corresponds well to the "*intimate knowledge of the data"* that can enable to identify *"the relationships among the emergent concepts"* and therefore *enable the possibility of theoretical insights that would not be apparent simply by inspecting the static structure. This is what the author calls a "Shazzam Moment", or "revalotory" p22.*

If the inductive qualitative case studies can certainly help to structure our theoretical construct, we also must be aware of the potential limitation that researcher have to prevent. First case study can become quickly quite complex as they are based on an accumulation of evidence. The very nature of case study construct can significantly narrow the theoretical construct to finally develop an idiosyncratic theory when generalized with also a risk of becoming tautological.

This section allowed us to demonstrate the pertinence of our choice of using a qualitative research design to study the evolution of corporate strategies in the context of an increasing scarcity of Natural Resources. We have seen the multiple case studies based on Natural Resources identified as crucial for the planetary system resilience will help us to analyze intra

cases the evolutions of corporate strategies confronted to the management resources and to analyze intercases the similarities and difference that may occur. This will also help us to forge the concept of pre-competitiveness and complement the Resource Based View of the firm with a critical framework in the current environmental urgency.

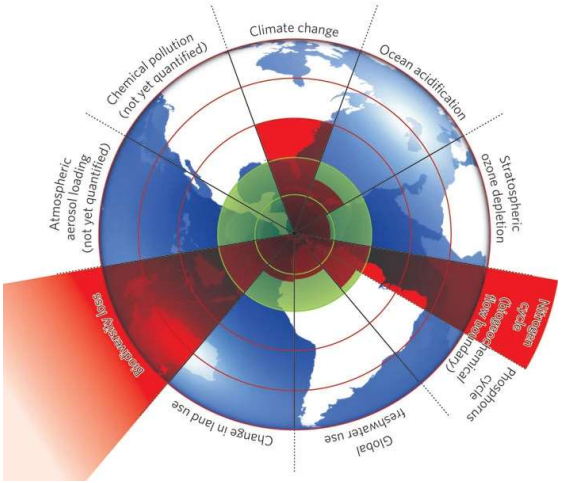
At this stage of our research, we have already identified our research question let us then follow the second step suggested in Tab 4 above the selection of cases with the objective to limit the extraneous variation and avoid over generalization.

4.2. CASE SELECTION

As the core of our study aims at studying the link between Natural Resource depletion and the impact on the rent appropriation mechanism and in order to focus on resources that are heavily impacted by the current ecological challenge, we have decided to use the nomenclature of Johan Rockström (2009) looking at a key resource highlighted in the model: fresh water. In the modelization of Johan Rockström the 2 resources are still within the planetary boundary limit meaning that it is still time for us to ensure we put the appropriate strategies in place to achieve that.

Figure 8 : Planetary Boundaries, Nature 2009, p 472

The inner green shading represents the proposed safe operating space for nine planetary systems. The red wedges represent an estimate of the current position for each variable. The boundaries in three systems (rate of biodiversity loss, climate change and human interference with the nitrogen cycle), have already been exceeded.



Secondly fresh water is a key determining factor to meet the world's future food security and sustainability needs. To nourish 9 billion inhabitant and ensure that the billion human being that are today chronically malnourished, food production must grow substantially while, at the same

time, agriculture's environmental footprint must shrink dramatically. As demonstrated by Foley, Jonathan A., Ramankutty, Navin, Brauman, Kate A., et al. (2011), water protection will determine our capacity to close the yield gap that is necessary to double food production while reducing the impact on the planet. They will imply a fundamental shift of the strategies of the agri-industry hence our interest in focusing on this key resource.

4.2.1. Water Resource management

The availability of freshwater resource both in terms of quality and quantity will be one of the most rapid challenges we will have to overcome. Besides this increasing demand, the resource is already scarce in many parts of the world. Estimates from the world bank indicate that 40% of the world population live in water scarce areas, and approximately ¼ of world's GDP is exposed to this challenge. By 2025, about 1.8 billion people will be living in regions or countries with absolute water scarcity [43].

This challenge is even clearer when we know that only 2.5% of the water available on earth is drinkable but in a large majority trapped in glacier and snowfield. The National Geographic goes highlights that only 0,007% if effectively accessible for human being and that despite that the rate of usage increase of this resource is twice the one of the growing populations [44]. Yet this resource is very often not managed and priced properly, and its protection very rarely structured efficiently despite its large usage by industries. Against this backdrop we however see and increase awareness on the issue and several attempts to find a new path forward.

We will use 2 cases to illustrate how new disruptive approaches tried to address this paradox the case of the Evian impluvium Management in France and the development of a Water Fund in Aguascalientes in Mexico.

[43] https://www.worldbank.org/en/topic/waterresourcesmanagement#1

[44] https://www.nationalgeographic.com/environment/freshwater/freshwater-crisis/

4.2.1.1. The case of the Evian Impluvium

Evian is a town located next to the Geneva Lake in the French Alps. The name of the town has been used to brand the source of mineral water used by Danone and has become a reference globally becoming one of the top FMCG brands in the world according to BrandZ[45].

In Evian the impluvium upon which the source quality and availability depends is located upstream on the Plateau de Gavot while the bottling unit is located close to the lake. During its course, the source run across several municipalities, agriculture, and peri-urban areas its protection therefore relies on the real multi-stakeholder approach. The Evian source is a key economic contributor for the region employing above 1000 people directly and a lot more indirectly. This economic activity being directly linked to the source availability and reputation in terms of purity it has quickly been of the essence to ensure that the source would be protected from any type of pollution. This is where the complexity aroused.

The landscape of the region leads to a very complex challenge as the impluvium regroup 13 municipalities and more than 80 farmers in an area that is facing a very strong real estate pressure due to the attractivity of the region.

The 4 municipalities located at the downstream part of the source were benefiting directly from the location of the factory and the bottling tax planed by the law. The more rural municipalities located upstream did not get any incentive to ensure that construction and or agriculture practices would not alter the source quality and protect the impluvium. With the increase housing pressure, a highly touristic region, the increase usage of chemicals in agriculture following the green revolution or salt during winter to de-ice roads the risk of pollution was increasing year on year.

In this framework the local private and public actors decided to regroup and find a system of incentive for all to benefit from the reallocation of the wealth created by the exploitation of the source to ensure its long-term sustainability. A collective public/private association named

[45] https://www.brandz.com/articlenew/Evian

APIEME (Association de Protection de l'Impluvium des Eaux Minerales d'Evian) was created in 1992 with the objective to create a redistribution mechanism.
Mr Magnin the mayor of Maximy Le Léman describes how the work of the association allowed to reduce the usage of salt on the road during winter drastically reducing the risk of pollution. In a video published as the *"perfect example of a public private partnership that is a win-win for all parties".*[46] *Apieme Video*

This example is highly interesting as it involves several actors and steps to build a coherent approach of protection for the resource.

1. Protection of the site as a RAMSAR site (the UN convention for Wetland), which was highly engaging for the local actors in terms of cahier des charges,
2. System of reallocation of taxes from downstream to upstream municipalities which was on a short-term view not necessarily rational for the municipalities where the factory was located,
3. Coalition of local farmer to ensure an auto regulation of the use of pesticide and fertilizers,
4. Specific additional financing agreed by Danone to support local change of practices and the APIEME work.

To structure our case study and ensure followed Eisenhardt (2013) recommendation to cross the different viewpoint on this specific case we interviewed key stakeholders of this case analyzing video recordings of several mayors that initiated APIEME, farmers, Danone Managers and Executives and also the secretary general of the RAMSAR convention which partnered with the locality more than 20 years ago. This totals more than 8h00 of video/audio recording fully analyzed using InVivo.

Water – Evian – Interviews or Video analysis – totals 8h00 of audio/video analysis.
- 2 Danone Corporate Executives - 3 Mayors through analysis of video interview performed by APIEME - 1 founder of APIEME ex. VP Sustainability of Danone - Secretary General of the Ramsar convention - A local Farmer

[46] http://www.apieme-Evian.com/protection/0/6-1-2-temoignages-l-apieme-selon-ses-membres

We also use several longitudinal materials to study how this specific relationship between the resource and the competitive advantage has evolved over time. The document we analyzed using In Vivo regroup internal strategic presentation of Danone, the evolution of the memorandum of understanding between Danone and Ramsar Convention, few email exchanges on the complexity of reconciling interest in the case of the renewal of the partnership, the business case of investment in the Terragr'eau Methanizer, the website of the Apieme and print and tv commercials that reflect the brand narrative over time and the link with some resource characteristics.

In total we analyzed more than 145 pages of material complementing the interview using In Vivo.

Table 7 : Evian case study document

	Document					
1	Publicité Evian Respirer à 3000	Danone	jpeg	1961	Commercial	1
2	Publicité Bienvenue dans notre usine	Danone	jpeg	2012	Commercial	1
3	Publicité evian 2012	Danone	jpeg	2012	Picture of print add	1
4	MoU Danone Fund for Water	Danone	pdf	2013	Memorandum of Understanding between Danone and Ramsar on partnership	18
5	Water Final Characterization Document	Mc Kinsey	pdf	2014	Internal strategy presentation on water resource protection	26
6	Le semaine -jounral des salaries	Danone	pdf	2014	Intenal newpaper for employees explaining the project	8
7	Fond Ecosystem Veolia presentation Terrag'eau	Danone	ppt	2016	Presentation of the Terrag'reau apieme project to Veolia	13
8	Key terms for contract preparation	Danone Ecosystem Fund	word	2017	Internal note summurizing objetives and deliverables ofthe partnership	4
9	CP Invitation	Danone	pdf	2017	Press release to annouce the first biogas injection in the local network	1
10	Internal note Ramsar	Eric Souberan	word	2017	Internal note of rational on RAMSAR partnership renewal	2
11	MOM Minutes	Danone	word	2017	Minute of the discussion on the renewal of RAMSAR partnership	2
12	Rethinking Nature Based Solution	Collective	pdf	2017	Call to action to pre competitive actions to protect water	5
13	CSR Evian Brand Initiative	Danone	pdf	2018	Recap of CSR Strategy of the Evian Brand	56
14	Apieme - arboresence of website	Eric Souberan	word	2021	Menu of the Apieme Website higlighting the logic of the com strategy	3
15	TC Commercial	Danone	youtube	2021	New campaign highlihting Natural resource protection	
16	TV Commercial	Danone	youtube	na	Protegeons la vie à sa source	
						141
	Emails					
17	Call avec Ramsar	Danone	pdf	2017	Exchange of 2 Email to debrief on the partnership renegociation	2
18	Yes Yes biogas	Danone	pdf	2017	Exchange on email annoucing the launch of the Biogas plant	3

4.2.1.2. The case of Aguascalientes municipality in Mexico

Additional to Evian we will study the creation of a Water Fund in Mexico in the municipality of Aguascalientes where Veolia and Danone have decided to join forces.

Aguascalientes is a municipality located south of Mexico City. The impluvium of Aguascalientes is constrained by an increasing intensification of farming in the upstream part of the impluvium where sugar cane and milk farming have significantly increased the usage of ground water, coupled with the influence of climate change this has led to a significant reduction of the ground water level affecting the farmers, the municipality and Danone who had a water bottling plant in the region.

This is why the Nature Conservancy (TNC) approached Danone and Veolia to promote develop a local water fund. As TNC defines it "water funds are organizations that design and enhance financial and governance mechanisms which unite public, private and civil society stakeholders around a common goal to contribute to water security through nature-based solutions and sustainable watershed management".

Practically the idea is to locally create an incentive mechanism for the farmers to change their irrigation practices financing pumps and valves but also creating a bonus mechanism for the water saved finance by a local levy on water user downstream and supported by the municipalities. One can imagine the complexity of this assembling finding the right consensus to change practices, securing and protecting water resources and business sustainability through resilient and water sober agriculture in a water stressed area. Farmers will save on water costs (fuel) and improve their productivity, while dividing their water consumption by 50% or more and valorizing through a financial incentive mechanism the water saved.

Additionally, to the Nature Conservancy, the Livelihood Fund for Family Farming (L3F) has been mandated to work with the farmers on the change of agriculture practices.
This case study will allow us to study in a very different socio economical context the motivation of economic actors to engage into such forms of collaboration with their local stakeholders.

Water Fund - Aguascalientes – 8 interviews – 5h00
- Veolia project manager - Veolia project lead - Danone project manager - Livelihoods Funds for Family Farming (2 pax) - The Nature conservancy Water Fund Lead

Like for the Evian case we have collected and analyzed very rich longitudinal materials to study how this specific relationship between the resource and the competitive advantage has evolved in the Mexican context. The document we analyzed regroup internal strategic presentation of Danone, progress update of the Livelihood Fund, The Water Allies partners, the evolution of the memorandum of understanding between the Water Allies, and 17 pages email exchanges.

In total we analyzed more than 229 pages of material complementing the interview using In Vivo that are reference in the Tab 6.

Table 8: Aguas Calientes case study documents

	Title	Author	Format	Year	Description	Length pages
	Document					
1	Aguas Calientes Water Fund Project	The Nature Conservancy	ppt	2016	Description of the objective and project outcome. Contribution of every partners	13
2	Partnership Structure	The Nature Conservancy	ppt	2016	Partnership strucutre description	6
3	Memorandum of Understanding Water Allies	Danone, Veolia, Livelihood, TNC	pdf	2016	Memorandum of Understanding for Partnership	4
4	Aguascalientes IC proposal	Livelihoods Fund	pdf	2017	Description of the Aguas Calientes case for Livelihood IC decision	81
5	Aguas Calientes - Project Update	Livelihoods Fund	pdf	2017	project update and model description for each partner	40
6	Water Stewardship Benefit Accounting	WRI Valuing Water	word	2017	Paper explaining the benefit of the water stewardship practices used by WA	24
7	Context Setting Water Allies	The Nature Conservancy	ppt	2017	Description of what a water fund is	21
8	Water allies Steering Committee minutes	Danone, Veolia, TNC, Livelihood	word	2017	Update on the project actions and deliverables	4
9	Pre Read	The Nature Conservancy	pdf	2017	Pre read on progress on the project	2
10	WSBAM Postcard	WRI Valuing Water	pdf	2017	Methodology if multibenefit quantification	2
11	WF List of Action	Danone, Veolia, TNC	,xls	2017	List of expected benefit and priority actions	1
12	Pitch Aguas Calientes Co-Funding	The Nature Conservancy	,pdf	2018	Co-funding stratedy, project description, what's in it fo key players	4
13	Water allies Steering Committee minutes	Danone, Veolia, TNC, Livelihood	word	2018	Update on the project actions and deliverables	3
14	LV Fund Call for COP 24	Livelihoods Fund	pdf	2018	call for integrated SDG approach	2
15	Aguas Calientes WF FundRaising	The Nature Conservancy	.xls	2018	List of potential co-funder and descritpion of their interest	1
16	Water allies Steering Committee minutes	Danone, Veolia, TNC, Livelihood	word	2019	Update on the project actions and deliverables	4
						212
	Emails					
17	Draft Water Allies Steering Committee Update Notes and Aguascalientes Pitch Documents	TNC	pdf	2017	Email exchange on the agenda of the alliance SteerCo	2
18	Re: Aguascalientes Workshop on Water and Agriculture	Danone Veolia	pdf	2017	Email exchange between Veolia and Danone on development of the alliance	2
19	RE: Draft Water Allies Steering Committee Update Notes and Aguascalientes Pitch Documents	Livelihoods Fund	pdf	2017	Email exchange from LV to highlight their priorities	3
20	Tr : Notes and Action Items from Water Allies Briefing	Danone	pdf	2017	Internal email on water priorities	5
21	Re: Water allies	Danone Veolia	pdf	2018	Email exchange on the future of the alliance	2
22	RE: Water Allies Steering Committee Meeting Pre-Read	Livelihoods Fund	pdf	2018	Reaction of LV to the water allies pre-read	3
						17

4.2.2. Interview Guide:

We use a semi-directive interview guide. Our interviews focus on identifying how interviewees being active players of the 2 cases perceive the importance of Natural Resource in their rent building exercise and if and how their perception is evolving with the knowledge that Natural Resource that contribute to their competitive advantage are depleting.

From them, we confirm the limitation inherent of the current Resource Based View or Natural Resource Based View frameworks to take into account the Natural Resources availability on competitive advantage formation and rent appropriation.

Table 9 : Interview Guide

Themes	Questions
Context	
The interviewee	▪ Presentation of the interviewee & interviewer ▪ Description of the role, function and background of the interviewee ▪ Description of the link with the case study and his role in the case
Organization	▪ Presentation of the organization ▪ Presentation of the organization role in the case study ▪ Description of how the Natural Resource studied is linked to the organization
The case study	▪ Description of the reasons the project studied had to be launched ▪ Mapping of the key stakeholders of the project and their roles ▪ Detail the reasons for the organization to join the projects
Role of Natural Resources	

Natural resources and cognition of managers	▪ Description of the impact of Natural Resources in the activity of the organization ▪ Description of how Natural Resources and their availability are considered in the strategic running of the organization
Scarcity of natural resources	▪ Description of the evolution of the Natural Resource availability ▪ Description of the impact on the strategy of the organization ▪ Description of how the Natural Resources were part of the decision-making process of the organization before and after the case study
Competencies & Capabilities	▪ Describe whether specific competencies and capabilities are needed to manage the resource ▪ Describe any organization or people changes linked to the case study
Natural Resources & Competitive Advantage	
Natural Resources and competitive advantage	▪ Describe where the competitive advantage of their organization lies and the role of Natural Resources ▪ Description of the potential options the organization has to ensure its access to strategic Natural Resources (appropriation, share…) ▪ Description of the one chosen by the organization and its reasons ▪ Explain if and how the Natural resources contributes to the competitive advantage/disadvantage of the organization and how
Rent appropriation	▪ Analyze the role appropriation has in this context: describe the pro & cont. ▪ Analyze how Natural Resources is considered in a rent appropriation mechanism ▪ Analyze whether appropriation and resource preservation compatibility

Link with RBV	▪ Describe what makes a Natural Resources a source of competitive advantage ▪ Potential reaction on the 4 key components of the RBV (Scarce/Homogeneous /Non replicable/Nontransferable) ▪ Describe what is an efficient management of Natural Resources according to the interviewee
Role of Time	
Time horizon of the organization	▪ Describe the time horizon of the decision-making process of the organization ▪ Analyze if and how this is compatible with an efficient the management of the Natural resources of the case
Short-term & Long-term tension	▪ On the specific cases detail the potential tensions between the long-term availability of those resources and the short-term need for competitivity? ▪ Analyze how their specific organization can react to that
Natural Resources & "Dynamic Capabilities"	▪ Describe the evolution of Natural Resources availability and how this is affecting the work of the organization ▪ Describe whether this requires/has required the creation of new knowledge or competencies
New collaborations	
Evolution of strategies over time	▪ Describe the evolution of the collaboration between stakeholders alongside the project ▪ Describe whether a change of behavior / appropriation mechanism/ relationships took place during the case study
New capabilities and change in appropriation mechanism	▪ Analyze if and how this evolution is impacting the appropriation mechanism ▪ Describe if new capabilities have been developed to manage this new form of collaboration

4.2.3. Methodology implementation

As explained in our research design section, our work is using an inductive and interpretative qualitative research design based on 2 cases centred on Fresh Water. As we aim at developing a new theoretical construct that will help to understand why and how corporates adapt their strategies to Natural Resource depletion challenging the rent appropriation mechanism present in the Resource Based View, we are trying to create a Taxonomy. Our approach will therefore be cumulative (Garreau, 2020) and the coding of is a key element of our work. We also intend to follow (Gioia and Corley, 2011) recommendation to ensure our case can be revelatory.

The following section is explaining and illustrating how our work has been progressing from data collection to the finalization of our interview guide and the coding of our data to forge the concept to the aggregated level that supports our theoretical construct.

4.2.3.1. Chronology of an organic coding work

First let's recall the data that are the basis for our work. Our thesis is based on 2 data streams for each of our cases. The first data stream being the interviews conducted with key players of the Evian and Aguas Calientes socio economical ecosystem and the second being the longitudinal documents that have been gathered ranging from 1961 to 2021 for Evian and from 2016 to 2019 for Aguas Calientes.

In total it is more than 13h00 of video and audio interviews that have coded and more than 370 pages of longitudinal documentation that have been studied as well.

Table 10 : Data supporting our work

	Evian	Aguas Calientes	**Total**
Interview	8 Interviews + Audio archives 8h00	6 Interviews 5h00	**14 Interviews** **13h00**
Documents	Period 1961 to 2021 145 pages	Period 2016 to 2019 229 pages	**370**

The data collection and analysis started February 2019 with our first interviews to end in June 2021 with the last documents gathered for the Aguas Calientes case. We are describing below what happened during this 29-month period.

First in the development of our thesis we initiated a preliminary version of the interview guide that was presented during our progress review in November 2018 at the Paris Dauphine University. With some adaptation our Director of Thesis advised us to start the first 2 interviews on the Evian case to fine tune our interview guide. On this basis, its stabilization was completed in March 2019. It is also as of March 2019 that we started to develop our N Vivo coding that has grown organically from the different data collected from March 2029 to March 2021. Our first pre-defence took place in November 2019, validating the interest of the Evian case and our analytical framework but also with a recommendation of complementing our research with longitudinal data. We therefore started the data collection. Our approach was at that time first to complete a working version of our results with the Evian case before opening to the Aguas Calientes case and compare our data. This helped us to be more efficient in our data collection strategy. This validation took place in March 2020 during our second pre-defence. From there started the interviews, data collection as well as the coding and analysis of the Aguas Calientes case.

Both cases helped us to forge our taxonomy which was present on March 2021 in a pre-defence to our Director of Thesis and Professor Vanessa Warnier from the IAE of Lille University.

Interestingly the process we have followed was highly synergistic. The interviews allowing us to strengthen the codification, forge the concept and the longitudinal research the answer the need of saturation and validation of several of our findings. This corroborates very much what was described by Langley and Croley (2011) many scholars namely that "*As a number of qualitative and interpretive researchers have noted it is somewhat artificial to parse the interviewing and the analyses as they tend to proceed together" p20*

In the last months before our 3rd pre-defense we identified that the document gathered did not change the nature of our coding framework that landed with 25 different items.

