Natural Capital
Nature has no price, has value

Consider the value of nature in business management, identify economic tools for conservation, strengthen the territorial management with informations on the benefits of ecosystems and support the development of environmental economic accounts are the contributions of the Regional–Local TEEB Project to join good businesses and public policies together with the conservation of natural resources.

The mapping of relevant ecosystem services for municipalities contribute for the construction of more effective territorial management instruments.

Climate change and water scarcity are the main motivations for including Ecosystem Services in business management.

500 people trained from the public and private sectors and from research and civil society, being 50% from business sector.

80% of the energy produced by hydroelectric plants uses, in some way, water preserved by nature protected areas.

The environmental–economic accounting of water allow to compare the wealth generated and the water consumption of different economic activities, an important information to improve sustainable resource water management.

The Regional–Local TEEB Project is an initiative of the Brazilian government, coordinated by the Brazilian Ministry of Environment (MMA), along with the Brazilian National Confederation of Industries (CNI), and other partners, such as FGV. The German Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety (BMU) supports the project, as an integral part of the International Climate Initiative (IKI). The project execution is through the technical support of Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.
DO YOU KNOW WHAT NATURAL CAPITAL IS? AND WHY DO BUSINESSES NEED TO INCORPORATE THAT CONCEPT INTO THEIR DECISION MAKING?

That is what this video is going to explain.

Natural capital is a term used to refer to renewable and non-renewable natural resource stock on Earth. For example, the air, plants, animals, water, soil, minerals...

It started being called natural capital when people realized those elements are critical for economic activities, just like people, machines and financial resources are. It is a way to justify conservation of natural capital to decision makers.

A demonstration, through numbers, that conserving wetlands located close to the city of Kampala, capital of Uganda, would be more beneficial than using those areas for agriculture.

Wetlands act as a natural sewage treatment, saving resources in sanitation. And they offer the extra benefit of acting as a natural barrier in case the sea level rises. Not to mention their value as a nursery and source of food for the marine life – which is very valuable, even economically speaking, for the fishing industry.

Therefore, to call attention to the importance of natural assets, the same expressions used in the mainstream economic and political models worldwide were applied.

Combined, those natural assets provide services that are called ecosystem services. Take, for instance, the balance in rainfall regime...

...natural vegetation that offers clean water, pollination performed by animals, CO2 capture that helps regulate the climate, forests that protect the soil and slopes against erosion...

And how does all this relate to the business world?

All business activities directly or indirectly depend upon natural capital.

As all business activities cause impacts on the environment and on the society, there is a need to know them in order to manage risks as well as business opportunities.

The impacts can be positive (investment in local restoration or improvement in the quality of water, soil, surface...) or negative (air pollutant emissions, waste generation, excessive water consumption, effluent emissions...).

The challenge is to create business practices and strategies that generate value for the organization and at the same time promote ecosystem preservation and the society well-being.

In this P22...ON edition, you will see a demonstration of how some companies are managing natural capital. We published 16 cases selected in the Natural Capital Business Management call for cases.

The action was promoted by FOGov, in partnership with the TEEB Regional-Local project and the Trends in Ecosystem Services (Tese) business initiative, supported by the Boticario Group Foundation. Our goal is to show business best practices to inspire other companies.

Enjoy!
For the new economy to advance, natural capital needs to be incorporated into the economic strategy. It is the economy, capital can be understood as a set of assets that generate production, income, and wealth. By transposing that language to nature, we come to the ‘natural capital’ expression, used to represent the stock of renewable and non-renewable resources that are combined and generate a flow of benefits for people – such as clean air, freshwater, shelter, food, climate regulation, medicines, recreation, and so on.

For Herman Daly and Joshua Farley, authors of reference works, such as Ecological Economics: principle and applications, natural capital means the “(biotic or abiotic) stock or reserve provided by nature that yields a valuable future flow of natural, resources or services.” Whereas ecosystems are an example of “stock,” ecosystem services provided by nature can be considered a “flow” (find out more about Ecosystem Services in this edition).

Conserving nature, by design, should be an unconditional practice, for which you expect nothing in exchange. It would be enough to understand that every form and structure sustaining life is worth of love, respect and protection, simply for their existence. Ethical and moral reasons would also be sufficient to justify conservation policies.