Table 11 : Data collection evolution

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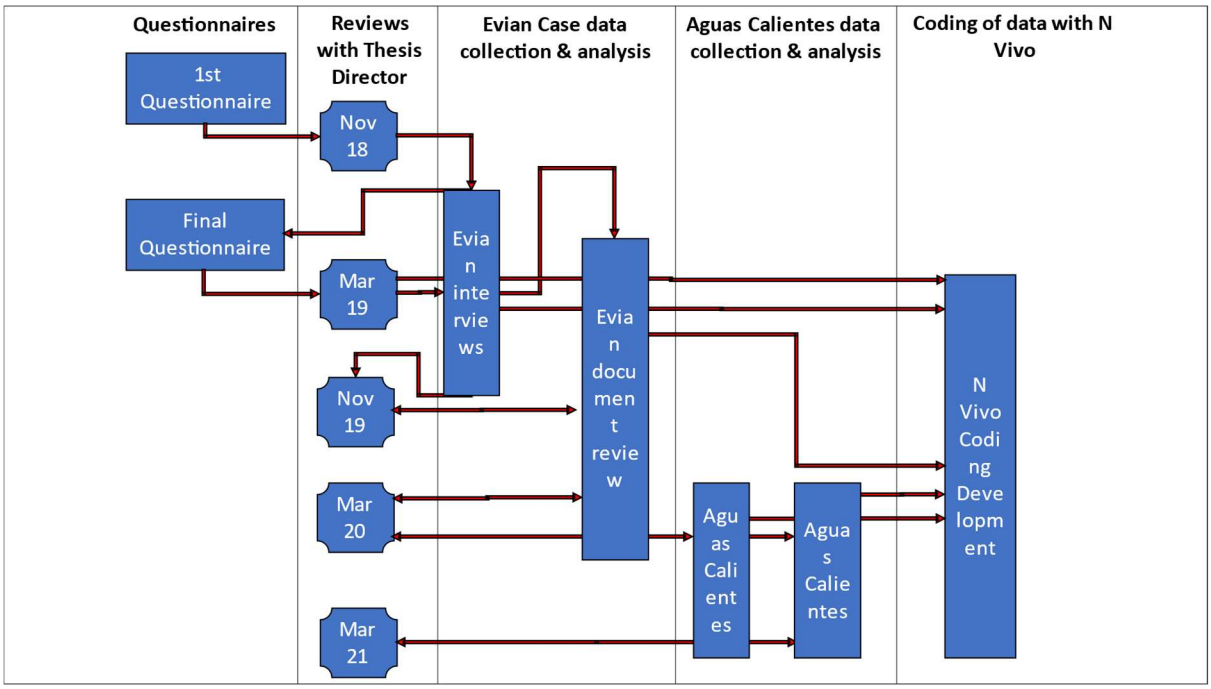

The section below is explaining the coding process we have followed.

4.2.3.2. From 25 codes to 6 items a revelatory journey

For our work we used the software NVivo 12 pro. Once we started the coding and on the basis of our interview guide, we enriched progressively the codes up to 25 different items that we have listed below.

	Codes
1	Personal attachment to the ressource
2	Importance of family and local roots
3	Cooperation between stakeholders to protect the resource
4	Conflicting time horizons between business and nature
5	Local political constraints linked to resources utilizations
6	Depletion of Natural Resources and economic impact
7	Manager perception of the Natural Resources
9	Conflicting interest in resource usage and management
10	Solidarity among local players
11	Utility of the resource
12	Role of leaders in the prioritization of resource management
13	Awareness of the Depletion of Natural Ressources
14	Understanding of the Natural Resource cycle
15	Change of perception and behaviors of leaders
16	Natural Ressource management as part of strategy
17	Evolution of the perception over time
18	New competencies / new role emegence to manage the resource
19	Short term interest vs. Long term preservation
20	Description of Natural Resource as a source of competitive advantage
21	Purity of water
22	Availability of water for all
23	Limit to the appropriation of the resource
24	Governance mechanisms to protect the resource
25	Risk and consequences of the depletion

While the interview guide and the time spend on the development of the Evian case helped us to enrich significantly the coding, the Aguas Calientes case helped us to confirm its relevance but also added significant dimension on the Awareness, New Competencies/new role emergence to manage resource and very significantly the Understanding of the Natural Resource Cycle that we have also identified in our case comparison.

Analysing further we identified several links and regrouped the codes into 6 different categories in that sense following very closely the second step of Gioia and Langley.

> Stewardship, Collective Management, Change of Time Horizon, Knowledge and Awareness, Resource Characteristics and Manage vs Exploit.

3 codes appeared to have sometime common characteristics with some categories

- 10 – Solidarity among local players that both relates to Stewardship and Collective Management
- 24- Governance Mechanisms to protect the resource that both relates to Stewardship and Collective Management
- 25- Risk and consequences of the depletion that relates to both knowledge& awareness and manage & exploit

In the table 12 below we are describing the second order theme development.

Table 12: 2nd order - themes development

Co	Codes	Stewardship	Collective Management	Change of Time Horizon	Knowledge / Awareness	Characteristics	Manage vs. exploit
1	Personal attachment to the ressource	Personal attachment to the ressource					
2	Importance of family and local roots	Importance of family and local roots					
3	Cooperation between stakeholders to protect the resource		Cooperation between stakeholders to protect the resource				
4	Conflicting time horizons between business and nature			Conflicting time horizons between business and nature			
5	Local political constraints linked to resources utilizations		Local political constraints linked to resources utilizations				
6	Depletion of Natural Resources and economic impact						
7	Manager perception of the Natural Resources				Manager perception of the Natural Resources		
9	Conflicting interest in resource usage and management						
10	Solidarity among local players	Solidarity among local players	Solidarity among local players				
11	Utility of the resource						
12	Role of leaders in the prioritization of resource management						Role of leaders in the prioritization of resource management
13	Awareness of the Depletion of Natural Ressources				Awareness of the Depletion of Natural Ressources		
14	Understanding of the Natural Resource cycle				Understanding of the Natural Resource cycle		
15	Change of perception and behaviors of leaders	Change of perception and behaviors of leaders					
16	Natural Ressource management as part of strategy			Natural Ressource management as part of strategy			
17	Evolution of the perception over time			Evolution of the perception over time	Evolution of the perception over time		
18	New competencies / new role emegence to manage the resource						
19	Short term interest vs. Long term preservation			Short term interest vs. Long term preservation			
20	Description of Natural Resource as a source of competitive advantage					Description of Natural Resource as a sourc	Description of Natural Resource as a source of competitive advantage
21	Purity of water					Purity of water	
22	Availability of water for all					Availability of water for all	
23	Limit to the appropriation of the resource		Limit to the appropriation of the resource				
24	Governance mechanisms to protect the resource	Governance mechanisms to protect the re	Governance mechanisms to protect the resource				
25	Risk and consequences of the depletion				Risk and consequences of the depletion		Risk and consequences of the depletion

From those 25 codes we regrouped them into 6 different categories as shown above. At that stage of our research, we identified that the 6 different categories could be regrouped according to 2 different sequences.

- First the conditions under which the Resource Based View of the firm and especially the rent appropriation do not work to create long term competitive advantage
- Second the description of the characteristics of the strategies developed by the corporates to ensure they can develop long term competitive advantage

In the first sequence the codes related the usage of the resource rather that its ownership as source of competitive advantage as well as its management rather that is exploitation and finally the fact they are collectively managed rather that appropriated appear are the conditions under which the RBV do not work.

The second sequence was showing how new strategies that we regrouped under Stewardship, the importance of a specific characteristic of the resource as basis of the competitive advantage, and finally a different appreciation of time was forging our new construct.

Table 13 : Coding Results

3 conditions when the RBV does not work to create long term value		***How to ensure long term value creation***
Use vs. Own	>	Identify and manage a specific characteristic of the resource
Manage vs Exploit		Steward the ressource
Collectively manage vs. Appropriate		Change time horizon

Let us now look at how the Evian and Aguas Calientes allowed us to develop this new framework.

5. FINDING AND ANALYSIS

5.1. FRESH WATER RESOURCE: THE CASE OF EVIAN

The Evian area in France and its world-famous mineral water brand owned by Danone is an emblematic case of how a Natural Resource management impacts the whole territory from farmers to tourist and municipalities

To study the Evian water case, we focused on identifying the role that this Natural Resource plays for local communities and the strategies developed to preserve it and develop a rent creation mechanism that benefit the same communities.

Key to perform our analysis we interviewed 7 key local stakeholders totaling close to 8h00 of interview and analyzed more than 145 pages of documents gathered during our research. The analysis of the interviews and several supports of the case show 3 main characteristics on how a competitive advantage build on the usage of natural resource may challenge the logic of appropriation present in the RBV as an underlying assumption.

- First there is a confirmation that to become a resource, the Natural Asset (fresh water) has to be used which by essence may challenge its sustainability if the usage exceeds the capacity of the resource to replenish or if threatened by pollution. The importance of usage seems more critical than the one of ownership.
- Second the logic appropriation of the resource that we have identified as an underlying assumption of the RBV seems in fact less critical and potentially counterproductive in the case of Evian than the capacity of the player to manage its social and territorial ecosystem.
- third, there is a clear articulation of potential conflicting interests that may challenge the capacity to protect the resource itself and therefore limit the capacity to derive long term sustainable rent out of its exploitation. Reconciling such conflicting interest become therefore critical for sustainable rent creation derived from the usage of the resource.

Those 3 characteristics challenge the logic of rent appropriation as a basis of a rent building exercise. They therefore call for an alternative strategy from the economic actor that we call Pre-Competition with a new set of capabilities. After detailing our findings related to Fresh

Water management and rent appropriation in the case of Evian, we will use the second part of our case study to forge the concept of Pre-Competition as a complement to the RBV framework.

5.1.1. From a Natural Asset to a Natural Resources, the usage is determining the rent creation:

The analysis of the material gathered in the case of Evian water resource management allowed us to identify 3 conditions (usage vs. ownership / collective management vs. appropriation / reconciliation vs. conflicting interest) that when gathered do challenge the traditional appropriation mechanism that underlies the Resource Based View model.

5.1.1.1. First condition: the intrinsic link between the resource and its usage for a Natural Resource can challenge the logic of appropriation:

As seen on our literature review with the definition provided by the United Nation [47], there is a clear consensus on the fact that a natural asset becomes a resource as and when it is used. This usage is more important than the ownership itself.

Our interviews confirm at several instances this link, just like the Secretary General of the RAMSAR convention provided us with her perspective on this aspect:

"When we talk about Natural Resources, there is a concept of use. So, the Natural Resources is what we use from this nature, from this biodiversity and it includes like the women or men using these resources provided by nature." Marta Rojas Urego Secretary General of RAMSAR, Interview.

The resource has therefore not only a utility but the way the economic actor uses it will characterize it as a Natural Resource.

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47 "Natural resources are natural assets (raw materials) occurring in nature that can be used for economic production or consumption". Glossary of Environment Statistics, Studies in Methods, Series F, No. 67, United Nations, New York, 1997.

In the case of Danone Water the resource is used thanks to a delegation provided by the local municipality as the Head of Public Affairs of Danone Water is highlighting.

"we do not own the water we are authorized to use it which creates a different link with the city with its communities. There is a very tight link with the economic activity, the tourism hence with the water comes the obligation linked to tourisms, thermalism, the golf and the casino management » Annick Moreau – Danone Water Head of Public Affairs - Interview

The resource is not owned by Danone and furthermore, the right to use the water of Evian, to exploit it in that case, comes with obligations that go much beyond the resource itself and in many ways determine the capacity to create rent and sustainable competitive advantage out of it in the long run.

In another interview, the VP Operation of Danone Water Division explains that :

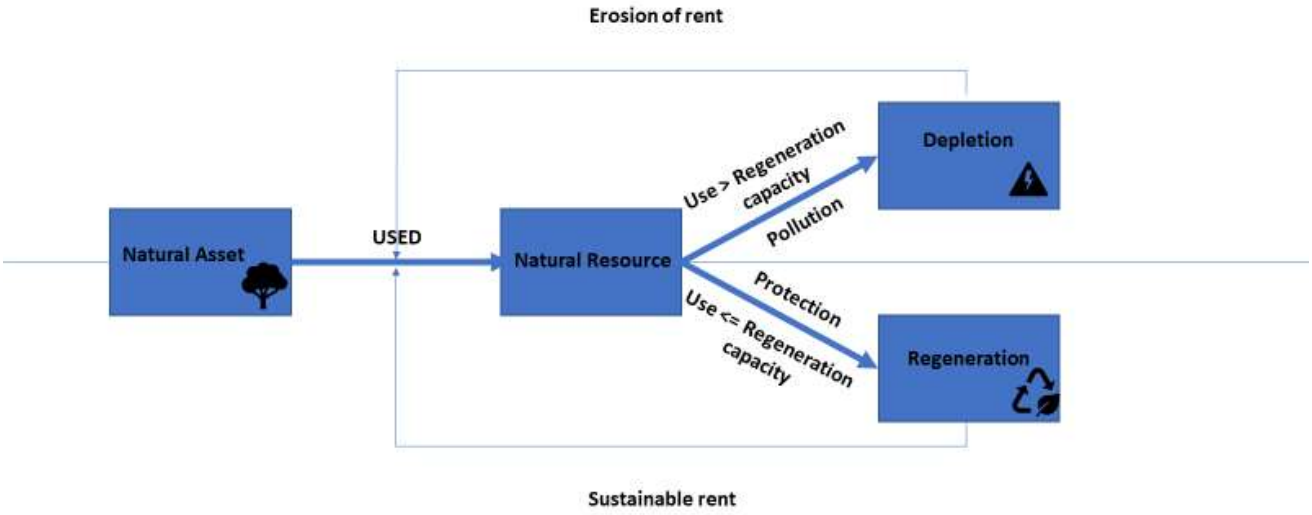
"a company that is part of Danone, Evian, that depends on the sales of water, depends on having this water being available, being sustainably available, being of the right quality and here you know the Natural Resource which in my way of speaking is more the ecosystem, the land, the ecosystem would be very critical because this is the source on which the company depends. So, it's a relationship between resource and use." Philippe Galois VP Operations Danone Water - Interview

Here the VP Operations of the Water Division emphasizes the role of the intrinsic link between the Natural Resource, and its usage. But this usage can create an ambivalent situation where if overused or polluted the resource can deplete and therefore limit the capacity of sustainable rent creation. In that case the appropriation can become deeply counterproductive as a short-term maximization of the resource will exhaust its capacity to replenish. It is interesting to note again that the NRBV developed by Hart mentioned the logic of pollution prevention not in the perspective of managing the Natural Resource but to avoid potential fine or taxes which honestly correspond to a very limitative perspective compared to the actual challenge faced by Natural Resources.

The threat that pollution or overexploitation could create is clearly highlighted in several interviews we conducted, and we have extracted below relevant citation that illustrate the

importance of management of the resource availability and the element of prevention against pollution.

Figure 9 : Natural Assets to Natural Resource



On the contrary protecting the resource or regulating its usage can ensure its long-term availability and therefore its potential for rent creation. We are summarizing this paradigm in the chart below.

Managing the resource availability	▪ *"We have developed and in-house team of hydrogeologist in order to know better the resource and manage it" Bernard Giraud – President of Livelihood - Interview* ▪ *"There are evident links between the resource availability and what we sell. You need to ensure the daily availability of the resource to sell, this is as simple as that." Philippe Galois VP Operation Danone Water - Interview*

	▪ *"So a company that and it's part of Danone, Evian, that depends that sales water, it depends on having this water being available, being sustainably available, being of the right quality and here you know the Natural Resource which in my way of speaking is more the ecosystem, the white land, the ecosystem would be very critical because this is the source on which the company depends. Marta Rojas Urrego, Secretary General RAMSAR - Interview*
Prevention against pollution	▪ *"Our [strategy] was first defensive in a sense that the focus was first to develop systems of detection of potential pollution. In the 70s and 80s atrazine was used in the culture of maize so we needed to tightly monitor the risks » Bernard Giraud, President Livelihood - Interview* ▪ *The project Terr'a Grau mentioned in its submission to the ecosystem fund the "importance of developing a fertilization of precision in the impluvium of Evian to limit potential pollutions" –Ecosystem Fund Project Submission, 2010* ▪ *"Today our hydrogeologists are there to study the resource and try to predict its quantitative and qualitative evolution to in fine protect it. If you do not protect it, it will be spoiled meaning polluted or overused » Philippe Galois, VP Operation Danone Water - Interview* ▪ *« we said folks if we do not anticipate the impact of our action in 10 to 15 years this will impact us and our children. We need to protect this collective asset » Mayor of Laringe, APIEME Interview*

The structuring impact of usage appears as well very clearly in the strategic review analysis performed by Danone and consulting firm Mc Kinsey in 2017. In this report the executive summary states that *"Beyond the immediate scarcity risk, Danone needs to secure its license*

to operate in the long term while strengthening its competitive advantage". It identified 6 potential levers to secure license to operate and strengthen its competitive advantage.

Protecting License to Operate

- *Water access: could be limited due to increased sarcity*
- *Water quality: usable water availability*
- *Reputation: local communities management*
- *Regulation: can limit the usage and access to water*

Strengthening Competitive Advantage

- *Operational Advantages: improving water footprint with upstream measures*
- *Consumer value: perception increased by water protection measures communicated*

Source: Water 2020 Final Document

The 4 license to operate dimension access, quality, reputation and regulation, condition the possibility to develop a competitive advantage and we therefore see how the characterization of the usage of the water resource is key in the capacity to offer a platform that can support competitive advantage.
To illustrate those risks the report analyzes several field examples (p.5):

1. On access the issue faced by Pepsico in Ethiopia forced to shutdowns for several month by the municipality under the pressure of local population due to increase scarcity. The population protested against water restriction impose to them while trucks of the Pepsico plant were going out every day.
2. On quality the report analyzes confidential information on how agriculture practices could impact mineral water springs if not managed pro-actively
3. On reputation: several media coverage are analyzed starting from the position taken by the former Chairman of the company stating that Water should be privatized and the increasing pressure faced in the USA.
4. Finally, the on regulation the report takes the example of the issue faced by the group in Brazil before extending the license of one of its largest plant due to river water scarcity.

From a conditional license to operate perspective, we will see later how Danone and Mc Kinsey offer a perspective on the way the management of the resource can become a source of competitive advantage.

5.1.1.2. Second condition: Natural Resource is determined by its local social ecosystem – managing it becomes critical to sustainable rent building.

A second aspect arising in our analysis of the Evian case is linked to the fact that Water as a Natural Resource is fully embedded into an complex environmental and social "ecosystem" / network of influence that to a large extend determine the optimum conditions of its usage and the potential of sustainable rent creation.

This dimension that is extrinsic to the resource itself is fully part of the rent creation process. Without the consent of the local communities, no delegation of usage would be possible. Without the solidarity between municipalities the resource could be at risk. Managing this dimension therefore becomes a specific capability of the company and its executive.

A former Sustainability Director of Danone is for instance stating that:

"I think that in many cases and maybe in all cases the situation vs. a natural resource is directly linked to its territory. It means that we only use part of its value that itself goes beyond in tis ecosystem "Bernard Giraud – President of Livelihoods - Interview

Rather than developing complex strategies to guarantee its appropriation the capacity to maintain a usage of the resource by engaging with local communities becomes a key capability for the company. It leads Danone to enter into very iconoclast type of activities than its core business such as getting involved in farm fertilization, the management of road de-icing, casino or golf club management and even tourism.

Danone Water Division's Head of Public Affairs is highlighting:

"*it creates a different link with the city with its communities. There is a very tight link with the economic activity, the tourism as with the water comes the obligation linked to tourisms, thermalism, the golf and the casino" Annick Moreau – Head of Public Affairs Danone Waters – Interview*

Such a link to local communities has several dimensions that transform this ecosystem management and prove to be key to determine sustainable rent building. It goes much beyond the usage and appropriation of the resource as stated in the RBV.

The proximity with local context changes Danone managers	▪ *"There have been very different personalities heading the factory or the business. However, I really have experienced how after 6 months or 1 year they all ended defending and protecting the brand and understanding the local stakes" Bernard Giraud – President of Livelihood - Interview* ▪ *"[you] know this is the normal process of breakthrough breakdown. This apparent contradiction that you face as a leader in Evian you need to overcome them. Working here forces you to accept them. This is the only way to start managing them and be successful" Philippe Galois – VP Operations Danone Water - Interview*
The proximity with local context focuses their work on different priorities than the core business only	▪ *"[Evian] is not a factory that was living in closed door. It has always been in full interaction with its territory. First because it is a rural place and therefore when you are the Brand Evian you represent the people of Evian" Annick Moreau, Head of Public Affairs Danone Water - Interview* ▪ *"Today and even back then, if we were following a pure economic logic, it's not necessarily the most rational thing to do when you are a food company to engage in hotel, casino and golf management! "Bernard Giraud, President of Livelihood - Interview*

Managing this ecosystem is also about creating a strong awareness and a specific engagement strategy. This has been as the core of the Ramsar / Evian partnership well illustrated in the

renewal of their Memorandum of Understanding in 2011 that states that the lack of awareness and understanding prevent to create the conditions of actions to protect water resources and wetlands.

Therefore the 2 partners commit to work hands in hands to raise the level of awareness to lead *to quality practice*. The MoU states, *"This partnership will be strategically organized around ont theme which is awareness and knowledge that is instrumental to ensure actions are taken in practice"* Ensuring that the social ecosystem is fully engaged becomes a critical component of the capacity to act.

Figure 10 : Terragr'eau news letter

The management of this ecosystem becomes a critical component to consolidation of activities. The importance of the link with local communities is clearly emphasized in an internal Danone Newletter in 2014 named "La Semaine" where the corporate sustainability director states that the Terragr'eau project is a "*perfect illustration of the mission of Danone Ecosystem that aims at consolidating the activities of local actors which whom Danone partners like farmers and local communities to reinforce the territories"*

5.1.1.3. Third condition: managing the resource implies aligning and managing conflicting local interests

While there is a general perception that the water resource is a common good and the whole community around is benefiting from its valorization as Mineral Water by Danone, it however created several sources of potential antagonism between actors that if not managed could put at risk the availability of the resource in the long run.

"In the logic of protection, we clearly see a certain contradiction between the location where the water is emerging and the impluvium where the water is coming from. A financial contradiction first because Evian was benefiting from the taxes while the upstream municipalities, much smaller and rural, had very limited budget to protect the environment. The one that had nothing to protect where receiving all the benefits" Bernard Giraud – President of Livelihood - Interview

We have identified several groups of stakeholders in our case study with potential conflicting interests linked to their living and/or operating on the same impluvium (water catchment area). This ambivalence between the resource and conflict of interest is often cited in our interviews and in several internal document of Danone that we reviewed as well as the presentation used at the origin of the constitution of the APIEME (Association de Protection de l'Impluvim des Eaux Minérales d'Evian / Association of protection of the watershed of Evian mineral water).

One of the early days founder of the APIEME stated:

"In the case of Evian, we were in a living environment, very dynamic especially for the protection of undergrounds. The population was increasing fast with a strong real estate pressure, tourism was a key economic pillar and 20 years ago agriculture practices were intensifying. […] at the same time everyone had a cousin or a brother a husband or wife working for Evian Water and therefore the preservation of the resource became increasingly topical." Annick Moreau – Head of Public Affairs Danone - Interview.

We have interviewed 4 main groups of stakeholders:

- Danone Employees,
- the Farmers that are cultivating on the impluvium of Evian on the upstream part of the plateau de Gaveau,
- the Downstream Municipalities that regulate the land use but do not benefit directly from the source and the downstream municipalities that mostly benefit from the source through tax and direct employment.
- Partners of the project such as the RAMSAR convention for wetlands, the UN convention that protects wetlands.

The stake of all the actors are quite different from each other as the below table summarizing some of the interview contributions demonstrate.

Danone	Long -term availability and purity of the water resource	▪ *"Our competitive advantage is based on a Natural Resource that is based on a very unique hydrogeological system that has an unrivalled quality and purity" Annick Moreau – Head of Public Affairs Danone Water - Interview*
Farmers	Revenue generation from their farms	▪ *"The question of agriculture and how we could help farmers to earn a decent living without endangering the water resource were key. This is quite interesting as this is how the AOC Abondance (Appellation d'Origine Controllée) was born while certain farmers had the tendency to intensify their production of maize to increase their yield and to do that used a lot of chemical intrant. This scared use a lot. "Bernard Giraud,President of Livelihood - Interview*
Upstream Municipalities	Maintain quality of life but allow economic development	▪ *"It is key to maintain a sustainable agriculture that offers perspective to local people and protect the environment" Jacques Burnet – Mayor of Laringe*

		▪ *Our environment is unique we need to make it knowns and to make it loved to ensure that we can transmit it to the next generation – Bruno Giller Mayor of Saint Paul en Chablais – Video of APIEME*
Downtream Municipalities	Ensure the economic development of their municipalities	▪ *« a large part of the revenue of the municipalities where the water is emerging is linked to this resource […] if something would happen on the plateau, if we would let a highway to be built we would shoot in our own foot and endanger the water resource" – Annick Moreau, Head of Public Affairs - Interview.*

Managing the fact that farmers wanted to increase their revenue and the real estate pressure on the upstream part of the impluvium in a demographically very attractive region, while at the same time preserving the resource seemed to be quite opposed. Why the downstream municipalities that were benefiting from the tax revenues of the source would aspire to share their financial resource, why the upstream municipalities without any incentive system would have an interest impose additional constraint to their populations at the risk of disappointing their constituent...and electors!

One can very much see that in a pure strategic maximization of every single actor's self-interest the overall collective rent creation potential linked to exploitation of the source could have been rapidly endangered. A pure rent appropriation and maximization logic would in that case not work to reconcile the opposed interest of every actor.

To overcome that several actions were taken and scaled up.

The first very determining one was to acceleration the transition of the local agriculture activity to an AOC ("Appellation d'Origine Controlée" /Controlled Designation of Origin) in order to "preimmunize" the milk products of the locality and create a *cahier des charge* that would protect the environment and at the same time render the increased environmental constraint acceptable economically. The second action was to create an instrument of solidarity between

the different actors named APIEME[48] (Association de Protection de l'Impluvim des Eaux Minérales d'Evian / Association of Protection of the Watershed of Evian mineral water).

The first step to regulate the agriculture activities and limit the usage of synthetic fertilizers and dominance of a cereal-based agriculture while at the same time offering a premiumization strategy for local farmers was the creation of a specific AOC Fromage D 'Abondance[49] was submitted and granted in 1990 and became in 1996 an Appellation d'Origine Protégée - AOP. This certification came with a very strict *cahier des charges* when it comes to critical environmental aspect like cow feed or grazing practices limiting the usage of certain pesticides and fertilizers and therefore preventing potential infiltration. For instance, this *cahier des charge* mentions in its clause 5.2 that *"the base ratio of the herd should be constituted with a minimum of 50% of grazing material in summer period and of hay during the winter".* With such an appellation the farmers could price up their milk production. In 2013 during the milk crisis linked to the liberalization of the European Milk Market, the milk price of Abondance producer was around 480 Euros/000 liters while conventional milk was at best at 350 Euro/000 liters this year[50], a difference of close to 40%.

Figure 11 : Abondance cheese Logo - Source internet

[48] https://www.apieme-Evian.com/

[49] https://www.fromageabondance.fr/

[50] https://www.20minutes.fr/economie/1308354-20140225-20140225-prix-lait-appellations-dorigine-protegent-producteurs

The second strategy developed in the territory was what is described by the Mayor of Larringes and President of APIEME between 2008 and 2014 as a "*instrument of solidarity"* but also to *"protect the future".* The mayor states *that this is a unique set up where the structure developed regroup "municipalities benefiting from the taxes derived from the resource exploitation, the private company exploiting the resource and the municipalities protecting the resource".* The mayor as a conclusion mentions that *"[this] is the future of the territory that is at stake" as "what we have to sell on the plateau is the beauty and purity of our nature and this has not price".*

Such *"solidarity"* that is challenging the individual instantaneous interest of actors is also challenging the sole logic of rent appropriation and maximization present in the RBV and highlight the necessity to map relevant alternative strategies to maximize the long-term rent creation of Natural Resources.

The conflict of interest can also arise among the different partners as if their objective of protecting the resource can be a point of consensus the interest of their organizations can sometime be a point of misalignment. If we take the example of the partnership between RAMSAR and Danone we studied several e-mails exchange during the negotiation of the partnership's renewal in 2017 between the secretariat of the convention and Danone.
Those emails demonstrate 2 positions, on the one hand the convention that wish to use the partnership to promote the protection of wetlands let's say in the general manner and Danone that to justify internally the importance of this investment that wish to leverage the partnership for some of its mineral water brands therefore being specific with local jurisdictional actions that can become a Proofpoint for its brands.

One email exchange is self-explanatory in this regard with the VP Sustainability of Danone saying:

"I just spoke to RAMSAR secretary general […]. Their position is that the current proposal would be to actioned focus for the commercial interest of Danone without the covering enough the need of general awareness for the wetlands protection". E-mail Exchange

The final proposal of the MoU will finally be developed around 3 objectives:

- Active support on 3 identified watersheds

- Development of a new impact assessment tool to be presented at the COP 13 for Wetland
- Continued support for the World Wetland days

This first case of our thesis is therefore offering a perspective on 3 conditions which by large invalidate the underlying assumption of rent appropriation. In the case of Evian, water as a natural asset as soon as it is becoming a resource for the territories changes the equation between local stakeholders as its protection becomes more important in the rent building exercise for the territory than its appropriation:

- first, the potential antagonism between the usage of the resource and its depletion if the usage exceeds the capacity of the resource to replenish or if threatened by pollution a dimension that neither the RBV or the NRBV identified.
- second the logic appropriation of the resource that we have identified as an underlying assumption of the RBV seems in fact less critical in the case of Evian than the capacity of the player to manage its social and environmental ecosystem. Worst the appropriation by 1 player could even disqualify its capacity to protect the resource dependent from other players
- third, the clear articulation of potential conflicting interests that may challenge the capacity to protect the resource itself and therefore limit the capacity to derive long term sustainable value out of its exploitation.

This creates a context where the current paradigm of the Resource Based View (RBV) seems not applicable to maximize the rent creation and competitive advantage of the different actors. We observed that different strategies are designed by actors that offer a complementing perspective to the RBV that we can name Pre-Competitive Strategies. Such strategies reconcile the interests at stake: the rent building potential of the resource, its preservation over time and reconcile the multiple interest of stakeholders. We see that it can become a capability that corporates or managers need to master to build sustainable competitive advantage in the context described by the 3 conditions above.

5.1.2. Pre-Competition a way to manage Natural Resource:

The place of Water as a Natural Resource in the Evian case is confirming the fact that since this natural asset has a clear utility the very natural attribute of the resource becomes key to determine its potential competitive advantage.

The appropriation of this characteristics is involving multiple stakeholders and may become a capability in itself. Unlike the RBV or NRBV are suggesting in the case of Evian more than the resource itself and its appropriation it is the way it is managed that maximizes the sustainable rent creation potential attached to it.

In such cases alternative strategies must be developed by the actors, strategies that we call Pre-Competitive.

To forge this new concept that can complement the Resource Based View of the firm in the case of Natural Resources the Evian case allowed us to identify 3 necessary characteristics:

- It is not the resource itself that can create competitive advantage but one of its characteristics. The first condition that arises from the Evian case is that in the context of the Water Resource what is driving the rent creation potential is a specific characteristic of the resource, its purity, rather than the resource in itself. Protecting this aspect is therefore the real determining factor that must be studied, and this factor is directly linked to the environment of the resource.
- secondly the case clearly stresses that rather than the appropriation and exploitation of the resource it is the stewardship of this resource that becomes a key enabler of sustainable rent creation for the actors. In a way the resource is more borrowed from the next generations than owned. Behind the stewardship aspect we will see all the elements of collective, territorial, and sometime emotional management.
- Finally, a third dimension is instrumental to the Pre-Competition: the time horizon. In the management of a Natural Resource that depends on a replenishment cycle that goes beyond the traditional economic horizon of quarterly reporting Pre-Competitive behavior can help to reduce the antagonism between a short term maximization and a sustainable rent over time.

5.1.2.1. First characteristic of Pre-Competition: it is not the resource that guarantee the competitive advantage but a certain characteristic of the resource. In the case of Evian, it is its purity.

Several of our interviewees highlighted purity as the true source of competitive advantage for the water brand of Danone. This first element tends to tell us when a natural asset is becoming a resource in fact it is not the natural asset per se that determines the rent appropriation but one of its characteristics.

As a Danone executive states in our interview:

"Water has something magic and unique; it is a treasure […] it remains in drinks sector a very unique product it the best for health and especially Evian who has something magic in it linked to the purity, naturality and health" – Annick Moreau – Head of Public Affairs Danone Water – Interview

This aspect is fully embedded in the brand construction. In the CSR Brand positioning strategy, the Evian marketing team wrote the following:

"Evian gets its exceptional qualities from the purity of its source giving its unique composition". 2017 Internal Marketing Document.

What is striking in those citations is the fact that the main differentiation and advantage that can be derived from this resource being used is also derived from its purity. But then one can ask how to ensure this purity can be protected for sustainable rent creation? We will see in the table below that Purity is intrinsically correlated with the way the environment of the impluvium is managed. Therefore, the capacity that Danone (and the local stakeholders) will have to protect that resource will determine the capacity to maintain this characteristic determining therefore its competitive advantage. This very aspect is highlighted at several occasion in our interviews as purity is not only the characteristics of the resource but also the link with its environment.

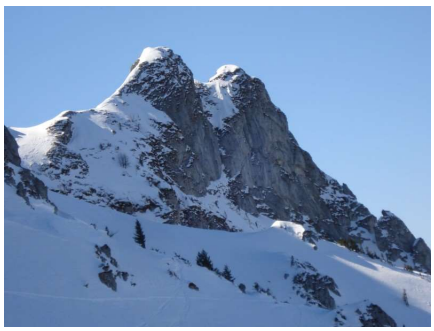
This citation articulates the importance of purity in the brand positioning but also the fact that this aspect has a mirror effect on other territorial activities like tourism.	▪ *« The image of the Mont Blanc, of the purity of the snow, the brands appropriated it completely […] we now say that we are excellent in the protection of the resource it becomes instrumental in a kind of excellence positioning. This is shared by all [in the community] as this is directly linked to local development and also the tourism. It became a win win » - Bernard Giraud – President of Livelihood - Interview*
In this citation the RAMSAR convention Secretary General clearly linked the dependency of Evian to the quality of the resource and therefore its ecosystem.	▪ *Evian, depends on the sales of water, it depends on having this water being available, being of the right quality and here you know the Natural Resource which in my way of speaking is more the ecosystem, the wild land, the ecosystem would be very critical because this is the source on which the company depends – Martha Rojas Urrego – Secretaty General Ramsar Convention - Interview*
In this citation the VP Operations of the water division is clearly identifying the volume and qualitative aspect of the water resource	▪ *"Yes, we need to ensure that the way we exploit [the resource] will not endanger it which means overexploiting it and creating an*

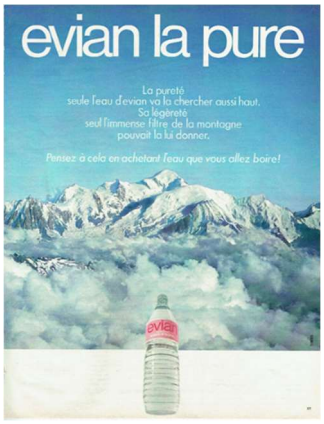
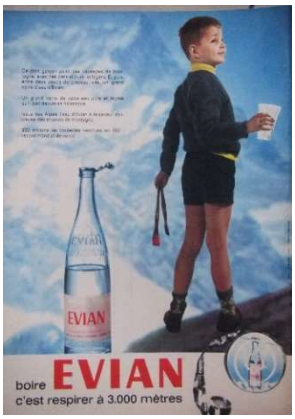
management highlighting how purity is in fact the translation of the resource quality.	*issue of availability in the long run because we took more than what nature can replenish and of course in terms of quality which means ensuring that we are not spoiling it. The quality of the resource in the case of Evian it is purity in fact" Philippe Galois – VP Operation Danone Water – Interview*

Purity is therefore what has been sold by the brand and valued by its customers along the years. This unique characteristic that determines the competitive advantage of the brand is also interestingly exemplified by several advertisement campaign used by the brand over the years. Using the internal archive of Evian we analyzed a few print commercial from the very first one in the 30s that shows a white dove drinking Evian water in a crystal glass down to the very last campaign launch in 2021 that highlight that Evian "protects life at source" .

This longitudinal look at the positioning of the brands from the 1930 till now, clearly demonstrates that a key and consistent attribute of the brand is directly derived from nature. It also directly or indirectly implies not only bring this characteristic to its consumers but also protect or steward it. This is directly expressed in the 2017 campaign stating that "miracle need to be protected by human beings" that shall be protected. The snow, the mountains and its imaginary of purity is present all over the visual identify of the brand (like in its logo which represent the Dent D'Oche a mountain overseeing the Leman Laken in present in the logo of the brand (see below). The 1962 campaign even implies that by drinking Evian miners that are exposed to toxins could clean their organism just like if they were breathing air at 3 000m

Figure 12 : Evian Logo & Dent d'Oche



One of the very first print commercial of Evian that iconize purity though a white	**1930** 	
Purity is what the Evian mineral water is delivering to the consumers a positioning that is quite consistent between 1971 and 2015	**1971** 	**2015** 
2 print commercials of 1962 that compare drinking Evian as breathing air in the mountains The first one showing a miner says that "this man has a difficult life. He must get rid of the toxin that his organism accumulates. When he drinks Evian it is like he his breathing the pure air of mountains"	**1962** 	**1962** 

Print commercial of 2015 claiming Welcome to our factory and depicting the alps	**2015** 	
Print commercial in French Press stating that there is now miracle and we need people to protect miracles	**2017** 	
Last commercial campain of Evian that says " protect life at source"	**2021** 	

From this perspective one can easily understand the comment of another Danone VP Operations of the Water Division that observed a steady shift of competitive advantage in its business from the product and distribution part of business to the upstream part of the value chain.

"[I] am observing that the competitive advantage is slowing moving away from the product itself to be located in the supply chain. Depending on the sector it can be on the downstream part of the supply chain, the distribution and road to market, or in the case of water in the upstream part i.e. how do you respect Natural resources". Philippe Galois – VP Operations Danone Water – Interview.

In this case the characteristic of a natural assets to become a resource is therefore directly linked to the capacity to manage the resource sustainably. Such element has not been taken into account by the Resource Based View neither the attempt of Hart to develop a Natural Resource Based View.

A Pre-Competitive strategy will aim at protecting a certain characteristic of the natural resource that is in fact the true value generator. As seen in the previous part of our Evian case study the protection of such characteristics is directly dependent from the alignment of local stakeholders that can have divergent interests (cf 2.3).
To ensure it will be the case Danone and its managers and executive had to develop specific capabilities that define a Pre-Competitive strategy and that we call Stewardship

5.1.2.2. Second characteristic of Pre-Competition: stewardship is a key capability to be developed to protect the rent creation potential of Natural Resource and a determinant of a Pre-Competitive strategy:

5.1.2.2.1. Defining Stewardship:

The Oxford dictionary is defining stewardship as:

> *"the act of taking care of or managing something, for example property, an organization, money, or valuable object"*. [51]

Behind this definition 3 notions are complementing each other which reflect well the reality of our case.

- First the caring part, which in essence relates a serious attention to something to avoid potential damage or risk.
- Second the definition adds the notion of management implying a proactive stand in the capacity to run or control something.
- And finally, the examples given of course relate to something that is valuable as such.

Our interviews highlight frequently the 3 components of stewardship:

A serious attention to something to avoid potential damage	- Philippe Galois mentioned that the management of the resource needs to be done as "*a good father would do"* - Bernard Giraud - President of Livelihood - mentions on his side that at the beginning of the water stewardship strategy "*the idea was to prevent a risk of pollution and note to talk about stewardship as otherwise Evian would have highlighted the risk"*
A proactive stand in the capacity to run or control something	- The words describe to explain the shift towards the water stewardship journey are self-explanatory with

[51] https://www.oxfordlearnersdictionaries.com/definition/english/stewardship

	"strategic choice" Bernard Giraud, "commitment" for Philippe Galois, - Talking about the beginning of APIEME, Annick Moreau states "*at the beginning we were probably very directive"* - Cathy Le Hec describes a *win-win partnership* at the inception of the APIEME
Something that is valuable as such	- The dimension of the importance and intrinsic value of water is very strong o Annick Moreau refers to Evian water as a *"war treasure"* o JR Bouron Mayor of Larringes mentions *"this resource will never be delocalized, and it is linked our territory, our landscape. The quality of our nature is priceless"* o Gaston Lacroix the Mayor of Publier mentions on his end that the water resource is the "common denominator of all the territory";

5.1.2.2.2. Three (3) conditions for stewardship to become a relevant capability:

5.1.2.2.2.1. A collective dimension prevailing vs. the individual interest:

Evian Water Resource is not owned by anyone in particular as it is a collective property and that several actors benefit from it directly or indirectly which creates a collective responsibility to ensure that the resource is available and therefore needs to work and act with other actors in a collective manner.

The Secretary General of the RAMSAR convention is extremely clear in that regard.

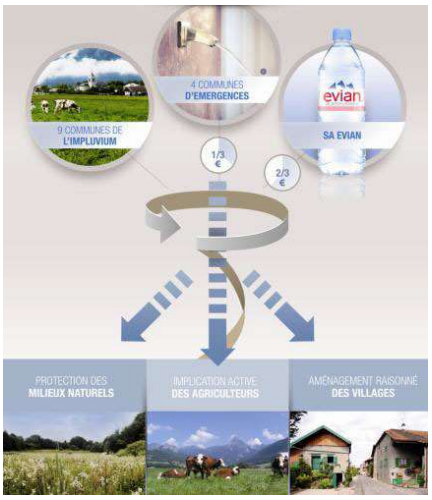
"as people are involved, it's absolutely essential as part of the sustainable management to involve the different stakeholders, […], for example for Evian, in the impluvium which is the RAMSAR site where it was established in the source of the Evian Water there was a work with the municipalities so how could you conserve this resource if you wouldn't work with the municipalities and all the local actors. This is a collective journey!" Marta Rojas Urrego – Secretary General RAMSAR - Interview

To steward the resource the Evian team had to understand it natural cycle and made it understood by local communities. Danone therefore very early invested into detailed hydrogeological expertise to study and materialize the link between urbanization, agriculture practices and the capacity of the actors to protect the resource itself. An investment that in the logic of understanding and protection of the resource was key but in a way was extremely far from the traditional business activity performed by Danone.

"We very early developed an hydrogeologist team, supported PhD, sponsored diverse studies to better understand. This was key for our license to operate but also to convince local communities. When I think of it, it is always from Evian that the whole [Danone] business has tried to anticipate emerging risks linked to the water resource. […] We after replicated this way of working through our geographical expansion or acquisitions" Annick Moreau – Head of Public Affairs Danone Water - Interview

Such collective management and shared responsibility towards the resource implied to develop specific strategy to ensure this stewardship with the municipalities, the farmers living on Evian. It led the Evian team to engage with stakeholders on topics such as the way to manage the de-icing of the road in the locality to limit the usage of salt that could infiltrate ground waters or thanks to APIEME subsidize the discontinuation of usage of fuel tank that could create a risk of pollution for local individual houses.

This citation shows the incremental and organic steps followed to engage with the local communities in a collective work.	*"We started with studies with the local agriculture chambers on soil. Then we went to meet the farmers directly to share the conclusion as well as the municipalities. I also go and meet the house owners to convince them to change their oil tank [to*

	limit the risk of leakage and pollution]" Annick Moreau - Head of Public Affairs Danone Water - Interview
This citation from the former president of APIEME highlights the importance of the collective work and the complexity of all the topics to be addressed to protect the purity of the resource itself.	*"This collective work must continue. We have not yet finished the sewage sanitation, every municipalities have not yet completed their spring ground catchment protection and we still have a lot of old oil tank that need to be replaced. The APIEME has a long life in front it." Jean Philippe Bened APIEME President 2001-2008 – Media Interview*
This graphic explains the principle of financing of APIEME. 4 municipalities benefiting from the bottling taxes contributing for 1/3 of the budget, Danone contributing for 2/3 of the budget and 9 municipalities upstream that benefit from 3 types of actions: - Protection of the wetlands - Help towards sustainable agriculture practices - Sustainable development of rural villages upstream	 *Source – Internal presentation Danone*

There is a clear perception from our interviews that what Hart is mentioning as "pollution prevention" is not sufficient especially when there is a difference between actors that are directly benefiting from the exploitation of the resource and the one that have the capabilities to protect or destroy it. This requires Pre-Competitive strategy like the one developed with the redistribution between the lower and upper part of the impluvium.

Such capabilities are essential to maintain the competitive advantage that benefit to all. The VP Operations of Danone is concluding that

"Today this is an association which utility is no longer challenged; it is perceived as a collective win-win" Philippe Galois – VP Operation Danone Water - Interview

5.1.2.2.2.2. Local and territorial relevance:

The resource is clearly identified as a local asset that needs to be preserved to the advantage of the whole communities. Such particularity reinforces the power of mobilization of local communities around its preservation. It calls for a specific territorial approach to be developed and the logic of "solidarity" as seen earlier from the Mayor of Laringe.

Local and territorial bonds are instrumental to ensure a long-term rent creation.