But, in the economic systems that view nature as a set of resources to be explored or a sink of resources discarded for the benefit of the human species, from an anthropocentric perspective, it is critical to acknowledge nature as a high value capital that supports all the others – human, social, financial, infrastructure capital, etc. That acknowledgment becomes a solid argument to avoid plundering nature from being plundered, but rather seen as an opportunity to generate and distribute economic and social gains. Currently, an important source of knowledge on natural capital is the information organization work conducted by The Economics of Ecosystems and Biodiversity (TEEB), headed by the economist Pavan Sukhdev and launched in 2007 by Germany and the European Commission. Their goal is to show the economic impact of losing biodiversity and degrading ecosystems, considering the harmful effects on human well-being.

When Sukhdev used to work in the financial industry in the 1990s, he found himself astonished with the disconnection between the notable economic performance of the so-called Asian Tigers, which allowed for individuals to amass wealth, and evident destruction of natural economic bases (in the end of the 1990s, Asia would face a crisis).

The Yellow River has dried up for nine months in 1997 and, in 1998, there was the Yangtze River flood. Heavy smoky haze caused by the burning of bogs in Sumatra damaged the air quality in Singapore, where I used to live. But news headlines all over the world would talk about the economic crisis in Asia, the collapse of the housing market in Thailand, demonstrations in Indonesia, devastation of localities in Russia (more about cultural ecosystem services here).

Ecosystems and biodiversity is all it takes to encourage the elaboration of public policies. But, in other situations, policymakers need to first demonstrate the economic value of a certain service to justify conservation practices.

A classic example – illustrated in Chapter 4 of the TEEB Report – was the demonstration, through numbers, that conserving wetlands located close to the city of Kampala, capital of Uganda, would be more beneficial than using those areas for agriculture, because wetlands act as a natural sewage treatment, saving resources in sanitation.

SPEAKING THE SAME LANGUAGE

Therefore, it would be more effective to use the same expressions, used in the predominant economic and political model worldwide. In other words, speak the same language of business as usual to introduce new paradigms.

Still, some environmental and socio-environmental groups criticize the use of expressions borrowed from the Economics, such as natural capital, stock, flow and natural resources. However, valuing natural capital is different from assigning it a commercial nature. It does not mean that nature is out for sale, but it rather has a tangible value – that cannot be monetized, such as the affective, spiritual and cultural values (more about cultural ecosystem services here).

The problem of not acknowleding tangible and intangible values is to convey the opposite message to newcomers; i.e., that natural assets are free and totally available to be explored by any-
There are plenty of reasons to seek the best business, economic and natural resources management. As continuously shown by the Earth Overshoot Day, announced by WWF every year we deplete the resources faster than the natural resources can regenerate within a 12-month-period, which keeps us in an explosive overdraft – to also use a financial expression.

It is the moment when human society's annual demand on nature exceeds what Earth ecosystems can regenerate over the entire year. In 2018, the day we were in overdraft was August 1st. In 1987, when measuring started, the day was December 19th.

Meanwhile, the financial capital increases, mostly, at the expense of use, exploration and degradation of natural and human capitals, according to the Natural Capital Coalition. That coalition, which gathers organizations and experts on the topic worldwide, produced a protocol which is used by the businesses as a guide to implement practices associated to natural capital.

The Natural Capital Coalition reminds us that every business affects and depends upon natural capital to a certain extent and, due to that, will be exposed to risks, but can also benefit from opportunities. Every impact and dependency will affect not only the business, but also the society, states the coalition.

With the purpose of investigating the importance businesses in Brazil assign to natural capital and how they address that topic in their management, in May this year a call for Natural Capital Business Management cases was launched, and the findings are published in the articles of this edition.

It is a pioneer initiative in Brazil that started from a partnership between the Ministry of the Environment (MMA), the National Confederation of Industries (CNI), and the German Cooperation for Sustainable Development (GIZ), under the TEEB Regional-Local Project, with the Center for Sustainability Studies at FGV Eesc (FGVes). It was also supported by the Boticario Center for Sustainability Studies (CNI), and the German Confederation of Industries.

According to him, the phenomenon of reprimarization has been intensified in the past two decades (please refer to the graph below) and is driven by industries that often times try to free themselves from what they see as ties from the environmental perspective, such as agrochemicals control, licensing requirements and fight against deforestation.