"[for] me this is a win-win. The way I explained it [the strategy of resource protection] to the team when I was directly in charge was to say that we could not have a long-standing activity if all our the stakeholders of our territorial ecosystem ware not convinced that they would be better off with Danone than without Danone and that we should use these lenses to look at our projects and evaluate their pertinence. It means that it is better to win 80 or 70 with a convinced ecosystem rather than 100 against them" Philippe Galois VP Operation Danone Water - Interview

This local dimension is nourishing the perception of an increased responsibility towards the management of the resource itself. This is described as a key factor of cohesion and acceptability of the measures by local communities and at the end of success.

"The industrial activity is totally dependent from the Natural Resource which itself is directly dependent from the territory and on top this resource is bottled and sold with the name of the territory. It is an amazing territorial laboratory » Bernard Giraud- President of Livelihood - Interview

5.1.2.2.2.3. A personal attachment:

All our interviewee mentioned a personal and sometime emotional attachment to the management of the resource. Such personal link or attachment with the resource is a driver for the commitment of many of the respondent to go beyond the traditional ways of working and therefore look at alternative strategies and compromise. In many ways this is challenging the rational behavior of a homo economicus. Such dimension coupled with the previous one creates a quasi-intimate relationship with the resource amplified by the fact that the way to protect the resource is also a way to protect the quality of the environment where people are living.

Philippe Galois is mentioning his work with the APIEME in establishing the innovative Terragr'Eau methanizer, which converts organic farm waste into natural biogas for the community. Used for the consumption of the bottling site and giving an equal amount back to the community in biogas. His personal conviction and attachment were key as the project was clearly beyond traditional	*"You see when I took the project [of methanizer] I inherited it from my predecessor. I took it over because I had a deep personal conviction. Back then I was completely free to stop it. Nobody would have objected".* *Philippe Galois – VP Operation Danone Water- Interview* *And sincerely my action on the APIEME is most probably the one I am the proudest of when I speak about my work to my children.* *Philippe Galois – APIEME website interview*
Annick Moreau is stressing the emotional side of linked to the management of the resource.	*"There is a kind of emotional side attached to Evian, to the water [management] I'd say emotional because there is a whole ecosystem of individuals and communities in which employees are fully part attached to*

	the resource I am authorized to exploit" – Annick Moreau- Head of Public Affairs Danone Water- Interview
Marta Rojas Urrego is reflecting on why certain individual decide to embark into a sustainability journey/strategy towards wetlands	*you needed to have this conviction yourself perhaps you know have like a personal story you know of having been raised in the "marais" or somewhere in your grandparents it's more an attached which is personal – Marta Rojas Urrego – Secretary General Ramsar - Interview*

The 2014 internal newsletter we have referenced relates the plant visit of Franck Riboud then President of Danone group. The intimate and intrinsic link between Mr. Riboud and the story of Evian is very clearly stated with a self-explanatory citation "*Thanks for taking so good care of my dear Evian like you do"*

Figure 13 : Visit of F. Riboud in Evian

EVENEMENT

Des visites importantes !

La semaine dernière, notre Président Franck Riboud et le Directeur Général du Pôle Eaux Paco Camacho sont venus visiter notre usine et l'ampleur des transformations en cours.
Franck Riboud a déclaré : «*Merci de faire attention à mon evian comme vous le faites.*» Merci à tous ceux qui ont contribué au succès de ces visites.

Such a personal attachment with the territories is key to understand the capacity of Group Danone to create cohesion and bonding. When visiting the Evian headquarter and sitting in the Antoine Riboud room one can see 2 pictures echoing each other.
The first one taken in 1992 during the Winter Olympics that took place in the Albertville shows Antoine Riboud the founder of Danone Group, Jean Claude Killy one of the most famous French skiers that won 3 gold medals in the 1968 winter Olympics and a very close friend of Antoine Riboud and the son of Antoine Riboud, Franck who then was the general manager if Evian and will become the CEO of group Danone in 1996.

The second picture on the opposite wall is a picture taken 25 years later in 2017 when Evian inaugurated its fully renovated production unit. In the picture we can see Franck Riboud then Chairman of the Group Danone, Jean Claude Killy and Emmanuel Faber CEO of Danone. A real symbol of the hand over between Franck Riboud and Emmanuel Faber.

Finally, it is to be noted that the Danone is also managing the royal palace of Evian and every year the general managers meeting, the gathering of the top 200 executives of the group is taking place in Evian that is considered as Danone family home.

Figure 14 : Photo de famille in Evian

5.1.2.2.3. Developing an articulated view on time: between long, medium and short term

Our interviews clearly demonstrate that the notion of time is of the essence when it comes to the protection of the water resource.
First because the hydrogeological studies demonstrate that Evian water journey from the catchment area last 15 to 17 years.

Here is how the source journey is described to factory visitors

"Our natural mineral water gets its unique, pure cool, crisp taste from its 15-year journey through the Alps. It starts as snow and rain and infiltrates through the ground of our Impluvium before slowly travelling through layers of glacial rocks where it becomes naturally filtered and enriched with electrolytes and minerals. Nature gives our water everything it needs - we don't add things for taste or enhance with extras". Evian Brochure for Visitors

These long cycles are clearly understood by Danone teams and are a key element of the adaptation of their strategies.

"We talk about a 15year to 20-year cycle. In any case it is a long cycle which means that pollutions can be detected only 15 years after and if it happens there is nothing you can do anymore. When you understand that, this changes everything » Bernard Giraud – President of Livelihood– Interview

Such link between the resource and the time dimensions is very much highlighted in the internet website of the brand where this "heritage is described as follow"

"The water emerges at the foot of the alps in the town of Évian-les-Bains, where the Evian mineral was first discovered over 230 years ago. We have great respect for this region and the water it provides. For over 25 years, we've been in partnership with the local community to continue to protect this Natural Resource so our water can be enjoyed today, tomorrow and always". Evian brand internet website[52]

[52] https://www.Evian.com/en_gb/our-water/

We see a clear pattern and acknowledgment that the time horizon between the potential impact we can have on the resource and its exploitation the way to protect its purity can create a misalignment for corporate leaders and manager vs. the short-term delivery of financial targets very often called the tragedy of horizon.

We have seen in our literature review that Time is unfortunately not considered in the RBV.

There is a clear perception that managers in Danone moved progressively form a defense or license to operate strategy to the one of stewardship linked to competitive advantage that a sustainable management of the resource can provide. This move is described as complex to operate in the corporate world as the decision are often described as dictated by short term imperatives.

Behind the dimension of time there is also the predicament of not being static. If the resource availability does not change or is perceived as such so there is no need for dynamic management of the resource. It is of course very different if there is a perception that the resource becomes scarcer. One of our interviewees notice that the increase in resource scarcity is accelerating the negative impact that corporate face such acceleration is in fact bringing the corporate horizon closer to the resource management horizon, but will it not be too late?

Bernard Giraud is highlighting how the progressive awareness of the impact and the risk of a poor management of the impluvium could bring the while community, imposed to look at a different time horizon for continuity.	*« The spring was the place where we sourced water leverage the local provenance. All that was very good but in fact we gradually understood that if something would happen on the impluvium that would be really bad. The system was not sustainable. Finally, the idea of duration and continuity of the resource became the common objective". Bernard Giraud, President of Livelihood - Interview.*

Philippe Galois highlights how the time dimension is critical and that executives are now much more equipped to take that dimension into account in their decision-making process.	*Such topics are ahead of the traditional management mechanisms although they are key to make good business […] the time scale we know have now is different from the one I had when I started my career. We progressed a lot to take long term impact into account. New criteria are now used to evaluate projects. Of course, profitability remains key but we now have a much more 360 approach". Philippe Galois-VP Operations Danone Water - Interview*
Marta Rojas Urego is noticing an acceleration a "shift" towards sustainability as resource become scarcer and therefore the time horizons and impact are more tangible for corporates	*"because of this shift […] it is going to be difficult to escape. I have seen that companies moving from corporate social responsibility which was like doing the good thing on the side to being forced somehow to embrace that as part of their operations." Marta Rojas Urego - Interview*

5.1.2.3. Preliminary conclusions:

The analysis of the water resource management in the case of Evian water allowed us to confirm that neither the Resource Based View (RBV) nor the Natural Resource Based View (NRBV) were fully equipped to embrace the competitive advantage creation potential of a Natural Resource especially because the rent appropriation as a factor of competitive advantage building seems inadequate to drive meaningful Natural Resource utilization when the resource is increasingly scarce.

As demonstrated, a Natural Asset becomes a resource when it is being used. Using a natural resource intrinsically raises the question of the capacity for the resource to be replenished or its quality to be protected against pollution. As a natural asset is anchored locally the usage or exploitation of the resource is raising the question of the capacity to reconcile potential divergent local interest with communities.

The case of Evian therefore helped us to identify 3 key characteristics signaling potential alternative ways of managing the resource to be in a position to maintain sustainable competitive advantage. We will test such characteristics looking at the water project collectively developed in Mexico by Veolia and Danone.

1. maintaining usage is more important than its ownership
2. managing its availability is more important than appropriation
3. tackling local divergent interest is more important than raising barrier of entry

Such conditions challenge substantially the underlying assumption of the RBV related to the rent appropriation. In the case of Evian this led local actors to invent and implement new strategies that we can call Pre-Competitive. Pre-Competitive strategy aim at achieving 3 key factors.

1. protecting a certain attribute of the resource that is directly determining its potential of rent creation and usage in our case the purity
2. stewarding the resource which means taking into account the collective management of the resource, its local and territorial dimension that is deriving a certain
3. managing the time horizon to ensure the long-term availability of the resource attribute.

Table 14 : Conditions and characteristics of Pre-Competition

Natural Asset > Natural Resources		**Pre-Competition**
3 conditions when the RBV does not work to create long term value		***How to ensure long term value creation***
Use vs. Own	>	Identify and manage a specific characteristic of the resource
Manage vs Exploit		Steward the ressource
Collectively manage vs. Appropriate		Change time horizon

In Evian case we have seen how Danone has developed a range of very strategic orientations to protect the purity of the water it is bottling and selling across the world. To do so it had to engage way beyond the company doors with the entire ecosystem. Over 25 years new governance emerged and the role to the company in its territory transformed drastically. At the same our interviews demonstrated how the internal perception of the role of the leaders in managing the resource has changed. The Pre-Competitive strategy developed has been a consistent and significant investment for the company bearing more than 2/3 of the APIEME budget and also investing into infrastructure such as the methanizer or developing

But such Pre-Competitive strategies do not mean that no rent appropriation exist of that competition does not exist either. It means that the fame of the competition has changed and the managing the sustainability of the resource became a competitive advantage.

- Fist because it allows the license to operate of the business guaranteeing resource availability while several mineral water sources have seen their capacity constrained. As Annick Moreau stated "*what triggered the movement at the beginning was the awareness that we needed to manage the resource with its permanence over time in mind"* and that "*to generate value we could not only extract water and bottle it*".
- Second because it has also become a key factor of reassurance for the consumers and therefore a differentiating factor for the marketing teams. As Philippe Galois the Vice President Operations of Danone Water *"today (water protection) has become a key element of credibility for our strategy and even of the mineral water category*

existence: The category is heavily challenged on plastics and therefore being a responsible steward of the resource in conjunction with local communities is a key differentiator"

To conclude the case, we conducted and interview of Emmanuel Faber then CEO of Danone who offered a very useful perspective corroborating that Pre-Competition was not a negation of competition but a new way to ensure its competitive advantage on a resource constrained world *"I think that the relationship between competitive policies and rent theory, is not a bijection. The way we think is not "ah there is a problem on the resource and on the rent" so mechanically I move to a Pre-Competitive thing, which is also collaborative and more inclusive. The reality is more nuanced and surely more, how to say also, more competitive. And that's why Pre-Competitive strategies are building a competitive advantage. Pre-Competition, you do it because you feel that it maintains, it builds, it distorts but at the end will allow you to develop your competitive advantage". Emmanuel Faber – CEO Danone – Interview.*

5.2. Fresh Water Resource: The case of Aguas Calientes

Aguas Calientes, is located in the southern part of the State of Aguascalientes 480 km south of Mexico. It is an average-size Mexican city with approximately 900,000 inhabitants, which accounts for almost 80% of the whole population of the State of Aguascalientes. It is the 14th largest metropolitan area of Mexico and the 8th fastest-growing urban population, with a +30% demographic growth over the last decade53.

Figure 15 : Aguas Calientes - Geographical position

Although Aguascalientes City is sourrounded by agricultural activities, it has developed a relatively dense industrial footprint with for instance the presence of Nissan motors that totals 12000 direct jobs in the city. The unemployment is low (3,5%) and economic growth above National average. To sustain this growth, the city depends heavily on Natural Resources:

- Power and food are massively imported from other states: in a country where already 60% of the food consumed is imported, Aguascalientes is the 4th most dependent metropolis with for example 75% of rice and 25% of maze imported.

- Water to supply the city comes 100% from underground water, thanks to a network of wells and pumps. The aquifers that provide water to the city of Aguascalientes are located in the driest part of the state and receive little amounts of rainfall infiltration.

The case is centered around the key players involved in the usage and management of the water resource for Aguas Calientes city: Veolia who with its subsidiary CASA is mandated by the municipality to manage the water network, the municipality, Danone who has a water bottling plant in the water basin and the farmers around the city.

The context of our case is therefore revealing in many ways:

53 "Encuesta Intercensal 2015" (PDF). INEGI. Retrieved 2015-12-08

- First the challenge linked to the increased scarcity of the water resource due to a strong demographic pressure and the intensification of agriculture practices in the surroundings of the city,
- Second because the project's inception took place at a moment when Veolia's subsidiary in the regional state named CASA was in negotiation with the Aguas Calientes municipality to renew its water concession. Such context led to an acceleration of the discussion on how to preserve better the water resource in the region as a whole with of course potential conflicting interests and the inception of a Pre-Competitive initiative that will be named the Water Allies.

This case will therefore allow us in a different political, sociological and pedoclimatic context to review the impact that water resource has in the rent building strategy of Veolia and the different actors. As the project started at the same time as our research work, we are also benefiting from a strong longitudinal point of view of the strategies developed since 2017. This will therefore open the possibility to compare the Aguas Calientes findings with the Evian case.

We will see that the importance of the usage, the challenge that the sole appropriation may cause to the resource as well and the necessity to build management mechanisms at a territorial level are confirmed in the case of Aguas Calientes challenging therefore the role of rent appropriation mechanism, the underlying assumption of the RBV.

Through its complexity linked to a dense and multi actor dimension this case is also offering great insights on the strategies developed by the relevant stakeholders to build a sustainable rent over time.

We will eventually find ways to identify a new dimension that conditions the capacity to build Pre-Competitive strategy, the necessity to equip stakeholders and build the right level of awareness and understanding to overcome more installed conceptual frameworks;

5.2.1. From a Natural Asset to a Natural Resources, conditions for rent creation

The Aguas Calientes case allows us to confirm 3 conditions for which a rent appropriation mechanism can be challenged as a rational way to build rent calling therefore for alternative

strategies: usage vs. ownership, collective management vs. appropriation, conciliation vs. conflict of interests. It also helped us to identify a fourth critical conditions the necessity to have clear metrics to forge a local consensus on the challenge to face and properly value this challenge.

5.2.1.1. First condition: the intrinsic link between the Resource and its usage challenges the logic of appropriation.

The fact that usage defines a natural asset as a resource is extremely present in many of the Aguas Calientes interviews and in a way helps to define what is at stake when it comes to the resource management.

As the Water Resource Director of The Nature Conservancy Andrea Erickson one of the largest conservations non-for-profit organization that teamed up with Veolia and Danone on this project is stating a natural asset becomes a resource when we start thinking "what to do with it".

"Once we start looking at it and saying, oh, it's a resource, it's because humans are starting to think about what they're going to do with it. Birds, turtles and duck don't think resource humans do" Andrea Erickson Water Resource Director TNC– Interview

In the case of Aguas Calientes the different stakeholders, farmers, the municipalities and its citizens, Veolia as a municipal water provider and Danone as a water bottler, use the resource for their own consumption and needs. Such usage determines what the resource brings to them.

Our interviews and document review clearly establish that the resource is not owned by any of the actors despite its availability being strategic to ensure a sustainable rent over time. Let's listen to Bruno Valla the Partnership Director of Veolia precisely describing the way the company is approaching its responsibilities towards the water resource.

> *"Our business model does not consider today the state of Natural Resources, it takes into account the degradation of resources when it impacts infrastructure work. We are there to repair, invest; we are not at all in the prevention. If the water degrades in the*

groundwater of Aguascalientes, we will tell the customer [the municipality] at some point that we are out of the norm and that we will have to invest in new infrastructure, make a factory, correct to make the water drinkable because the water you provide us is no longer within the standards. Water as a resource is the responsibility of the of the municipality, not at all ours." Bruno Valla - Partnership Director Veolia– Interview

In this citation we clearly see how Veolia is considering itself as a user of the resource and not as the owner of the resource and this is from the maintenance and delivering of drinkable water that they are deriving their rent.

Laurent Auguste ex Executive Vice President for New Business Model confirmed that vision to us:

We did have a lot of thinking around our positioning and what we called at that time the short water cycle and the long water cycle. At that time Veolia's position was that our responsibility only lied on the short water cycle, meaning the human activities of towns on the resource without looking at the long water cycle with an assumption that availability was not an issue. Laurent Au*guste - Executive Vice President for New Business Model – Interview*

The distinction that Laurent Auguste is making between the short and long water cycles places the resource usage at the center of the distinction the company is making to then define the boundaries of its responsibility.

Outside Veolia, Danone Water Cycle manager Jehanne Fabre confirms that water was not perceived as being owned by anyone as it was perceived as a shared resource.

"We have chosen this project because of the multiplicity of actors around the table as we wanted to test how we could have an integrated management of the resource and invent a new business model around a shared resource that was not owned by anyone." Jehanne Fabre – Water Cycle Manager – Danone - interview.

She continues stating that:

"What was important for Danone was to have a water pure enough and available enough to run its factory in Aguas Calientes" – Jehanne Fabre - Water Cycle Manager– Interview.

Yet the resource availability started already to be challenged by the demographic, climate change and agriculture practices, challenging therefore the potential usage attached to it.

The following table summarizes the progressive awareness level that we identified while analyzing the various data collected.

Pitch document of the Water Allies to find other investors. The document has been developed by the Water allies to factualize scientifically the water challenge of the region and convince them to adhere to the water fund initiative.	▪ *"In the next few years, Aguascalientes (State and city) will face significant water security challenges. On the one hand, an accelerated depletion of the aquifer levels, which represents 70% of water consumption. In five of the six main aquifers, extraction surpasses recharge by a volume equivalent to filling 175 times the Aztec soccer Stadium every year. On the other hand, water quality in both surface and groundwater sources has decreased sharply. There are at least 130 points of untreated municipal wastewater discharge. These two risks will be heightened due to the effects of climate change, based on which by 2030, a reduction in almost 15% of available water is expected" Pitch Document Water Fund AguasCalienties*
Main reasons for the challenge caused to the resource - Demography - Intensive farming model	▪ *"The issue for Aguas Calientes city was the agriculture practices around the city. Without this pressure from agriculture the aquifer would have been able to balance" Laurent*

	Auguste Executive Vice President Veolia – Interview
	▪ *In Aguas Calientes 2 trends were clearly cumulative on the one hand a very strong demographic pressure requiring and increase in the drinking water output and on the other hand an intensive farming model based on grain production that requires increasing water usage to ensure a good yield. Jehanne Fabre - Water Cycle Manager Danone - Interview*
In the Livelihoods investment committee deck the progressive exhaustion of the resource is clearly qualified. This highly documented analysis concludes that: *"Aguascalientes' economic growth and public health is threatened by its dependence on a stressed water resource"*	▪ *"Over the last 50 years at least, measurements show that this water needs to be extracted from deeper and deeper wells, an evidence of aquifer depletion, which translates into operative challenges and costs for various economic sectors, including the provision of water to the households, industrial water uses and extraction of drinking water. Since there is no existing infrastructure to import large volumes of fresh water from other regions of Mexico, this resource is already seen as a limiting factor for future development". 2017 – Livelihoods IC Document*
A raising awareness from actors lead by the political context but also by tangible collateral environmental impact on soil linked to the	▪ *The consensus that led us to intervene was the depletion of the water resource in the city of Aguas Calientes that was not sustainable. The agent that was managing water CASA a subsidiary of Veolia, had to dig deeper and*

increased scarcity of the water resource.	*deeper every year to reach the aquifer. Other signals were very tangible such as the soil cover reduction an increased number of metal contaminant." Stephane Perrier - Livelihood Ventures COO – Interview* ▪ *"There were signs of subsidence of soils due to falling groundwater. There was contamination of water with metals found deep in the groundwater. Lots of clues that showed that the question of water had to be answered and the municipality seized the question by saying they were going to make it a priority and moreover, by making it a priority, they threatened Veolia lose their concession for water management in this state, in this municipality if they themselves did not participate in the solution" Stephane Perrier- Livelihood Venture COO – Interview.*

Such rapid evolution leading to tangible issues faced by local players consequently led the municipality to include that dimension as a condition for the renewal of their concision contract.

As Stephane Perrier former COO of Livelihoods is highlighting:

"many evidences showed that we needed to answer to the water question and the municipality took that as a priority threatening Veolia to lose their concession if they were not participating in finding a solution" Stéphane Perrier- Livelihood Ventures COO - Interview

Laurent Auguste confirmed that states of action:

"Veolia was in charge of the city concession and needed to enter into the management of the resource itself to ensure its contract renewal and the resource long term availability" Laurent Auguste - Executive Vice President New Business Models Veolia - Interview.

In Aguas Calientes, the resource itself was for long not managed and considered as infinite. The local actors were benefiting from its usage until its increased scarcity revealed by the demographic challenge and intensification or agriculture practices. This then took a full political dimension while these local authorities were presented as lenient on this aspect which then became a topic for the local election. This situation revealed the importance of developing a truly integrated water resource management strategy that would include all the very strong local ecosystem.

5.2.1.2. Second condition: Natural Resource is determined by its local social ecosystem – managing it becomes critical to sustainable rent building.

In the case of Aguas Calientes the management of the local ecosystem appears from the very beginning as a key factor of stability and success in the renewal of the concession and therefore the sustainable rent creation for Veolia. In that sense it confirms the point we already identified with Evian where the resource was fully embedded into a complex environmental and social network of influence that was determining the capacity to use the resource on an optimal way for a sustainable rent creation.

One of the first obvious reason was that the concession was under tendering for renewal as seen earlier. Second because it requires to push the boundaries of the model involving new stakeholders in the "long water cycle". Let us see what Laurent Auguste is saying about such links.