If businesses do not incorporate natural capital into their management strategies, it will be really challenging for the country to advance in the sustainable development agenda. Acknowledging those who incorporate natural capital into their business strategy is the great drive of this edition.

**EVOlUTION of QUARTERLY GDP PER ACTIVITY, 1996-2018 (AVERAGE IN 1996 = 100).**

Source: IBGE, Quarterly Balances.
Natalia Lutti - Manager of the Trends in Ecosystem Services (TeSE), FGVces

Luciana Alves - Technical Advisor of the TEEB Regional-Local Project / GIZ

Elisa Romano - Specialist in politics and industry of the National Confederation of Industry (CNI)

Luana Duarte - Environmental Analyst at the Ministry of Environment (MMA)

THE CALL OF CASES: VIDEO TESTIMONIALS AND METHODOLOGY

Watch here the video testimonials of who led this initiative (in Portuguese):

A STEP-BY-STEP GUIDE TO THE CALL FOR CASES

Understand the initiative drives and learn about the selection criteria

To learn how the management of natural capital creates value for companies and, at the same time, for the ecosystems they are part of. This is the great drive for the Natural Capital Business Management call for cases.

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Why a call for cases? Partner organizations understood it would be an effective way to identify what companies in the country are addressing natural capital in their decision-making, and find out what practices they are using. In fact, the initiative made the companies see themselves in that field and share concrete actions and results, which may inspire others to do the same.

Being a reference to other businesses and, thus, expanding that innovative management model was one of the assumptions, considered when establishing the rules for the call. Cases were selected with the goal of showing that the management of natural capital can be applied in many forms, by businesses of different sizes, operating in numerous industries.

Launched in May this year, the call received 33 cases altogether, which was then assessed by a committee of experts formed by representatives of partner organizations. After individual analyses, there was a meeting for alignment and consensus, considering four criteria:

- Potential long-term practice: The action is permanent and is part of the business routine. By integrating your core business, rather than being a parallel activity, the practice becomes a long-lasting experience because it is included in planning, implementation and monitoring processes.

- Potential for replication and future perspectives: The action can gain scale, be used by other organizations and be used as a reference and inspiration.

- Materiality and strategic contribution for business challenges: Natural capital management contributes directly or indirectly to add value and for advancement in business practices, considering integration into the business strategic perspective, business areas involved and the impact in its internal processes, as well as results, products or services.

- Generation of benefit for natural capital: Business practice provides a relevant contribution for maintenance, restoration and/or increase of natural capital and its ecosystem flows, as well as costs and benefits for the local population who relies on natural capital, other related actors and the society as a whole.

Based on these criteria, the committee has selected 16 final cases, which we will cover in further detail in the articles contained in this edition.
Valuation to Conserve

Businesses map, measure and try to understand their dependency and impact relationships with the ecosystems

By Sérgio Adeodato

Measuring the Value

Developing metrics to convert dollars into the (negative or positive) impacts caused to ecosystem services and to livelihoods in local communities is key for companies to assess risks and opportunities. The strategy is incorporated into business, in industries that span from chemical to power generation and are intensive in the use of ecosystem services, such as water resources provision.

Water-related conflicts arise worldwide, causing environmental, social and economic losses. Currently, there are 1.7 billion people living in regions where the demand for water resources exceeds the supply. By 2050, there will be over 2.3 billion people in this situation, according to the Organization for Economic Cooperation and Development (OECD). At the same time, in order to keep track with the population and industrial production growth, volumes removed from nature already account for three times as much as 50 years ago.

The impact caused by water shortage directly affects business; thus, it is increasingly necessary to find ways to measure and neutralize risks, points out Gustavo Kajura, a member of the Sustainable Development team at Braskem.

After having mapped threats in different scenarios by 2040, America’s largest thermoplastic resin producer decided to delve deeper into the analysis and calculate the economic feasibility of solutions to access water, one of its main inputs.

The method consisted of measuring the financial cost of impacts considering a water crisis scenario – in which the grant to use rivers may be reduced in 30%, causing a drop in industrial production – and comparing it to investments in alternative sources capable of avoiding the problem.

In the company unit in Duque de Caxias (Rio Grande do Sul state), the valuation pilot project showed that for 12 months of drought the total impact is somewhere around BRL 120 million. The option to pay for reclaimed water obtained from sewage during a five-year period, including the water crisis period, is a solution that costs BRL 20 million less than the risk of reducing supply and production.

The technological reference for the alternative option is Aquapolo, a project in which Braskem is a partner, at Great ABC, in Sao Paulo, with capacity to produce 1,000 liters per second in one of Sabesp’s wastewater treatment plants, a volume that is equivalent to the water consumption in a city of 500,000 inhabitants.

Thanks to that extra volume produced, the petrochemical company escaped harmfully from the 2014 and 2015 drought in the Southeastern region, which forced water power rationing in some cities. About 40% of the businesses reported they were affected, according to the State of Sao Paulo Industries Federation (Fiep) – in some cases, those losses required measures to improve water management.

‘It is not just about internal security in the operations, but lower pressure on watersheds, so the society will be able to access the resources’, explains André Vilaca, Sustainability Expert at Braskem, who, in the past few years, invested BRL 280 million to reduce water consumption to levels six times lower than the industry average worldwide.

Measuring the value of risk, making the perception of impacts something more tangible, is a key step to manage the process requires clarity in the perception about the impacts caused by companies, analyzes Santa Sevierini, from the Environment & Forest Manager, João Augusti.

The sector depends on soil, water and climate conditions. And the same natural resources the company needs for its operations are used by other segments to supply their own needs. Therefore, according to the manager, the negative externalities should also be accounted for, and, in that case, reported as costs to customers and society as a whole, aiming at guiding choices and looking for solution strategies.

Understanding the dependency relationships between natural resources and calculating the value of [both negative and positive] impacts caused to them are increasingly growing challenges faced in the business agenda. Especially for economic sectors with broad presence and interference in the territories. At Fibria, the world’s biggest producer of eucalyptus pulp, the initial plan was to map ecosystem services under the influence of its operations, and economically measure the effects on two of them: food production, and global climate regulation through carbon balance.

In the first program, called ‘Colmeias’ (the Brazilian Portuguese word for ‘Beehives’), to foster apiculture, the analysis covered honey production by communities amid the forests planted to supply the industry. The calculation helps clarify controversial issues, such as the argument that extensive eucalyptus plantations for paper production compete for space that could be used to produce food, causing social problems and threats to food security. The transparency process requires clarity in the perception about the impacts caused by companies, analyzes Santa Sevierini, from the Forest & Environment Department at Fibria. Those who do not value externalities, costs or benefits to society will ultimately ignore them. And this can currently pose risks to competitiveness.

Concerning climate change, the externality was equally positive. With 1 million hectares of eucalyptus forests, 374,000 of which solely dedicated to environmental conservation, the company captures more carbon than it releases in industrial operations. The account balance reached BRL 2.8 billion in 2016, considering the social cost of carbon of US$ 16 per ton, according to the international standard. ‘Those are benefits the company generates without being compensated for. And, somehow, they need to be aligned with the revenue’, states the manager.

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MEASURING THE VALUE

The numbers allow for raising the managers awareness in their decision making, high-lighting Augusto. At Fiora, the variable started to be applied early during new project defin- ition, such as the recent change of the fleet used to transport timber, and now the company is considering to use electrical trucks, with zero emissions. By assessing the disposal of sludge from the inlets (São Paulo state) plant in landfills, the data collected about the im-pacts arose a question that had never been asked before: what 12.20 will release less greenhouse gases?

HOW TO QUANTIFY THE IMPACT OF RESTORATION

In order to manage, you must first measure. To Paranapanema, the data collected about the im-pacts arose a question that had never been asked before: what 12.20 will release less greenhouse gases?

In addition to identifying ani-mals, especially birds and am-pibians, the technology quanti-fied forest biomass above the soil and assessed the quality of water as a sign of successful recovery of the riparian forest area. One of the greatest chal-lenges was to design all vari-aibles in a representative way for different environments in a landscape scale of 40,000 hectares.

The next step will be economic valuation to support future in-vestments: “solving the financial equation is critical to do more business with less”, states Machado, planning to replicate the meth-od to other neighboring areas to the plants operated by the company in Brazil.