> *"The perimeter of Veolia is and to a larger extent stayed the short water cycle most probably by economic pragmatism and by the very nature of our customers that themselves were mainly looking at the short water cycle. On the long water cycle where we need to capture the issue of the resource, the challenge is the profit-making capacity linked to the externalities and the lack of counterparts to manage the resource together. But nevertheless, I was convinced that we needed to expand our perimeter of action,*

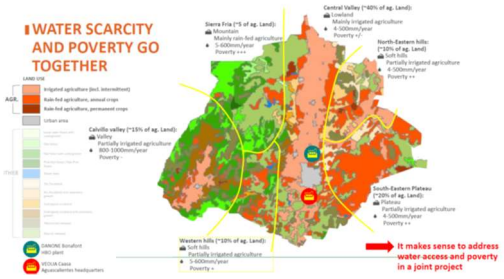
and this is way we were supportive of the creation of the Aguas Calientes Water Fund" Laurent Auguste - Interview

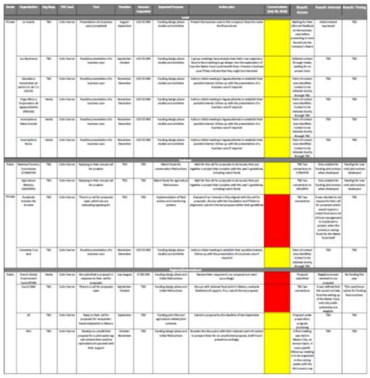
In this citation it is interesting to note the key aspect of finding a right counterpart to manage the resource together is a real key factor of success. This cannot be done alone. This element is key in the Water Fund dynamic of Aguas Calientes and reported by many of our interviewees.

"Where I am speaking about the lack of interlocutor, I am referring to the lack of people in charge and/or with a capacity to act. Not easy as no one was responsible for the resource itself" Stephane Perrier – Interview.

In that context the partners of the Aguas Calientes Water Fund tried actively to create a community of thinking and action gathering the various players of the aquifer. This has been a key turning point of the project that many documents we have studied demonstrate (see below).

The strategic analysis made by Livelihoods for Veolia and Danone to justify an investment in the project, clearly state that the engagement of rural communities was instrumental as "*agriculture represents 65% of water use in the State of Aguas Calientes"* . The water fund project therefore started with a very structured agriculture strategy. Secondly to mobilize the local ecosystem, partners also engaged into a larger consultation of other companies and institutions in Aguas Calientes to pitch to them the case for a joined water resource protection program. A detailed pitch was even written by the partners in November 2017 and syndicated to almost a dozen companies including La Huerta, Nissan, Lala, JW Marriott to engage them.

Extract of the strategy presentation deck submitted on December 2017 to the Livelihood for Family Farming Fund investment committee. In the Aguas Calientes project updates the project coordinators Livelihoods highlights that *'water scarcity and poverty go together'*	

and that it makes sense to address both in a joint project. The strategy includes a detailed sociological profiling of local communities. Small holders being clearly named as Key players for change and with a distinction that ranged from large fodder and dairy producer to rain fed farmers.	
To strengthen the Watershed projects the key actors developed a pitch and a list of potential partners. We have consulted the list of contact that the partners used to connect with key stakeholders of the aquifer in the logic of setting up a water fund. The document lists the contact owner, the potential co-financing expected and has a summary of the discussion initiated with a color code on the progress. It totals around 12 private organizations with a strategy that described the interest that each of the organization could have to join the water fund.	
At the very inception of the idea of a water fund lies the logic of grouping a network of	*[A Water Fund] is a concept that I have progressively seen developing. What we have*

stakeholders with a structure to manage collectively the sustainability of the water resource.	*been doing at Aguascalientes with The Nature Conservancy was the idea, but the structure was not there. We tried therefore to identify the network of stakeholders that can have an interest to ensure that proper management of the resource and what are the organization that could be developed locally between the different stakeholders to start such collective management of the water resource in a sustainable manner" Laurent Auguste – Interview*

What gives it value is the translation of this resource into activity and ultimately into an economic resource. *"The farmer will not change his practice because he is told there will be no water. On the other hand, if we tell him that by managing this resource better, he will have greater income, an increase in yields then he will be able to value this resource and find an interest in it. And it will be the same for Veolia. The water resource here is in fact the foundation of their economic activity"* Jehanne *Fabre – Water Cycle Manager Danone - Interview.*

5.2.1.3. Third condition: managing the resource implies aligning and managing conflicting local interests

While water is essential both for the rural economy of the Aguas Calientes state and the city that regroup water intensive industries in the agri-food (La Huerta, Lala, Danone) other industries like car manufacturing (Nissan) have historically paid little attention to its management or preservation.

As Laurent Auguste – Executive Vice President of Veolia highlights in Aguas Calientes:

"like in many other places historically, nobody is responsible for air or for water with the assumption that it is infinite, it is there, available, we can use it as much as we can and without asking the question of its management". Laurent Auguste – Interview.

Multiple stakeholders however have a role to play in this partnership with specific interest that our interviews helped us to map. As Stephane Perrier however highlights: *"there was a real challenge in this partnership as partners did not know how to work together"*

Aguas Calientes Municipalities	Demonstrate to their citizens and at the beginning of a renewed mandate of the governor and secretary of agriculture that their action was delivering tangible results and that the subsidies received from the federal government was effectively reaching out the farmers to enhance their irrigation technics.	▪ *"After that, there was the second most important player, which was the secretariat of agriculture in Aguascalientes. We arrived at the beginning of a mandate of the governor and his secretary of agriculture, and they both had to show that they had solutions to provide and that the money they received from the federal level was turned into actions. They were extremely criticized on the fact that the state of Aguascalientes was recognized as a state with water problems, they received money but they were subsidies that were misused or not used, because of being too bureaucratic, too difficult to reach so basically the rich farmers who already had enough to pay for irrigation were able to capture these subsidies but who were suddenly non-additional and therefore they would*

		have installed the irrigation equipment anyhow" Jehanne Fabre – Water Cycle Manager Danone - Interview ▪ *Our project started just at the beginning of a new mandate of the local governor. This proved to be a real advantage as he needed to announce new programs and actions and we were coming with new ideas, things that had never been made before. Stéphane Perrier – COO Livelihood – Interview*
Veolia	Renewing its concession and demonstrate a visible proactivity towards the water problem solving. Progressively adapt the positioning of Veolia from a player responsible only for the treatment and delivery of water to a player that takes into account its full environment and ecosystem.	▪ *"Their challenge [Veolia] was to renew their management contract with the municipality of Aguascalientes. Show urgently (I speak to you as if I were at the beginning of the project since their contract has been renewed since then) that they are able to mobilize innovative and effective solutions to respond to the theme of water and with, not only demonstrating things technically, but with a communication potential so that the citizen can understand it and them say here we transform lives . Visibility was very important for Veolia. Stephane Perrier – COO Livelihood - Interview.*

		▪ *In the pre- and post-industrial logic and also of Veolia's "raison d'être", we generally try, and that was the case with the management at that time, to position Veolia no longer as a purely local player with reduced immediate obligations but as an actor who can become a partner to not only manage the immediate obligation which is to serve water in this case to the customers of Aguascalientes but also use all of its know-how for the benefit of the region and ensure that the service will be delivered in a more sustainable manner. Bruno Valla – Business Development Director Veolia - Interview.*
Danone	Availability of good quality mineral water / License to operate in the long run.	▪ *The challenge for Danone which is part of this territory [with its water bottling plant] is a challenge related to the understanding of the resource itself. Danone must have when it is in regions under high water stress and when there is a project that is initiated resource, the capacity to position itself and participate in the local communities dynamic. This strengthens their license to operate. Interview Jehanne Fabre – Water Cycle Manager Danone.*

The Farmers	Productivity and revenue increase and new forms of redistribution of public subsidies. License to operate vs. water resource scarcity.	▪ *And the small farmers who fell into the meanders of bureaucracy very rarely managed to have these subsidies, so they were criticized on the allocation of this money with threats to interrupt it. So they were interested in having a new intervention model that was closer to farmers, more human with real impact monitoring to demonstrate the effectiveness of the money invested. Interview Stephane Perrier – COO Livelihood* ▪ *What gives it value is the translation of this resource into activity and ultimately into an economic resource. The farmer is not because he is told: "be careful there is no water that he will change his practice". On the other hand, if we tell him that by managing this resource better, he will have greater income, an increase in your yields then he will be able to value this resource and find an interest. And it will be the same for Veolia. The water resource here is in fact the foundation of their economic activity. Jehanne Fabre – Water Cycle Manager Danone - Interview*

Such complex network of interest sometimes opposed or non-aligned was the basis for a potential vicious circle where everyone was only incited to utilize the resource to its own interest and capture the rent associated to it without anticipating the impact of its usage on the long term availability of the water resource therefore undermining its own potential of long term rent appropriation.

Such potential consequences are well described by Andrea Erickson during our interview that talks about potential "losers and winners" if the logic of resource and appropriation management does not change.

> *"You have to imagine there are going to be winners and losers if you either leave things as they are: growing populations, urban, suburban, very urban, just nonagricultural. Populations will grow with less and less resource behind them. And at some point, that power issue will have to break. For instance, Las Vegas will run out of water and you will not give the people of Las Vegas water. You will end up going to the upstream water users, the agricultural water user, and say, sorry, you're not going to grow this year because we've got to put the water in the city. And so, in the American West is a great place to go, look for, like winners, losers, conflict all the time. And it's going to be around water scarcity a lot of times. But there's also winners and losers when you have pollution events and those that are dumping all kinds of pollution and other people don't have the infrastructure to have clean water before it's in their community and floods their community and they're losing because they you know, they're marginalized, they're losing out" Andrea Erickson – Director Water Resource TNC - Interview*

Alternative strategies are therefore needed to build that bridge this is what we call Pre-Competitive strategies.

5.2.2. Pre-Competition a way to manage Natural Resource:

In Aguas Calientes what was long taken for granted became a strategic part of the capacity of key actors to protect their long-term rent (including the local governor for reelection!) : the protection of the water resource. As seen in the previous section describing the conditions of the Aguas Calientes case:

- Veolia had to demonstrate its capacity to protect the resource to win the renewal of its concession
- The cost of treatment and delivery of water was increasing for both Veolia and the municipalities
- The municipalities and local government were challenged by their electors and the media for the management of water resource
- The farmers operating in the region faced a reduction of their yield needed to change practices while protecting their standard of living.

The potential reduction of water availability had therefore several impacts for the stakeholders from additional treatment costs, water research for new drill, yield reduction or reputational risk for local authorities. While individual interest could be antinomic like using more water for farmers depleting further the watershed and increasing therefore the cost access and treatment for the city, the solution to manage its availability long term could only be found via strong collective management starting with shared awareness of the situation.

Interestingly the project analysis developed by the Steering Committee of the Water Alliance between Livelihoods, Veolia, Danone and The Water Conservancy in its inaugural review of the program is covering the different *"competitive edge"* that both Danone an Veolia could derive in its section *"What's in it for Veolia"* and *"What's in it for Danone"*

Figure 16: Aguas Calientes Project Update -2017 (1/2)

For Veolia the project and launch of the Water Fund is described to create a positive edge with the City of Aguascalientes being perceived as an innovator and potentially monetize positive externalities in the future.

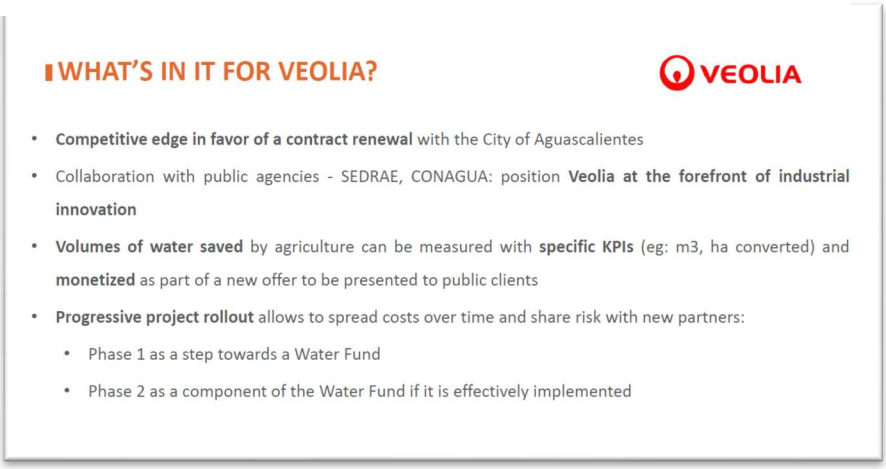


Figure 17 : Aguas Calientes Project Update – 2017 (2/2)

For Danone the potential benefit highlighted come from an enhanced license to operate in the region and a potential strengthening of the reputation of its brands as well as an opportunity to enhance the local sourcing of its fruit.

The management of this resource is therefore key in the rent building exercise of both organizations and equally for the municipalities if we consider that their competitive advantage is to win the election race or manage their reputation towards electors.

We therefore found an interesting recursive relationship between what this resource brings as potential rent and the way it is used by the stakeholders. It's easy access and availability are the triggering factors for rent but its appropriation without anticipating the way to manage it long term can endanger the very possibility to build rent.

To solve such dilemma the case of Aguas Calientes allows us to demonstrate and unveil several strategies deployed by local stakeholders. Such strategies offer a complementing view to the rent appropriation mechanism present in the RBV and the NRBV and that is what we forge as Pre-Competition and that have been eloquently summarized by Andrea Erickson the Director of Water Resource of The Nature Conservancy answering the question on what problem they were trying to solve in Aguas Calientes with Veolia and Danone.

> *"But if you were to step back and say, OK, but answer the question at the broadest possible moment that you can answer it, what we're trying to do is mainstream nature-based solutions in how we deliver water security, because that's our interest. But what*

I think we're trying to do together is to create the most resilient water, possible for the most amount of people, for the longest amount of time, and that is kind of the larger thing that we're trying to solve together. It could be we have a sediment problem loading into reservoirs for the city, affecting water supply and also electric generation. So that's going to be different every single place. But it's that raising up like we are trying to create the most resilient water possible for the most amount of people, the longest amount of time. And I think it's when you get to the longest amount of time. And it really becomes really important to reach the understanding of what that system will provide." Andrea Erickson – Water Resource Director TNC – Interview.

This citation is enlightening as it summarizes 3 key characteristics of the Aguas Calientes case that helps to define Pre-Competition:

- To begin with more than the resource itself it is its usage that brings a specific benefit conditioning rent appropriation which raises the question of its availability. Its availability becomes therefore a determining factor for all stakeholders what Mrs Erickson named as "*security*" and linked to the stakeholders' "*interest*".

- Secondly, the way to manage the resource i.e., its stewardship is also very present in the case of Aguas Calientes. Stewarding the resource implies a strong collective management, and the development and syndication of a structure of intermediation in our case, the Water Fund. This dimension is present in the earlier citation when the objective is to serve *"the largest number of people"* and the strong reference that it may be "*different every single place"* and therefore highly context specific.

- Thirdly we again see how the time scale of every actor is equally important in the case of Aguas Calientes and Mrs Erickson – Water Resource Director, TNC - mentions *"the longest amount of time".*

- Finally, one element is very prominent in this case and appears as a real condition of success as an important need to normalize and shared perception of the stake at risk and must therefore give a strong value to the resource.

With this new case we will have corroborated further the conditions that challenge the underlying assumptions present in the RBV and forged further the characteristics of what we are calling Pre-Competition and that as a new capability can complement the RBV.

5.2.2.1. First characteristic: it is not the resource that guarantees the competitive advantage but a certain characteristic of the resource. In the case of Aguas Calientes, its accessibility to all.

In our interviews and in the documents, we have studied for the case of Aguas Calientes, it is clear that water is seen as resource because it has a very definite usage for the stakeholders. Water is a mean to an end and the way it has been historically handled does not take into account the risk of exhaustion.

Let's analyze how this dimension is apprehended:

In this citation Andrea Erickson introduces the concept of *"water security"* and *"ecological integrity"* as the strategic position to be reached. She also highlights that the definition of that reach is by construction humanly defined meaning that this is the use of the resource to a specific purpose and its protection over time that is defining *"security"*.	▪ *It's in our way of thinking. It's that the ecological systems are the substrate. It's the basis on which you build water security. And so, we take it a little bit out of the circle. We would say ecological integrity necessary for water security. And therefore, there's a reason to talk about that connection between the ecological systems and all those different uses that we need for water. But I see water security as a human defined interest. Andrea Erickson – Director Water Resource TNC – Interview* ▪ *But once we start looking at it and saying, oh, it's a resource, it's because humans are starting to think what they want, what they're going to do*

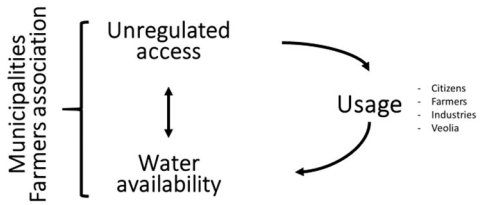
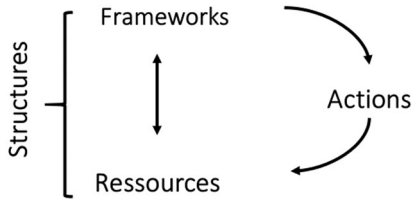
	with it, now birds and turtles and duck don't think resource humans do. And so, then it becomes about what are those different needs that people have for agriculture. And this is about the resource management. It's about the agricultural use of water or it's a resource to it's a quantity of water and quality of water that is necessary to electric generation. So, it becomes about how much and where and how that we use that. And then there's then this issue of like, well, then how many users do we have and how much do they need and when do they need that? And that sits on top of this other question of the ecological system and the service to us and apply that resource need, I think. -Interview Andrea Erickson
Laurent Auguste highlights very clearly the *"vector"* need of the water resource for the food system, economic activities and even life. He uses the metaphor of "fuel" for the system which for him illustrate that this is from its usage as an enabler for other activities So again its easy access and availability are central in that perception.	▪ *"Water is used but it is not consumed completely and obviously it can be moved. For me it is a vector. The water resource is essential on a certain number of our activities, of course on life. And the question is its availability in a given geography at a given time and therefore the ability to go and use it to generate all the activities and basically life. So, from this point of view it is THE ingredient, for the food system, for life and for any economic activity. This is why this is a resource, because it is a fuel without which a certain number of activities are not possible" Laurent Auguste – Executive Vice President Veolia - Interview*

Joined statement of the Water allies to potential partners on the cost/consequence of inaction.	▪ "*The cost of not collectively taking prioritized action, with a long-term vision and through an integral approach, can be higher both economically –lost or unrealized investments-, socially – the inability to generate and the loss of jobs -, and on the environment – irreversible damages on high-value environmental and water ecosystems" – Extract 2018 Pitch Water Fund Aguas Calientes*

The analysis of our interviews and documents demonstrates that while the usage of water is key to the rent building exercise more that its rarity it is its availability *"with the right quantity at the right place at the right time"* that is a key factor to ensure that other activities (agriculture, industries….) can fully benefit from their competitive position. In that sense it is an enabler a *"vector"*.

Our interviews frequently demonstrate that a profound recursive relationship exists between the resource, what creates rent, its usage and its environment. If we take the municipalities, they need sufficiently large amount of water available in the ground to be able to satisfy the needs of a growing population and industries. What becomes therefore important is this availability. This contradicts the rarity conditions of the VRIN developed by the RBV. This corroborates greatly the recursive relationship highlighted by Feldman (2009) and that we developed in our literature review. The figures below show the parallel between the recursive cycle of Feldman and what the Aguas Calientes case tells us with the key role played by accessibility to the resource.

Figure 18 : Recursive link in Aguas Calientes

Aguas Calientes	The recursive cycle of resourcing. Feldman 2009 p.140
	

This confirm very well what Danone Water Resource Manager says as a conclusion: *"What gives its value is the translation of this resource in economic activities. Farmers will not change because we say beware their will soon be no water. However, if we tell him that managing its resource better, he will increase its revenue, increase its yield he will start valuing the resource for its own interest." Jehanne Fabre – Water Cycle Manager Danone – interview*

5.2.2.2. Second characteristic: Stewardship as a key capability to be developed to protect the rent creation potential of Natural Resource and a determinant of a Pre-Competitive strategy:

As seen earlier, the Oxford definition tells us that stewardship is "*the act of taking care of or managing something, for example property, an organization, money, or valuable object"*. [54]

When we look at the way stewardship is referred to on wikipedia[55] we find a very pointing direction, leaning towards stewardship being an ethic that embodies the responsible planning and management of resources.

[54] https://www.oxfordlearnersdictionaries.com/definition/english/stewardship

[55] https://en.wikipedia.org/wiki/Stewardship

Those definitions clarify several aspects that are visible when we analyze the Aguas Calientes case. First the notion of care meaning that what is at play as a certain level of fragility, second to steward something there must be a conscious and proactive choice, it is an "act" in itself and finally the time dimension the resource is valued and valuable as such. All those elements are corroborated extremely well in the Aguas Calientes case.

Care: a serious attention to something to avoid potential damage.	- Clearly emphasized in many interviews and documents gathered with the risk of *"water depletion"* raised by Stephane Perrier COO of Livelihoods referring to the hydrogeological study - Similarly in the pitch developed by the Water allies where words like "urgency", "water security", "business continuity" are frequently used.
A proactive stand in the capacity to run or control something	- Andrea Erickson Water Resource Director at TNC clearly explains the needs for a pro-active stand to protect fresh water as she mentions that "*Water has its own special uniqueness is that it's a moving asset so you need to take sort of a rights-based approach to how we're going to put this under protection here and then call it good, make sure that there's enough park guards"* - Similarly, we can see in a company like Veolia ow Laurent Auguste then Executive Vice President for New Business model brought the strategic topic of managing the *"Long Cycle"* of Water to the table as key not only for Aguas Calientes but the "*the future proofing"* of the group's Water strategy
Something that is valuable as such	- The dimension of the importance and intrinsic value of water is very strong

	○ For the local mayor the topic became key in the run for re-election ○ For Veolia demonstrating its proactive stand for the protection of the *"long water cycle"* was key to win the new local tender for both Stephane Perrier COO of Livelihoods and Bruno Valla Director of Project Development for Veolia

However, they do not tell us what needs to be put in place to steward the resource.

Water in Mexico is the property of the nation, and its use is granted to different parties through water rights, legal contracts that state the volume of water, source of extraction, authorized use and the duration of the permission. Nationwide, these water rights have been historically allocated for fixed term but renewable periods, based on insufficient baseline information on water availability, leading to over-allocation and the subsequent over-extraction of water, both surface and groundwater. However, a lack of collective incentive and management of this system does not allow the government to impact the usage of water that is depleting. When Aguas Calientes project started in June 2016, there were 32 fully established Water Banks in Mexico, one in each of the Conagua's regional or state offices. Yet this well-intentioned scheme is unfortunately underused, as supported by official government figures which show that, in the 2001-2006 period, only 3,447 requests for transferring water rights were authorized, out of a total of 519,825 water rights registered.

The analysis made by the Water Allies captured in the Investment Committee paper in 2017 concludes that *"The enforcement of the allocated use is also at best ineffective, and in most cases non-existent. Furthermore, there is a lack of incentives for different water users to make a more efficient use of water, promoted by subsidies for agricultural water use in particular, which act as a perverse incentive for excessive water use."*

The impact analysis of the case is also highlighting key obstacles for the scheme:

- "*Lack of enforcement of volumes of water effectively extracted (so users who transfer their water rights might actually continue to use them afterwards);"*
- "*The high number of illegal wells and non-revenue water (estimated by official government figures to mostly be in the 25-60% range nationwide, and estimated at 44-58% in Aguascalientes);*
- *Lack of continuity in government schemes which might affect the sustainability of the Water Banks beyond the next change of the federal government (2018).*

Based on such obstacle the conclusion is that in this circumstances CONAGUA "*needs external help in order to actually reduce water consumption"*. This help being the development of a local stewarding strategy the Water Fund of Aguas Calientes.

This strategy was rooted in 3 different dimensions that provide us with a clear framework to identify when Pre-Competitive strategy have an interest to support rent creation.

- First a solid link exists in the necessity to team up and create a collective with an intermediation model to address the issue and properly care for the resource. This is of course present in the interaction between the stakeholders but also with the construct of the water fund as an infrastructure to support that.
- Second there is a strong local and territorial aspect to the need to apprehend differently the resource and the way to steward it leading to different way of collaborating.
- Finally, for the change to take place a strong need to look in the same direction is present which requires a pedagogical work of awareness. Without it, it would be foolish to imagine that local players would accept to go against what is perceived as their short-term interest.

5.2.2.2.1. Three (3) conditions for stewardship to become a relevant capability:

5.2.2.2.1.1. A collective dimension prevailing vs. the individual interest:

To steward a Natural Resource that is not the sole property of anyone but can benefit to everyone ins their capacity to generate a competitive advantage, the capacity to build a collective infrastructure to align interest is of the essence.

Our interviews and longitudinal documents help to clarifies the key component of this collective management. First, they need to be championed with a clear leadership to gather an align stakeholders together. The logic of efficiency is also key, in a way stakeholder must recognized that they are stronger together than alone and therefore that it is their interest to move in that direction. This means in Aguas Calientes the need to identify a credible champion and the development of a dedicated governance model with the Water Fund and finally that this mechanism of governance is itself a work. This is identified very early in the process and the search for such local champion led the Water Allies to develop a pitch document to convince key local players that would be sees as more credible to join them. In this pitch document the following is stated:

> *To achieve a long-term and large-scale model, we need to ensure the leadership of a Champion that convene different stakeholders for a coordinated effort: government, companies, academia and civil society, with financial and scientific support for the next stages of the Water Fund, beyond any political ideologies. Pitch Aguascalientes Nov 2018.*

In this citation Andrea Erickson clearly underlines the social construction needed to manage the resource and the need to have a collective of "*champions"* to lead the dynamic. The notion of *"shared benefit"* is also supporting that need for a collective approach.	▪ *And so, to get there in Aguas Calientes [stewarding the resource], we set up all these things that humans need. We need to have some amount of numbers, you know, whether it's conservation plans and cost benefit analysis. And we need to have social constructs of champions and we need to have legal constructs of a vehicle and we need to have financing and long-term financing. But the intent really is setting in motion this idea of shared benefit and shared management of that resource over time.*

In the second citation Mrs. Ericksson highlights even more precisely the need for a collective vehicle and a specific governance that involve relevant stakeholders.	*Andrea Ericksson – Director Water Resource TNC – Interview* ▪ *Nobody can solve the water by themselves. And so that sense of the nature of the of this particular asset of water and its shared quality and its moving quality makes it more say it's more likely that you have to create some of these* ***collective vehicles*** *or that you decide in a certain society that we are going to have strong governance and we're going to give that power to our government. Andrea Ericksson - Interview*
In this citation Laurent Auguste is stating that to manage the water resource in the case of Aguas Calientes a collective approach is instrumental and also more efficient. This call to set up new structures of governance and management.	▪ *Typically, Water Fund-type approach like in Aguas Calientes are collective ones, because on its own, one can't do it or it will be more effective to do it together and therefore it is key to know how to have the leadership to try to go back to a number of other stakeholders and set up new structures and management models.* *It also often means knowing how to make investments, looking for alternative technologies or approaches, partnerships, support and therefore really changing the way things work. Laurent Auguste – Executive Vice President Veolia - Interview*
He further highlights the need to make society once the aspect of the resource as a common good is fully recognized. This expression of "*faire société"* is very strong	▪ *This may require trying to team up with different actors, agreeing on modes of behavior so "make society" ("faire sociétéé) finally somewhere but start to make society and say that we have a*

and confirm the collective dimension of the journey towards stewardship and Pre-Competition.	*common good, how do we best manage together? Laurent Auguste - Interview*
Stephane Perrier stresses the necessity to facilitate in real time the process of alignment between the different players and this is a key success factor.	▪ *It's not something that's been done and worked on its own, this alliance needs to be fed all the time and it's quite something. The biggest work on this project is to maintain this alliance and maintain this alignment permanently. Stephane Perrier - COO Livelihood - Interview*

Stewardship is therefore intrinsically linked to the collective dimensions that the Aguas Calientes case is highlighting. In the Memorandum of Understanding between Veolia, Danone, Livelihood and the Nature Conservancy the following paragraph is self-explaining this collective aspect.

> *"Our experience leads us to conclude that a step change in approach is needed in integrated watershed management to get to a meaningful scale of impact within and across vulnerable water sources. We believe that by working together we would be best equipped to evaluate and deploy collective action water funds and related investments to change the current trajectory of water risk. Such a collaboration would strengthen our respective organizational priorities and missions and test whether it is possible to replicate water funds through a variety of partners by distributing knowledge and expertise. Memorandum of Understanding" - Water Allies*

This extract of the MoU between the parties combining the large objective targeted that supresedes the individual interest but also affirm that each individual organization would benefit from the development as well but with an aim not to appropriate it but to distribute knowledge and expertise at a larger case. We are far from a rent appropriation mechanism.

5.2.2.2.1.2. Local and territorial relevance:

Water being by definition a local resource and the management of this natural cycle implies a strong articulation of the local/ territorial networks that is strongly embedded in the Aguas Calientes case.

Let's see how this local dimension is considered:

The very need of adapting the management of the resource to the local context is well explained by Laurent Auguste which requires the mobilization of local players as expressed in the second citation.	▪ *Practices must be adapted to the local context, the geographical context, the environmental context, and the surrounding activity. The case of Aguascalientes, the problem for Aguascalientes city comes from the agricultural activity in the vicinity. If it were not for this agricultural activity, there would not be the same pressure, the same concerns about the sustainable availability of water. The specifics of the environments on which we work are important, see the story of course. Laurent Auguste – Executive Vice President Veolia - Interview* ▪ *As there was no structure in place locally, we needed to identify the stakeholders that had a real interest in getting involved in the management of this resource and consequently the organization that could be put in place locally between them. Interview Laurent Auguste*

5.2.2.2.1.3. Creating awareness to create the consensus for a stewardship strategy:

As water has been perceived as an unlimited resource the risk of scarcity and more importantly the root causes of this scarcity are not evident for many, but they appear as a key foundation to create sense for the different stakeholders and a sufficient level of consensus to accept an infrastructure that would normalize the water usage.

This awareness building exercise is extremely frequently mentioned in the Aguas Calientes case. Let is review why and how this awareness raising part is built.

On the why side we identified 2 key components

1. the importance of qualifying the resource and develop a consensual perception of the mains stake. For instance, CASA/Veolia was often blamed for the water availability but in fact without tackling the long water cycle that involves farmers they could not impact the water stress.

2. Creating a reality to ensure the rarity or the value is perceived by the different players

On the "How" to create it the case also provides a clear picture:

3. Developing an unbiased vision of the reality supported by scientific evidence seems key in the case to gain the necessary buy in but also raise the issue of the time of action vs. the time of science.

Why creating awareness?

In this extract Stephane Perrier highlights the difference of interpretation between the various players and in the absence of	▪ *There were different interpretations as when we talked to people in the city, they said that it was Véolia's fault, when we talked to people in the countryside, they said that it was the*

consensual diagnosis the blame game that everyone is playing to protect their rent/interest.	*municipality's fault, when we talked to farmers it was the city that was growing and that they continued to do their business as they have always done. Everyone was passing the buck but everyone agreed that there was a problem to solve, everyone had their experience of the water problem because either we could not drink tap water anymore, whether it was because they had to dig a well in the countryside or because the water bill increased under the pretext that the resource was becoming scarce. Everyone had their own perception of the problem. Stephane Perrier – COO Livelihoods - Interview*
In this citation Laurent Auguste is explaining the need via what the Water Fund will be to create an economic reality expanding what he names as the business perimeter.	▪ *So in terms of business perimeter, for me the vision was actually that we had to contribute to expanding this frame, this is for me what we try with the Water Fund Aguascalientes, create a new entity, a new economic dimension by picking up the pieces to be able to create a dimension and an economic reality on our activities. At the same time, in areas where we could contribute and intervene and /or recognition of the limits of the system to be taken into account in our models and in our positions. Laurent Auguste – Executive Vice-President Veolia – Interview*
The importance of normalizing the discussion was key as well to be able to set the base for potential	▪ *There was a third objective, which was modeling. We were also creators of a new model, building knowledge to be able to replicate this model of risk sharing management*

replication at a larger scale or in other geographies.	*and resource sharing since they know that this shared resource requires this risk sharing and this investment sharing in several territories. So they want to model their approach. Jehanne Fabre - Water Resource Manager Danone– Interview*

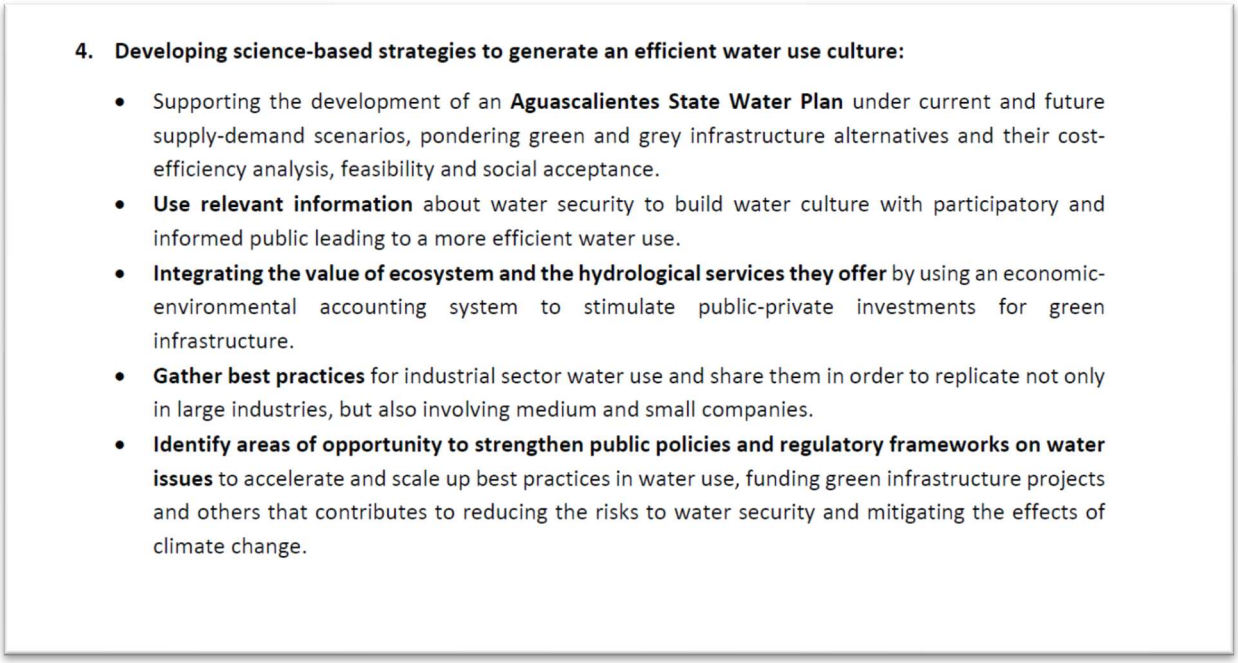
The very clearly stated objective is to create a common vision and understanding nourished by a shared interest. This is what Jehanne Fabre Danone Water Cycle Manager is clearly highlighting in her interview:

- *This vision only can create in turn a drive to action. It's the vision, it's the understanding that there is a common interest but not theoretical, a very practical understanding with an action plan, see an action plan, see a theory of change, see examples and say ok, actually, I believe in it if we do this together, we're all going to gain something – Jehanne Fabre – Water Cycle Manager Danone - Interview*

How to create it?

The first step is to equip the stakeholders with evaluation tools that can normalize the discussion around impact and unlock the capacity to internalize the externalities in the economic models and this starts with a science-based approach. In the November 2018 pitch document used to attract potential champions this is very strongly highlighted as of the 4-success factor for the fund as seen in Fig 10 below

Figure 19: 2018 Aguas Calientes Pitch document p4



4. **Developing science-based strategies to generate an efficient water use culture:**
   - Supporting the development of an **Aguascalientes State Water Plan** under current and future supply-demand scenarios, pondering green and grey infrastructure alternatives and their cost-efficiency analysis, feasibility and social acceptance.
   - **Use relevant information** about water security to build water culture with participatory and informed public leading to a more efficient water use.
   - **Integrating the value of ecosystem and the hydrological services they offer** by using an economic-environmental accounting system to stimulate public-private investments for green infrastructure.
   - **Gather best practices** for industrial sector water use and share them in order to replicate not only in large industries, but also involving medium and small companies.
   - **Identify areas of opportunity to strengthen public policies and regulatory frameworks on water issues** to accelerate and scale up best practices in water use, funding green infrastructure projects and others that contributes to reducing the risks to water security and mitigating the effects of climate change.

Interestingly this document mentions an efficient water use "culture" which shows the strong intentionality behind. Such science based strategy would not only enhance the knowledge of the public but also offers an economic model attached to an innovative environmental accounting system.

However, we will see in the interview that a scientific approach has its own limitation in the awareness building exercise. Indeed, if science is key in that dynamic its timing can be a hurdle in the capacity to quickly drive decisive actions. The stakeholders in the Aguas Calientes case had to arbitrate between a fully scientifically proven infrastructure and the necessary time to action.

Laurent Auguste underlines the necessity to create tools that can assess and analyze the impact and ensure this can be land locally.	▪ *One of the first things we did was to work on a concept of water footprint so there was the carbon footprint but the water footprint was a little more complicated so*

	we developed what we called the "water impact index" taking into account the usage of the resource in terms of quantity and quality and which were taken and put back in the environment to really see what was the footprint of the activity industrial human or other on this water resource. Interview - Laurent Auguste Executive Vice President Veolia ▪ *In my opinion, it is necessary at the same time to develop somewhere the tools of analysis, of understanding that allow to know how to differentiate. Then, know how to delegate, recognize that the solution must be local and therefore ensure both that the skills and the decision-making capacities are brought to the right level. Laurent Auguste – Interview*
Burno Valla corroborates the point of Laurent Auguste both on the tools development but also on its finality that is the evaluation of the impact at local level.	▪ *We created at Véolia about ten years ago, an index called the Water Impact Index, which measures not the impact of water in absolute terms but the impact of regionalized water because water is a regional resource. And so, a cubic meter of water does not have the same value in a stress impact as in a non-stress impact. Interview Bruno Valla – Business Development Director Veolia*

Stephane Perrier is presenting the mapping exercise of the agriculture landscape that was necessary to create the necessary awareness and create the point of action.	▪ *There was this first step of consensus to say that agriculture can be a solution and after agriculture, we had to choose where we could focus. There is therefore a phase of mapping of all the State, an agricultural and sociological mapping to see the critical points of actions that are both impacts on the water resource of the city which was the main point of concern of the actors in place. Stephane Perrier – COO Livelihood - Interview*
But Stephane Perrier is also alerting us on the fact that the time of science can become a hurdle to action and engagement of stakeholders than requires visibility on the impact expected to fully mobilize.	▪ *There is an opposition between the time of science and time of action. When you need to rely on scientific knowledge to develop your action, if you have knowledge gaps, science is slow and that is a huge penalizing factor for the consideration of science. I know, it's my job right now. You almost have to wait for science to produce a result in order to be able to integrate it into concrete action and it is very difficult to start from a need for concrete action, to challenge science and tell it give us a result, because in general science will start to run and it will cross the finish line it will already be too late. The time for action will have passed. Stephane Perrier - Interview*

5.2.2.2.1. Third characteristic: developing an articulated view on time : between long, medium and short term

On top of the importance of availability, a second dimension is instrumental to create the necessary conditions for a Pre-Competitive strategy to become relevant for economic players : the time required to impact and manage the resource availability. This time necessary for this critical element is described as superior to the standard horizon of economic actors and therefore calls for different strategies and behaviors, confirming to a large extend what Mark Carney refers often to as the "tragedy of the horizon"[56].

And it is true that the necessary time to deploy the program and generate the first positive outcome goes much beyond the traditional calendar reporting timeframe. The Livelihoods Funds investment committee paper demonstrate, the timing of the project for "only" 250 farmers is estimated at 6 years as we can see in the Fig X below

Figure 20: Timing of Aguas Calientes Agri Project

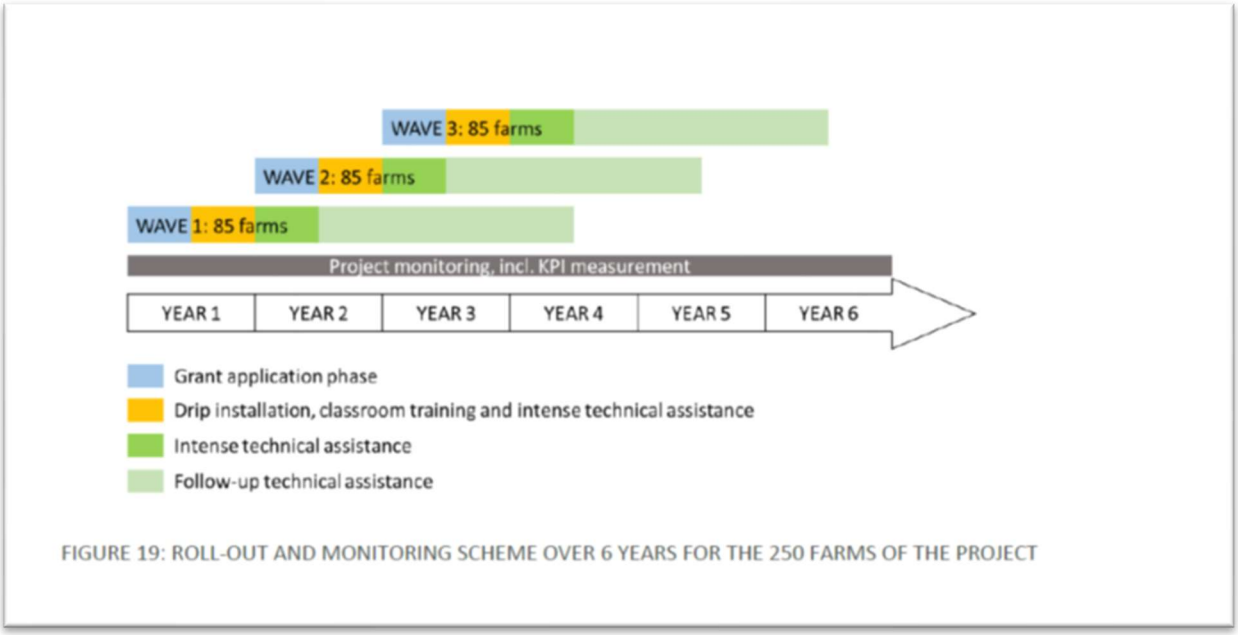


FIGURE 19: ROLL-OUT AND MONITORING SCHEME OVER 6 YEARS FOR THE 250 FARMS OF THE PROJECT

Again, on that front Andrea Ericksson is very well summarizing this paradigm when she contrasts the usual thinking around a Natural Resource like water and the consequences of taking into account what she names the "generational time".

[56] https://anaxis-esg.com/2019/09/29/la-tragedie-des-horizons/

"Water is not equal across time, it is not equal within one calendar year, because it has it's raining seasons and dry seasons linked to the local context. It also has longer cycles of drought and wet seasons. So you can't manage for water just on one point.[….] And it's also true that we could absorb all of that. I mean, there are people that may make their money now thinking, hey, I got this aquifer here. I'll just sell this water now and we'll be done. 50 years will share this business. Then that resource is gone. And so that's not an overtime moment, that is a short term 50 years, maybe that's a good business deal for one family company, but that recharge and that regeneration of that system, that is not available for future people. And so if you have generational time in mind, you have to think about the regeneration cycles that a limited resource has". Interview Andrea Ericksson – Director Water Resource TNC

The Aguas Calientes case offers 2 dimensions for us to explore when it comes to the time characteristics. First the time required to manage the resource in its natural cycle and second the time in which the different economic actors operate and traditionally corresponds to the way they can assess their success or failure. This is one of the elements that the water allies coalition is trying to reconcile through the water fund. Acknowledging that dimension is key to be in position to develop Pre-Competitive strategies.