INITIATIVE X-RAY

ECONOMIC VALUATION OF THE WATER SCARCITY SCENARIO IN BRAZILIAN INDUSTRIAL PLANTS

Proponent: Braskem – large-scale private company from the petrochemical sector
Beginning date: April 2017
End date: non applicable
Place of realization: Rio de Janeiro, Alagoas, Bahia
Approximated investment: to be defined

How it generates value for the company: in assessing the po-tential impact of water scarcity and subsequent compa-rative valuation with the implementation of a reuse project, Braskem is able to assess which alter-na-tive is most interesting under economic bias. It enables the knowledge of how much it would be worth paying for an alternative water source proj-ect to compensate for the im-pact of lack of water in its op-erations, as well as to identify which “part” of the equation is most interesting to adopt risk reduction initiatives. Intangible benefits are also obtained, such as innovation through the valu-a-tion of an ecosystem service and the approximation of the sus-tainability of business deci-sions.

How it generates value for the ecosystem and players in-volved: The initiative will allow the company to obtain water from alternative sources (such as reuse, desalinization), reduc-ing the risk of watersheds from which water is collected. It can support other companies to app-raise the impact of their op-erations with water resources and subsidize projects search that for alternative sources of wa-ter. There, is therefore, a repla-cability factor.

How it relates with other global initiatives: This is directly relat-ed with all Sustainable Develop-ment Goals, more specifically goals 6 (Ensure access to wa-ter and sanitation for all) and 13 (Protect, restore and promote sustainable use of terrestrial ecosystems, sustain-ably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss) and 17 (Strengthen the means of im-plementation and revitalize the global partnership for sustain-able development).

EXTERNALITY APPRAISAL PILOT

Proponent: Fibria – large-scale private company from the pulp and paper sector
Beginning date: March 2017
End date: non applicable
Place of realization: Anacruz (ES), Três Lagoas (MS) and Jacaré (SP) branches
Approximated investment: non applicable

How it generates value for the company: The quantification of Ecosystem Services enables the management of natural capital through actions that promote the improvement of provision services and mitigation of possible impacts. Apart from helping to broaden the view on natural capital, the pi-lot project, developed in 2017, represents an important step in any future discussions of the certification standards to which the company is submitted to.

How it generates value for the ecosystem and players involved: Being restricted to externalities, the scope of this study makes it possible to bet-ter distinguish the environ-mental impacts suffered by the company from the social impacts caused by it. By mon-itoring externalities, it allows to impacts to be placed in a finan-cial perspective that is aligned with corporate planning and management practices. It is ex-pected that liabilities, risks, and business opportunities related to environmental externalities will gain visibility among execu-tives and investors who have no technical knowledge of envi-ronmental issues; having a better chance of influencing the company’s strategic planning.

How it relates with other global initiatives: This contributes di-rectly to the 2030 Agenda and target 6 of Sustainable Devel-opment (SDG 12 (Responsible Consumption and Production)). Goals 2 (End hunger, achieve food security and improved nu-trition and promote sustainable agriculture), 6 (Ensure availabil-ity and sustainable management of water and sanitation), 13 (Take urgent action to combat climate change and its im-pacts) and 14 (Conserve and sustainably use the oceans, seas and marine resources for sustain-able development). The work is replicated in the region by Givés in accordance with the Paris Agreement the intended Nationally Determined Contribu-tion (NDC) and Nature by Design Protocol Application Program.

DEVELOPMENT OF APPRAISAL TECHNOLOGIES FOR ECOSYSTEM SERVICES AND NATURE CAPITAL IN ENVIRONMENTAL PROGRAMS

Proponent: CTG Brasil – large-scale private company from the hydro electrical sector
Beginning date: May 2015
End date: December 2018
Place of realization: Pontal do Paranapanema (São Paulo State) – Ecological Corridor
Approximated investment: R$ 2.8 million

How it generates value for the company: The generation of information is possible with the implementation of natural capital valuation models and allows for better management of resources. It is an aspect that encourages the company to adopt these strategies with the logic of natural capital. The eco-logical corridor has restored an area equivalent to 1,200 soccer fields (12,00 ha), involving the planting of 2.4 million trees and providing a source of income for the communities involved.