Let's look at what our documents are showing:

Laurent Auguste in this citation is highlighting how the solutions lies in the capacity to create "awareness" on the time and exhaustibility of the resource from the players	▪ *[In Aguas Calientes] the activity was generally based on the assumption that the resource is infinite and therefore that we can take as much and as long as we want without any impact. There was an increased awareness that there was a limit, and what needs to be done to have a more sustainable management of this resource so that it is available for the time when it will be needed in the future. Interview Laurent Auguste – Executive Vice President Veolia*

Andrea Ericsksson is very precisely describing the mechanisms at play. A new infrastructure should create a reality through water rights to ensure an incentive mechanism can be formed to come back to a long-term management of the resource. This will come at loss for some of the players and in a way this perception is necessary to create the necessary awareness of the true cost of the resource.	▪ *But there still may not be a win-win for everybody and some water scarce environment. And in Mexico and Aguascalientes, the situation is that kind of template situation. If you really want to start solving the problem, the first thing you don't have to do is take away water rights. You just have to make sure that people only use what they have a right to. And that is a perceived loss to them, and that's going to be because they're using it and they may not be doing bad things with it, they may be growing things and they may be doing contributory things to our society. But if, on the other hand, you have a scarcity problem that you want to solve, you may have to reduce their power in the situation and then that is a loss to them and they're not going to feel it any other way than a loss.* ***And the way we've tried to work on it when you're working on that is to try to come back to that long-term sort of what is that long term benefit.*** *And if we can't find solutions now for rebalancing, you know, what is at stake? At stake is at some point in the future, we're going to hit a crisis and you're going to be shut down, that the answer will be that you will have no water to use. Instead,* ***let's find ways to start balancing the system so that everybody can be OK over the long term****. But there will be positions that feel like they have lost something, and they will not feel like this is a Win-Win. Interview – Andrea Ericksson – Director Water Resource TNC*
In this citation Stephane Perrier is distinguishing quite eloquently	▪ *This is a topic that is permanent in Natural Resource projects because you really have 3 different types of times: you have the time for*

different existing times that do not necessarily match with each other's: The time for action that he links to political mandate, the time of impact or transformation that he links with the water cycle and even the time for science that can be longer. Such different timings with their implications can create a tension between different stakeholders as highlighted in the second citation of Stephane Perrier explaining Livelihood's approach when starting the Aguas Calientes project.	*action and we are in a society for many reasons where we want to have action very quickly, sometimes it will be a political impulse and we know that political mandates are at most 5 years and that it is not the time of the transformation. In 5 years, you do almost nothing in a watershed, you see transformations, 5 years is perhaps the beginning of the impacts that you will see. There is a gap between* ***political time*** *and the* ***time of impact****, and on top of that, there is the* ***time of science*** *which is yet another logic. Stephane Perrier COO Livelihood* ▪ *We arrived in a context where Véolia had asked for support from TNC, which applied a scientific methodology that was very cumbersome very long and that struggled to end up on actions, so he had a logic of scientific description of all the elements of the landscape, to make socio-economic surveys throughout the landscape, to involve hydrologists. And we heckled this approach a little bit by having a very pragmatic approach based on the knowledge that it already existed by saying we have a greater chance of having an impact because we felt that scientific time was not going to stick with political time and technical time, we had to provide answers quickly to keep the actors mobilized Interview Stephane Perrier – COO Livelihood*

We can therefore see that the way to manage the resource and therefore the capacity to secure a sustainable rent is strongly impacted by the time perspective and the reach of the different

actions. A short-term framework can lead to resource exhaustion and protective of regenerative measure sometime exceeds the time horizons of stakeholders to benefit from the expected positive impact and our in the case of long scientific studies drive action.

Therefore, alternative strategies, networks and infrastructure like the water fund in Aguas Calientes are developed. They create the necessary neutral ground to bridge the different time horizons and reset the individual interests to protect the natural asset. But to do that the Pre-Competitive strategies must embrace a different set of behavior, what we call stewardship.

The second case analysis that we performed highlights therefore several structuring characteristics of the Pre-Competitiveness:

- first Pre-Competition is dealing with the management of a specific characteristic of the resource here its availability for all in a quantity that is sufficient to perform their activity it becomes therefore a condition for rent creation.
- Second to ensure that the resource is sustainable over time stewarding the resource is a must and commend to apprehend its collective and territorial dimension but also to create the necessary awareness finding the right balance the capacity of science to bring a so-called neutrality and also the need for concrete action
- Finally, the Aguas Calientes case is also demonstrating the importance of the time dimension that can be perceived as a limitation for individual actors overrule their individual interest.

Table 15 : Conditions and Characteristics of Pre-competitivity

Natural Asset > Natural Resources		**Pre-Competition**
3 conditions when the RBV does not work to create long term value		***How to ensure long term value creation***
Use vs. Own	**>**	Identify and manage a specific characteristic of the resource
Manage vs Exploit		Steward the ressource
Collectively manage vs. Appropriate		Change time horizon

As for Evian while Pre-Competition seems very relevant in Aguas Calientes to overcome the limitation of a Ricardian way of considering Natural Resources that are increasingly scarce it

does not mean that Veolia has come out of the competitive arena. In fact the development of this Pre-Competitive strategy was clearly a necessity to keep the water management license in the municipalities and at the same time ensure long-term water availability and/or a reduced treatment cost. The capacity of Veolia to develop a credible project to steward the resource became a decisive criterion in the competition towards the license renewal. In that sense, its Pre-Competitive was a pre-condition to create a competitive advantage.

To conclude the case on Aguas Calientes we interviewed the CEO of Veolia Antoine Frérot. Mr Frérot states that "*what constitute fundamentally a competitive advantage is not the resource in itself but the capacity of an organization to use it well"*. Mr. Frérot continues saying that "*appropriation always exists but it is not the resource itself that is key, but the process of maintaining the capacity to use it the most efficiently".*

The comparison of the 2 cases of our thesis will help us to fine tune the matrix of analysis we have developed and polish the new construct we propose, Pre-Competition. This is the purpose of the following section.

5.3. COMPARING EVIAN AND AGUAS CALIENTES

The matrix we forged to analyze when a Natural Asset becomes a Resource and how Pre-Competition challenges the underlying assumption of rent appropriation is largely confirmed by the Aguas Calientes and the Evian cases. It lists the conditions and Characteristics of Pre-Competition. But let us analyze how the 2 cases compare against it in this section

Table 16 : Conditions and Characteristics of Pre-Competition

Natural Asset > Natural Resource		Pre-Competition
3 conditions when the RBV does not work to create long term value	>	*How to ensure long term value creation*
Use vs. Own		Identify and manage a specific characteristic of the resource
Manage vs Exploit		Steward the ressource
Collective management vs. Appropriate		Change time horizon

5.3.1. Comparing the conditions that challenge key RBV assumptions

The 3 conditions we highlight in both cases and that demonstrate that the appropriation mechanism as underlying assumption of the RBV make the RBV inefficient to explain the strategies developed by Danone and Veolia to create a sustainable competitive advantage protecting the resource they use.

In both cases we demonstrated that:

1. the usage is more important than the ownership. Indeed, neither Danone in Evian or Veolia in Aguas Calientes own the Natural Resource: they "use" it with an objective. In the case of Danone to sell the Evian water and for Veolia to perform its activity of water provider for the Aguas Calientes municipalities. While in Danone the logic of appropriation of the land has

never been considered (vs. what Nestlé is doing with Vittel), Veolia also for a long time considered out of its responsibility to manage the resource the famous "*long cycle of water" (Laurent Auguste – interview).* In both cases the Pre-Competitive strategy were developed outside of the traditional Ricardian way of thinking.

2.Following our matrix, we then observed that the management of the resource prevailed its exploitations. The way the resource is managed becomes a central pre-occupation in the strategies that both actors are developing. The amount of intelligence; financial resource involved at Danone to manage the resource translates into dedicated hydrogeologist teams or the subsidies given to APIEME to name a few, represent a significant commitment for the company. This also translated into very specific organization decisions at Danone with the creation of the Water Cycle in 2019, a dedicated team organized around the management of the water resource for the whole company. The water cycle is described by Jehanne Fabre as *"a cross-division entity, which aims at driving the transformation to secure and protect water as an essential resource for Danone and its communities "*(*Jehanne Fabre - Danone Water Cycle Manager– interview).*
For Veolia the increased scarcity and need to apprehend the resource in a different manner led to the creation of a joined strategy with The Nature Conservancy to develop the model of water fund and also a switch from the management of the "short cycle of water" to the "long cycle of water". In both cases the actors organized themselves with specific structures of coordination to engage local communities and frame their actions. The APIEME in Evian and the WaterFund in Aguas Calientes.

3.Finally the third conditions challenging the Resource Based View in the 2 cases we have identified shows how the collective management of the resource prevails vs. its sole appropriation. Danone in Evian like Veolia in Aguas Calientes uses the source under a delegation from the municipality and therefore must compose with its local ecosystem but more importantly because the resource purity is impacted by the activities conducted upstream on the impluvium therefore in a different area that where the source is surging. This imposes a clear need for an active collective management of the resource illustrated in the case study.
In the case of Veolia, the importance of creating the conditions for all local actors to agree and to get organized to develop a joined strategy led the senior management to become one of the key sponsor of the Water Fund system developed by The Nature Conservancy and also to launch with Livelihoods and Danone the Water Allies.

Studying these 2 cases evidenced that Natural Resource scarcity being increasingly frequent as seen in our Big Issue will reset key theoretical assumptions including ownership, exploitation and appropriation. Both the Evian and Aguas Calientes cases prove that eloquently. This is why our new construct can help to name and characterize the alternative strategies that are developed and that we call Pre-Competition.

5.3.2. Comparing the characteristics of Pre-Competition

The comparison of the 2 cases helps us to finetune the concept of Pre-Competition. Pre-Competition define as emergent collaborative strategies that aims at ensuring the long-term availability of the Natural Resource and therefore the rent that can be derived from its usage through collective management.

In this section we have performed a detailed comparison of the characteristics of the resource to determine the one that are relevant for each case. This will help us to refine our construct. For each of the items we have tried to specify the level of relevance based on the interview and longitudinal analysis conducted. The range has been developed around high relevance, medium relevance, low relevance.
What comes out of our analysis (Tab 17) is that out of the 7 items we have identified 4 have a high relevance for both cases, 1 has medium relevance for both cases and 2 are diversely perceived meaning that one of the cases shows a high relevancy of the said characteristics while the other one shows a low relevance of the characteristic. Let's look at it in details.

As seen in the previous sections, the first characteristic to define Pre-Competitive strategies is that the Resource is in fact a medium and that it is its very usage that will drive competitive advantage. The second is that Pre-Competitive strategies are built to manage a time horizon that is longer that the traditional horizon of business. Finally, Pre-Competition implies a different relationship to the usage of the resource that we defined as Stewardship. Our cases allowed to detailed significantly this last dimensions highlighting 4 sub-characteristics that form Stewardship with a collective interest superseding the individual appropriation, an instrumental importance of a local/territorial dimension in the design and deployment of the strategy; a

personal and sometime intimate attachment to the resource; and finally a knowledge or awareness effort to build a consensual view necessary to align stakeholders.

Let's first look at the 4 dimensions that are both highly relevant to our cases.
Both in Evian and Aguas Calientes the fact that a specific characteristic of the resource is the medium of value creation is clearly highly relevant. In the case of Evian we established that it is its purity that is at the heart of the rent creation mechanism and justifying therefore a specific strategy for its preservation. For Aguas Calientes it is the volumetry of the resource and its capacity to be available for all actors involved that is determining the strategies developed by the Water allies.

Stewardship is also highly relevant in both cases. On the one hand it is clear that the management of the purity of water over time is key for Danone to be able to maintain its leading position on the mineral water market, it is also key for the local communities as this is a key generator of employment and taxes. This requires an active management of the resource that goes beyond the short-term maximization of its utilization. In Aguas Calientes the number of players involved, and the potential contradictory needs and interest command a dedicated way of managing the resource overtime. Within Stewardship 2 dimensions appear as highly relevant:

- The fact that collective interest supersedes the individual appropriation mechanism leading to the creation of specific governance. In Evian the preservation of the territories from urbanization can go against the interest of landowners as well as the system of taxation to share resources between the municipalities at the bottom of the impluvium and the one as the top of the Impluvium. In Aguas Calientes the tensions between the city and the farmers and the industries is also at the heart of the principle of creating a Water Fund to collectively manage the resource.

- The local and territorial dimensions is also instrumental in both cases as the tools and consensus building exercise can only be devise and socially accepted if owned and developed locally. In Evian getting private home their heating fuel tank or the farmers to reduce their consumption of fertilizers can only be achieved by a strong community engagement. In Aguas Calientes the project was first triggered by the municipalities pushed by electoral consideration to demonstrate that the local governor's office was

active on that front. We can also see a deep territorial a local reach in the capacity to engage farmers in the change of their agronomic practices.

Within stewardship 2 dimensions are diversly perceived depending on the case.

- First in the case of Evian we found a very strong narrative around the personal and almost intimate relationship that many people have around the resource starting with Franck Riboud and also granularly convincing many executives in the company when they spend time locally. This attachment leads the management team to revisit traditional action standards. Such dimensions is not identified in Aguas Calientes except for the governor who obviously in its reelection as a lot at stake.

- The second dimensions is the highly instrumental knowledge curve that is described extensively in our interview but also alongside the documents gathered on the Aguas Calientes case. In this case the capacity to factualize almost scientifically the situation and to communicate it to the local communities but also local players is described as instrumental. This led to several key initiatives such as the development of a pitch for local industry players, the recruitment of specific local consultant, partnership with universities to perform advances hydrogeological studies. Such knowledge building exercise proved to be instrumental in the capacity to install Stewardship. This dimension is Evian is rarely mentioned in our interviews however one can assume that this stage was in fact present at the beginning if the knowledge build process especially when hydrogeologic studies were performed 15 to 20 years ago.

The last characteristics identified to forge the concept of Pre-Competition is the time horizon. It is clear that the time of nature is different from the one of business and especially when it comes to restoration or protection measures. This dimension is present in both case studied of course, especially when the famous 15 to 17 years of water cycle are mentioned in Evian and also the famous long water cycle highlighted by Veolia executives. This is of course a very challenging dimension as in both cases this is often more the very direct impact of threat linked to water scarcity that triggers a reaction than the anticipation of the potential scarcity to come. This is why we have evaluated these criteria as medium.

This side-by-side analysis of our cases demonstrates the solidity of our nomenclature and determines both the conditions under which the RBV is not able to explain the strategies developed by certain actors to manage and/or anticipate the consequences of Natural Resource scarcity. Such limit do not necessarily come as contradiction to the RBV but more as a way to complement it with the ambition to define further how companies could envisage rent creation and preservation of the Natural Resources.

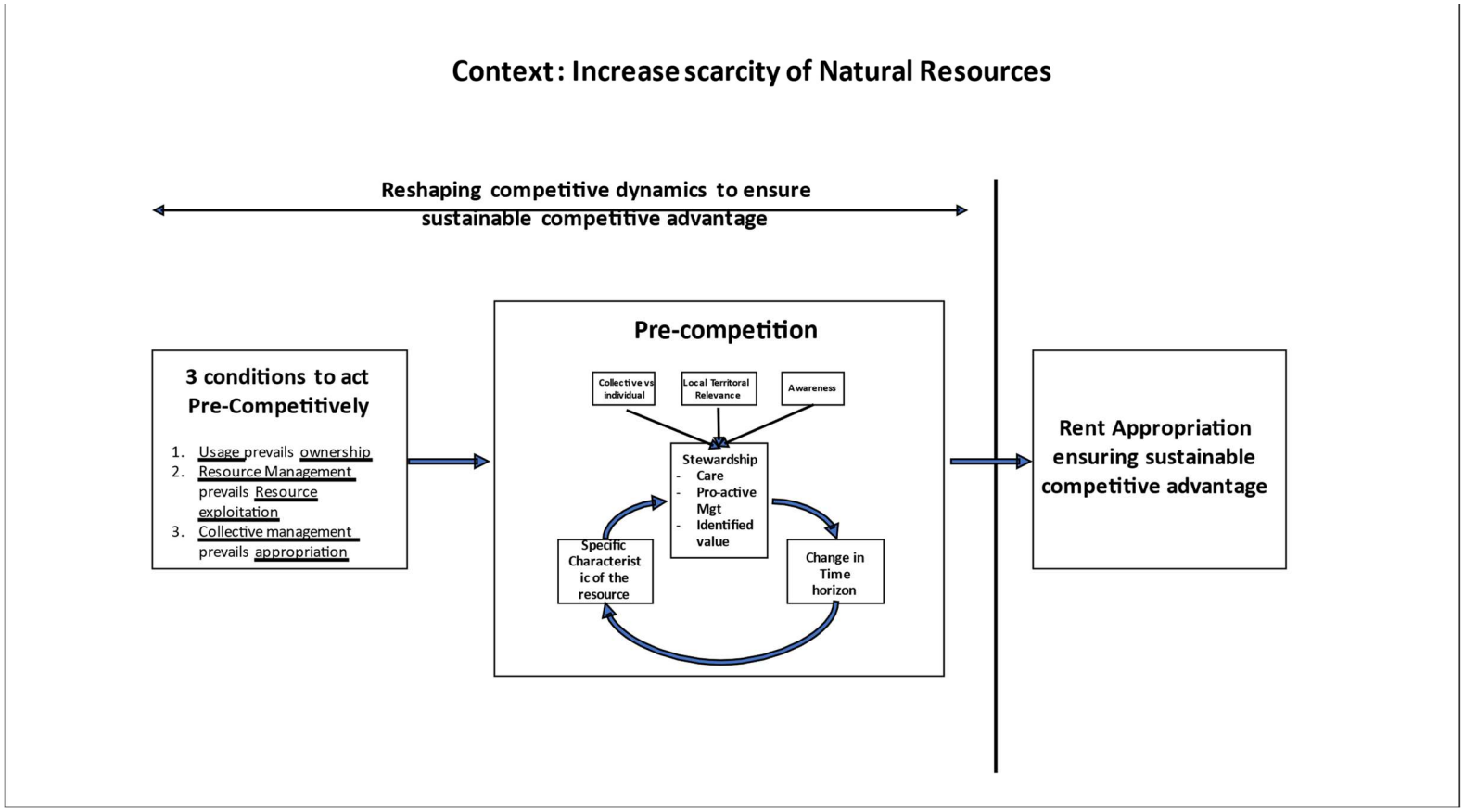
Table 17 : Side by side comparison of Pre-Competitive characteristics

Case → Characteristics triggering pre-competitive strategy↓	Evian	Aguas Calientes
A specific attribute of the ressouce is the medium between the ressource and its usage to drive competitive advantage	**High relevance** - Purity is driving the rent building opportunity for evian cf. all the marketing positioning of the brand since the 1930's	**High relevance** - Availabilty *"on time at the right place" (Laurent Auguste - Interview)* is a determining factor for all players to develop their activities
Time horizon superior to the usual decision making perspective	**Medium relevance** - hydrological studies are demonstrating the 17 years cycle of water in the evian watershed. However it's more the potential direct damage to the environment that is triggering the people's efforts opening therefore the conversation to longer term horizon to manage the ressource	**Medium Relevance** - the stakeholders verbalize this issue and the Water Fund is supposed to help moving in the right direction but they also recognize that the water cycle time scale remains difficult for them to apprehend and that intermediate incentives must be invented.
Stewardship anchored in the dychotomy between usage and sustainable management of the Natural Resource**. 4** characteristics have been identified.	**High relevance** - Mineral water is what evian sells and market but it needs specific management to protect the rent over time.	**High relevance** - municipalities are accoutable in front of the population for the availability of water, it is a key element of yield for th farmers and of cost and licence to operate for Danone and Veolia. Stewarding the ressource is key to protect its usage
(1) Collective interest superceeds the individual appropriation	**High Relevance -** Involving multiple stakeholders to superceed individual interest (Farmers, Municipalities, Citizens, Danone) is key and led to the creation of a dedicated Vehicle APIEME.	**High relevance** - a blame game is taking place between the city and the coutry side and a tension from the government to private players requiring to *"put [them] together around the table" (Stephane Perrier - Interview)*
(2) Local/territorial reach to impact the actions must be design at local/territorial level involving a string level of subsidiarity	**High relevance -** the capacity to steward the ressource comes down to local and territorial management : heating fuel, de-icing of roads, fertilization strategies. It is purely local and somehow highly granular decisions that can only be designed and enforced locally.	**High relevance** - the project was first triggered by the constraint imposed by municipalities in the renewal of Veolia concession pushed by local elections. It forces to have a closer relationship with the local ecosystem,
(3) Personal relations to the ressource triggers caring behaviors	**High Relevance -** high attachement of Franck Riboud and key Danone Executives (who lives/lived in the area) to this territory but also of local players to their quality of life plays a significant part.	**Low relevance -** relation mainly focused on the usage dimensions. Except for the governor who has part of his political asset at stake for reelection,
(4) Awareness/Knowlegdge as a tool to build a consensual view and align stakeholders	**Low/Medium Relevance** - hydrological studies are important for Danone but other players did not mention that as a key element that triggered the collective dynamic. The economic and quality of life consequence of pollutions or scarcity are mainly the triggering points.	**High Relevance** - a key fondation for the sense making exercise of the players frequently highlighted in our interviews.

5.3.1. Final matrix to present Pre-Competition

The comparison of our cased corroborates the structure of our matrix of analysis based on 3 conditions that would call for a Pre-Competitive strategy to develop a sustainable competitive advantage and listing 3 characteristics of Pre-Competitive strategies.
As seen in both the Evian and Veolia cases, the development of Pre-Competitive strategy does not infer the negation of competition. It is more creating the necessary conditions for a corporate to compete, identifying exactly the characteristics that derive their interest, stewarding the resource and anticipating its long-term availability. Our cases allowed us to define very precisely the notion of stewardship with the 3 conditions that would allow its development. Fig.20 offers a complete view of our conceptualization.

Figure 21 : Pre-Competitive framework for sustainable competitive advantage



6. DISCUSSION AND IMPLICATIONS

The in-depth analysis and findings of the Evian and Aguas Calientes cases allowed to describe and confirm the limit of the Resource Based View of the firm and the Natural Resource Based View of the firm when confronted with Natural Resource scarcity increase. The cases also corroborate that the Ricardian "in-house" assumption of the RBV of rent appropriation could even be counterproductive as they could accelerate the exhaustion of Natural Resources.

In Evian and Aguas Calientes we have seen that alternative strategies arise to manage such paradigm. Those strategies do not fit into the Ricardian thinking displayed by the RBV especially when the notion of usage and collective management prevails the one of ownership and appropriation. To explain such shifts, we proposed and described a new construct that we named Pre-Competition. The implication of Pre-Competitive strategies can be vast both in terms of capabilities that corporate and manager must develop but also in the way companies must envisage their role and their collaborative strategies in the socio-economic environment they operate in.
If collaboration becomes a key capability, we however have seen that Pre-Competition was not the negation of competition but rather a new form of collaboration with its socio-economic environment towards the long-term preservation of the Natural Resource and the capacity to develop Pre-Competitive strategy can become the cradle of a sustainable competitive advantage.

Our findings have several structuring implications for scholars but also on the way the economic actors can structure their strategies to manage the increasing scarcity of exhaustible Natural Resources. The following section will help us to first study those implications for the management researchers and especially for the Resource Based View, the Resourcing theory and the Natural Resource Based View. Secondly, we will also look at the implication of our findings and new construct for Corporate Executives (CEO, Strategy Director; General Managers), for the Regulators and on the relationship between supplier and customers.

6.1. Implication of Pre-Competition on Management Research

During our Literature review we specifically studied the relationship between Natural Resource scarcity and 3 fields of research; the Resource Based View, the Resourcing Theory and the Natural Resource Based view. Let us look at the implication of our work on each of those 3 fields of research.

6.1.1. Implication of Pre-Competition for the Resource Based View of the firm (RBV)

As seen in our Literature Review and following the steps of Edith Penrose (1959) we have seen how many scholars tried to "look inside the black box" at the way competitive advantage could be derived from the resource and the way they are assembled. Indeed, according to the Resource Based View (Rumelt, 1984; Wernerfeldt, 1984; Barney, 1991; Amit and Schoemaker, 1993; Peteraf, 1993) economic rent is a consequence of firms holding resources that are Valuable, Rare, Inimitable, Non-substitutable (VRIN).
With the very central role of the resource and the importance of its assembly on the formation of a competitive advantage and in the context of Natural Resource depletion we showed how the RBV proved a highly relevant framework in the Anthropocene era. We also touched upon the limitation to provide a framework that think and prevent Natural Resources depletion. One of the key factors is the fact that at the heart of the RBV model lies the assumption that competitive advantage must be derived from rent appropriation this appropriation mechanism linked to the logic of maximization of usage of rare resources to its benefit. The Ricardian Nature of the VRIN conditions could therefore be counterproductive and create and incentive to accelerate the resource depletion to maximize short term competitive advantage and at the end exhaust the resource.

Our work implies that a Pre-Competitive strategy can help to complement the RBV looking at the conditions under which the RBV could operate without rent appropriation as a structuring in "house assumption", enabling therefore the possibility to envisage sustainable competitive advantage attached to an exhaustible Natural Resource.

In that context Pre-Competition will imply a pre-screening and qualification of the resource at stake before applying the RBV framework. Looking at the resource the scholars should consider whether the usage of the resource prevails ownership, the long-term management of the

resource prevails its exploitation and the collective management prevails its appropriation. If the 3 conditions are met then a specific strategy must be developed to ensure the specific characteristic that can create differentiation is fostered (rarity and availability in the case of Evian and Aguas Calientes), the time dimension necessary for its management considered (Long Water Cycle on both cases) and finally a stewardship strategy developed (development of specific governance mechanism for APIEME, Water Fund).

This will create a new set up for the RBV framework to operate not based on the resource appropriation but on the way the usage and key characteristic of the resource is best protected. The capability to be better than its competitors on the 3 dimensions of the Pre-Competition can create differentiation. Moving forward this could even become a resetting of the way corporate could compete at the service of the resource they use and why not for the best interest of the resource itself.

6.1.2. Implication of Pre-Competition for the Resourcing Theory

As seen in our Literature Review, a restrictive view of the RBV is somehow static and limitative since the origin of the RBV is anchored in the understanding of how soft resources (managerial capabilities) are assembled, triggering an over-emphasis of the RBV on non-physical resources (Bansal & Knox-Hayes, 2013; George et al., 2015). Physical resource become a "factor" or ordinary resource (Warnier, Weppe & Lecoq, 2013). We believed this vision is highly disconnected from the context in which organizations are operating since more than half of the world GDP is dependent from Natural Resources according to the world economic forum[57].
With that perspective in mind, the resourcing approached developed by Marta Feldman (2009, 2011) makes all its sense and calls for considering an extensive way of approaching our proposal extending the scope the Resource Based View (RBV). In her analysis Feldman focuses not on the exogenous nature of resources but on the endogenous resourcing cycle. One of her key developments for her is that "resources are not exogenous and fixed, but rather generated as they are brought into use" Feldman 2009 p138.

[57] Half of World's GDP Moderately or Highly Dependent on Nature, Says New Report > Press releases | World Economic Forum (weforum.org)

Firms' growth can therefore be studied as a dynamic process of management interacting with resources. Services of resources are drivers of firm heterogeneity. Feldman argues that *"strictly speaking it is never resources themselves that are the "inputs" in the production process, but only the service the resource can render*. This last point is key in the articulation we have demonstrated earlier between ownership and usage and is central in the articulation of Feldman thinking underlining that to *"become resources, things or qualities have to be put into use, that they then realize context-specific values contingent upon how they are placed in use, and furthermore that putting them into use is not a zero-sum proposition." Feldman 2009 p.140*

As seen earlier a restrictive view of what the Resource Based View of the Firm would separate capabilities that are internal vs. external. We believe this distinction could be challenged and that the Pre-Competition could serve as a link between the Resource Based View of the firm and the Resourcing Theory. Indeed, Pre-Competition is detailing the conditions and the characteristics for corporate to identify how Natural Resource can create long-term competitive advantage (RBV) and at the same time how to protect the key characteristic of the resource to preserve its usage (Resourcing) as a differentiating factor.

As management professional but also in view of both cases we have studied in this thesis we do not find that this dichotomy is reflecting the reality of what we are experiencing on the ground.

In front of a resource gap, manager certainly look at the best way to reach their goal and probably without necessarily thinking whether the resource is internal or external. Veolia in Aguas Calientes was confronted with the objective to renew its license with the municipality and at the same time faced a more strategic internal reflection on its role in managing the long water Cycle. The company developed a sophisticated strategy of engagement of local stakeholders, initiated the creation of a governance mechanism and engaged scientific resource quantification in the watershed. This strategy is a mix of internal and external resource assembly. Similarly in Evian, Danone to protect the purity of the water it is bottling has not only developed a full-fledged hydrogeologist team, it has also engaged into a 25 year long strategy of local ecosystem protection with the support of municipalities and the development of a public private partnership with the APIEME.

In the context of exhaustible Natural Resources, Pre-Competition could therefore help to create a useful bridge to identify the conditions under which the usage of the resource can create a competitive edge (Resourcing) while fostering its long-term sustainability through a rent appropriation mechanism once the characteristics and time horizons have been adapted and a stewardship strategy is in place.

6.1.3. Implication of Pre-Competition for the Natural Resource Based View of the firm (NRBV)

The finding of our thesis and our work certainly calls for a fundamental review of the NRBV developed by Hart (1995). At this stage of our research, we cannot emphasize enough that what has been the most advanced attempt to consider the ecological constraints in the RBV are at best anecdotical. We have seen how the framework composed of 3 "interconnected strategies": pollution prevention, product stewardship and sustainable development was extremely limitative selecting angles that are extremely operations driven even in a most recent attempt of Mc Dougal, Wagner & McBride (2019).
Hart in his proposal is not challenging the Ricardian rent appropriation concept and is therefore restricting the impact of managing the Natural Resource scarcity increase to either cost avoidance, optimization, or access to market. He however recognizes the need to take into consideration a nonrestrictive view for the RBV and opened the door to its application to several case study on Natural Resources.

According to us pollution prevention, product stewardship and the always surprising in the list sustainable development are not complementing the VRIN and RBV framework. They just list potential actions that can be taken to maintain a competitive advantage linked to an exhaustible Natural Resource. However, they can be one out of many others and have on top a very Malthusian perspective which calls to do less of something to reduce its impact or protect its license to operate. This articulation can of course be valid but at the same time extremely limitative as many sustainability topics are linked to acceleration of solutions (doing more of something) and/or working differently.
For instance, we need less carbon emission so less coal energy which could relate well to the pollution prevention proposed by Hart, but we also desperately need more trees, carbon sequestration in the soil, greener innovation. For instance, the rising theme of Nature Based solutions cannot be apprehended with Hart's view. Nature based solution are defined by the

IUCN as *"actions to protect, sustainably manage and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits"*[58] . Nature Based Solution have the potential to deliver up to 37% of the Paris climate goal, as well as the potential to help address other societal challenges while being good for business and people[59] according to the World Business Council for Sustainable Development (WBCSD). Hart's view therefore does not embrace the potential for green innovation, collective management of protection and restoration efforts and the highly strategic need to scale up green solutions rapidly to face the key challenge of our times.

Pre-Competition offers a potential to identify the conditions and characteristics under which the Natural Resource can be managed without having resource appropriation as its core assumptions. Once new time horizon, the specific characteristic of the resource identified, and a stewardship strategy embraced the pre-competitive strategy can tun as a basis to a sustainable competitive advantage and the capabilities develop it turns into a true rent generator. Pre-Competition can thus help corporate to maintain the long-term availability of the Natural Resource and at the same time offers a framework for corporates to get organized to reach that objective which leads us to the potential implication of our work for economic actors.

6.2. Implication of Pre-Competition for economic actors

Our findings and the Pre-Competitive framework we are building can have several productive implications for economic actors trying to find a solution to the Natural Resources scarcity and their implication to their business models. In this section we will analyze the key implication we are identifying:

- first for corporate executives being CEO, General Managers or Strategy Director i.e., the executive in charge of anticipating and driving the strategic move of their organizations.
- second for the regulator as norms may have to evolve substantially to ensure pre-Competitive strategies are scales up for the benefit of all

[58] Ecosystem Management work - IUCN Global Standard for Nature-based Solutions | IUCN
[59] New WBCSD report helps business accelerate consistent and credible actions for climate and nature. - World Business Council for Sustainable Development (WBCSD)

- Finally, we will question the consequence of Pre-Competition in the Supplier-Customer relationship as our construct may have significant consequences in the way relationships in the value chain are structured.

6.2.1. Implication of Pre-Competition for corporate executives

As we have seen in both Aguas Calientes and Evian cases managing the Fresh Water Availability and Purity commanded that key executives of both organizations go beyond their only fiduciary or transactional responsibility. This means that over and above managing the P&L of their organization, their employees and markets shares…etc., the top executives had to gain a deep understanding of the hydrogeological reality of their territories and engage systematically in a network of relationships that goes way beyond their traditional reach including farmers, scientists, or local politicians for instance. In both cases governance structure was created, and Executives of both Veolia and Danone were involved in the building and running of the governance structure. Both structures being non for profit, the objectives, action standard, time management and decision-making processes are significantly different from the one usually used in the corporate world. This certainly means new type of capabilities that must be developed and acquired by key executive and that have been frequently highlighted in our interviews.

The Evian general managers and marketing leaders are not only required to lead the market share of their brands and the performance of their marketing campaigns, but they are also required to understand the hydrogeological profile of the source, what it takes to protect it and be directly involved in the management of the local ecosystem.
At Veolia we have seen how the case of the protection of the Resource became progressively a commercial and contractual discussion in the renewal of the concession while tensions between different users in the locality arises. This concretely meant that the leadership of the company on top of bidding for the water management service of Aguas Calientes had to learn how to engineer and program managed the most convincing Pre-Competitive coalition of actors locally.
These examples demonstrated how Pre-Competitiveness requires an adaptation of managerial practices, a significant rebalancing of the executive agenda towards outward focused initiatives

and a change in perception of the time horizon of their action. It has also an impact on the perception of what should be proprietary and not.
New capabilities such as long-term anticipation, collaboration, consensus building, multistakeholder management, public private partnership, must now be mastered by key executive and the necessary dedicated time attached to it factored in their job desk if they want to be successful in managing the networks of interactions required for a strong Pre-Competitive strategy. It is with no surprise that both Veolia[60] and Danone[61] executive have a significant part of their Long-Term executive incentive scheme tied up to the meeting of key environmental and social objectives. This at the end will also determine a large part of their individual success.

Another structuring dimension can be identified in our finding, the importance of understanding deeply its value chain to anticipate potential risk and scratch beyond the surface of what constitute our competitive advantage to ensure the key characteristic that can be valorized from the resource is sustainable. This contradicts a very segmented way of looking at the company responsibility. For Evian the responsibility of Danone is not only to bottle water but also to get involved in the impluvium de-icing strategy and the replacement of fuel tank for individual heating systems. For Aguas Calientes Veolia had to enter the long water cycle which originally was not strategic to them. We could also imagine how Tropicana must anticipate the climate change impact on orange production in Florida[62] or Nestlé on coffee production in Latin America that may affect yield but also the taste of the coffee beans[63].
A Pre-Competitive strategy therefore demands an effort of value chain transparency. It also raises the strategic question of the role the corporate intends to play in the value chain with the potential implication of the level of upward integration for instance

As we can see being equipped to devise and develop a Pre-Competitive strategy can become a key capabilities for a CEO or top executive to perform this can undoubtedly but further studied by management scholars looking at leadership in organization.

[60] Info sur éléments de rém. du DMS post CA 05.05.2020 (veolia.com)
[61] Publication_VA_28022020_Vf.pdf (danone.com)
[62] The Squeeze On Florida's Orange Crops | On Point (wbur.org)
[63] How can climate change impact the quality of coffee? | World Economic Forum (weforum.org)

6.2.2. Implication of Pre-Competition for Regulators

Additional to the implications for top executives the highly collaborative dimension of Pre-Competition in its conditions and characteristics can command to look at its consequences towards our current regulatory framework.

As our findings show, Pre-Competition is not the negation of competition, but they require a certain amount of collective and consensual work to ensure the resource can be protected over time and not exhausted by a short-term rent appropriation mechanism. A very rich debate exists about the market failure that externalities represent. As a matter of fact, working together on such topic can represent significant transaction cost for the corporate with a limited incentive structure. If the benefit of environmental protection could generate a potential gain for the economic actors, this could create a significant leverage for Pre-Competitve strategies to be developed and why not transfer the competition not on the quickest and dirtiest way of appropriating the resource appropriation but on the best way to stewards it long term and maximize its rent. New scheme like the ETS Carbon Scheme or the recognition of the carbon sequestration in the soil are moving in that direction but they should be drastically stepped up to create a scale effect.

In this context the accounting standard must also evolve to accelerate the transition of our economic system. At COP26 in Glasgow the IFRS foundation which hosts the IASB, the board that establishes since decades the international accounting standards, announced the creation of the International Sustainability Standard Board (ISSB) with a mission to establish disclosure standards which will insert climate, social and governance data into the price and cost of capital mechanisms and will allow capital allocations guided by these data. This move has a unique opportunity to synchronize the needs of finance and business in the green transition[64].

Finally, another implication of the Pre-Competitive framework as it redefines the boundaries of collaboration and competition would be the anti-trust regulations. We know that the antitrust laws have been inspired and developed in the 70 and 80s by the monetarism of and the Chicago School. An increasing number of voices raise the potential conflict between, sustainability and competition laws. How this framework should be revisited when corporate must collaborate to

[64] IFRS - Emmanuel Faber appointed to lead the International Sustainability Standards Board

in issues such as promoting sustainable agriculture, supporting affordable and clean energy, promoting responsible consumption and production, fight climate changes? Such questions are now on table of antitrust authorities in several part of the world. For instance the EU launched in October 2020 a consultation on competition policy supporting the European Green Deal (the EU Consultation). The EU Commission is considering sustainability in an ongoing, once-a-decade review of EU regulations and guidance on the assessment of agreements among competitors (horizontal agreements) or suppliers and distributors (vertical agreements)[65].

This last development led us to the third implication that we believe can arise from the development of Pre-Competition, the change in Customer-Supplier relationship.

6.2.3. Implication or Pre-Competition for Customers – Supplier relationship

As seen, the implication of Pre-Competition for key executives is also rooted in the questioning of where the corporates dependent on exhaustible Natural Resource sees their role. A linear vision of the economy is specializing actors in different segment of the value chain and can create an asymmetry of information. Our model shows the necessity for a corporate to understand what exact characteristic of the resource is bringing its competitive advantage. From that finding we could project that Pre-Competition could significantly rebalance the focus of corporate towards their upstream value chain to break the asymmetry of information and guarantee its license to operate. Like Danone hired a full-fledged hydrogeologist team or Veolia staffed its New Business Model team, Nestlé developed a network of 1200 agronomist in 35-40 countries to directly work with the farmers of its suppliers on technical content and deploy their regenerative agriculture[66]. At the same time Nestlé moved progressively moved away from third party certification to offer direct traceability on its cocoa sourcing. We can also see the same trend at Unilever announcing in 2021 a breakthrough partnership with Google to create full traceability on its palm oil sourcing and meet its 2023 deforestation free goal. Again, a case of collaboration[67].

The imperative of looking upwards in the value chain could redefine strongly the relationship between suppliers and customers. In the interview to Food Navigator Pascal Chapon states that "*procurement strategies must evolve and the answer to this on agriculture is longer term and*

[65] Green Gazette (europa.eu)
[66] How Nestlé is supporting regenerative agriculture: 'We need to source in the right way' (foodnavigator.com)
[67] Unilever and Google partner in finding sustainable sources - FoodBev Media

through collaboration". He then adds that *"the landscape approach with local cooperatives and other buyers can become important".* This interestingly confirm several of our findings. Hence with Pre-Competition the collaboration between supplier and customer should be revisited to enhance transparency and find ways to collaborate with other member of the ecosystem considering the time of mother nature as a key factor of the new strategy.

What also strikes us in our finding is that Pre-Competition is leaning towards the development of an ecosystem of collaborations that can deliver an ecosystem of solutions to best guarantee the sustainability of the characteristics that can lead to competitive advantage and bring value to consumers. In that sense Pre-Competition could be a way to develop a fundamentally end-user centric view as the key characteristic of the resource to be protected is central in the dynamic of pre-competition. In that sense it can very well relate to the building of a system lock-in as per the vision developed by Hax & Wilde (1999) in the Delta Model. For Hax & Wilde a system lock-in is focused on systemic economics as opposed to product economics and creates decisive competitive advantage through complementors, or those who have significant influence over the customers of a business through complementary value-adding. The example given by Hax & Wilde in their seminal work is the one of Microsoft which was able to attract customers to its platform through partnerships with third-party organizations (complementors) such as Intel. Over time, the company was able to achieve market domination through the extensive partnering seen in their products and services. Could Danone have maintained the purity of the Evian source without the ecosystem it has created in Evian? Had Danone created therefore "a system lock in" between farmers-municipalities that supports its competitive advantage? Is Pre-Competitiveness a new way to create a "system lock in"?

This fundamental redefinition of the customer-supplier relationship at the service of the end user has been frequently highlighted in our interviews and surfaced in many documents. Competitive advantage is progressively rebalancing from a pure product performance discussion to how the product has been made, designed, manufactured, and sourced. Such dimensions are perceived as increasingly strategic. It also means that because the construction of a competitive advantage must integrate increasingly upward and/or downward it takes longer to build. The traceability and transparency dimension becomes key for many. At the end it can be a question of coherence as Philippe Galois states *"I think that people will be more and more educated, aware of environmental issues and that the economic approach can no longer be linear. And at the end, you cannot have a speeches and acts that are disconnected".*

7. CONCLUSION

Natural Resources are depleting at an alarming rate, and this calls for immediate action and adaptation of economic models to safeguard our lifeline.
Unfortunately, Natural Resources have long been considered by mainstream economists as infinite while corporates are facing an increasing and acute issue of sustainable access to them. The potential scarcity or complexity of access to the resource surely means that they can become an element of the competitive advantage and rent creation for firms. But for how long? It is our collective responsibility to decide if our economist system should allow appropriation and exploitation to the point of exhaustion or if it should foster an alternative model of collaboration that would ensure the long-term availability of the resource.

Our work showed that the Resource Based View (RBV) provides a relevant framework to appreciate this dynamic as it focuses on how resources are used and assembled with the objective to create a competitive advantage. But interestingly this strategic framework did not originally consider Natural Resources. Several attempts have therefore been made to develop a Natural Resource Based View (NRBV) of the firm.
We showed that because the RBV and NRBV are built on Ricardian paradigm of rent appropriation, this non-explicit "underlying" assumption disqualifies them to ensure the sustainability of the competitive advantage they aspire to form. Even Hart's attempt failed to apprehend this dynamic, and one can wonder if the mechanism behind rent appropriation is note contributing or accelerating the Natural Resources depletion. Rarity as one of the core triggers of competitive advantage in a Ricardian logic is turning as a dangerous trigger for Natural Resources that are exhaustible. When depletion equals rarity this very assumption of the VRIN condition of the RBV becomes at the same time the cause of an unsustainable competitive advantage.

On this basis and using 2 inductive revelatory case studies focuses on Fresh Water, we have studied how Danone and Veolia included Natural Resources in the buildup of their competitive advantage.

We found out that to do so, new strategies that we call "Pre-Competitive" are emerging and could reset the way to build competitive advantage. We were able to identify 3 conditions under which those strategies could be relevant when 1. usage prevails ownership, 2. resource

management prevails resource exploitation and 3. collective management prevails appropriation. On this basis, the Pre-Competitive strategies will focus on protecting a specific characteristic of the resource, consider its long term availability and develop stewardship strategies. While Pre-Competition implies new collaborations it is not the negation of competition, it is offering a vision under which the RBV can operate in the context of Natural Resource scarcity ensuring sustainable competitive advantage and potentially protecting the Natural Resource. This could help to move from resource exploitation to resource preservation. Pre-Competition and our findings can therefore complement the RBV and offer a decisive development to the NRBV. It could also help to bridge the Resourcing Theory and the RBV as the usage and characteristic of the Resource are at the heart of the Pre-Competition. Our work can help executives confronted with this challenge in defining a winning strategy, it can also influence regulatory adaptation to foster collaborative frameworks. Finally, Pre-Competition offers a new light to the Customer and Supplier relationship offering new modes of interactions questioning the role of each in the value chain.

Our findings call however to study further several elements. We are therefore aware of the limits of our framework. At this stage we would like to call 3 limits that could offer valuable avenues for researcher moving forward.

First our thesis focused on one specific resource Fresh Water. As Water is the mother of life, we intentionally chose it for its revelatory potential. Further research could try to apply the Pre-Competition framework to other Natural Resources such as soil, staples, fish and or using maybe the planetary boundaries framework …This could help to test and refine further our findings. We have seen in our discussion that other cases may be very relevant (cf. the examples of orange, soil health or coffee).

Second the strong collaborative dimension of our work is also echoing the work of the theory of the common. We intentionally focused our work on the RBV and its Ricardian implication as our managerial experience proved us that this paradigm is strongly anchored in the way business are run. Building on the theory of the common additional research could study how Pre-Competition could create a potential bridge between the theory of the common and the Resource Based View of the Firm based on its deep collaborative dimension.

Third our cases were developed around 2 French listed corporations that had at the time of our study very committed CEOs: Emmanuel Faber and Antoine Frérot. Both companies developed an official “Raison d’être” (Purpose) and Danone became the first Purpose Drive company of the CAC 40 (“Entreprise à Mission”). We have not studied in our work how the cultural, leadership impulse and governance structure could influence the emergence of a Pre-Competitive strategy. This could open great avenues for future works and research refining the discussion point on executive capabilities.

My 20+ years of responsibility as management practitioner in France, India, the Netherlands, the UK allowed me to test, fail, learn, and succeed sometime. It, more importantly, helped me to realize that I needed to deconstruct what I was taught in business school to apprehend the ecological challenge I faced. This thesis started in 2017 allowed me to rebuild and I am immensely grateful to all the support I received along those years.

There is no invisible hand that would dictate its supreme laws. Our economic model is only a social construction, a succession of choices we make every day. They can always be different provided we have the leadership to do so. We can use creativity, collaboration and yes competition, as a force for good. So, let’s use the power of Pre-Competition and let’s *“be the change we want in the world” Mahatma Gandhi.* Our planet deserves it.

DETAILED TABLE OF CONTENT

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