How it relates with other global initiatives: The initiative is asso-ciated with Sustainable Develop-ment Goals; 6 (Ensure availability and sustainable management of water and sanitation for all), 13 (Take urgent action to combat climate change and its im-pacts), 15 (Protect, restore and promote sustainable use of terrestrial ecosystems, sustain-ably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss) and 17 (Strengthen the means of im-plementation and revitalize the global partnership for sustain-able development).
PLANTING WATER

Businesses find solutions for the current water insecurity by conserving and restoring the natural landscape

Every business uses water in its processes and supply chains. Some use more, others use less. Only very careless managers would not be aware of the risk of water scarcity that clearly exists in some regions throughout the country. Forest conservation and recovery have proved to be such an appealing solution to reduce this risk that many companies have chosen to deploy production and conservation best practices, in order to ensure sustainable use of water. Largely, the companies selected in the Natural Capital Business Management call for cases related to this theme—namely, Sabsesp—a semipublic corporation that provides services to 368 municipalities in São Paulo in water distribution, sewage collection and treatment—was one of the companies that managed the company, but also for a supposed lack of position on water shortage-related environmental issues. The response to all the criticism came in 2017, in the digital book *Mutua Alem A de Agua* (Way Beyond the Water). The goal of the publication was to publicly announce the ‘Green Belt for Water Supplies’ program, which covers the regions in the supply system of the city (Santo André, Rio Claro, and Fazenda Capiuví, in São Paulo Metropolitan Area).

In the foreword, Sabsesp’s CEO, Jerson Kelman, admits that the severe water crisis in São Paulo at that time made it clear how important it is to efficiently and sustainably manage natural resources in order to prevent future climate adversities. More than a duty, recovering and preserving natural resources in the green belt regions is a strategic guideline to ensure water is delivered to over 28 million consumers, he stated.

Sabsesp adopts a similar strategy with the program ‘Water Cerrado Consortium’. As Guilherme Amado, the company’s green coffee expert, explains, the goal of the program is to ensure a future for coffee in the Cerrado area in Minais Gerais State (a region known as ‘Triângulo Mineiro’). If you follow the rainfall rates in the past 10 years, you will notice that in seven years rainfall volume was below the mean historical rainfall. This is a great impact in a region of high temperatures, considering coffee production heavily relies on water (about 60% of coffee production in the cerrado biome makes use of irrigation). In 2015, the same drought that made the water in Sabsesp supply systems disappear, also heavily hit the producers of the most awarded Brazilian coffee beans. At that time, coffee producers had to stop collecting water, otherwise their irrigation equipment would be embargoed by the state government. Interrupting the plant life cycle (by suspending irrigation) causes it to lose fertilizers and agrochemicals, affects the production, the productivity and the quality of the finished product, as Guilherme Amado, Nespresso green coffee expert, explains.

According to him, in many agricultural areas in Patrocínio there are no trees at all. Large-scale agricultural production in the Triângulo Mineiro area started in the 1970s. After successive droughts destroyed coffee production in the State of Paraná, many farmers migrated to the region, where the climate was good and lands were not so expensive, but not all of them treated the ecosystem carefully when preparing their croplands. ‘This affected the climate and now everyone is paying a high price for it,’ says the expert.

Add to this scenario the data published by two climate studies concerning agriculture: *the first* one, conducted by Embraop in 2013, and the *other* conducted by the Homer Team (New England, USA), in 2018. Scenario modelling for different agricultural regions around the world estimate that, if the planet temperature rises 4 degrees in the next 100 years, at least 90% of the current crop lands will not be feasible any more. ‘We are really concerned, because the Cerrado area in Minais Gerais State is included in those studies and we buy a huge amount of coffee from them. There are growing risks; therefore we are taking actions. For example, we have conducted projects to address that kind of challenge,’ he states.

In 2015, after Patrocínio and the neighboring region had gone through a prolonged Summer, when there was no rain at all, for over 30 days, severely affecting the quantity and quality of coffee, Nespresso still under the impact of having to interrupt the season, supported the formalization of the Cerrado Water Consortium. It is a multisectoral collaborative platform whose goal is to create ‘sustainable productive landscapes’ in a pilot area, in the Córrego Feio watershed, in Patrocínio. The model establishes that all farmers, upstream or downstream, have to establish production and conservation best practices, in order to ensure sustainable use of local natural capital. The project is based on three pillars: sustainable landscapes, supply chains, and qualification of ecosystem services. Under the supply chains pillar, the strategy is to restore natural environments to ensure the provision of ecosystem services. Under the consortium, the third pillar is to offer qualification of ecosystems through strengthening the regional identity and adopting sustainable production processes. The third pillar is to offer qualification of ecosystems through sharing information and knowledge, as well as training sessions on sustainable production practices.

One of the key takeaways of this project is that concept of ‘landscape-based approach’ is the result of a co-creation that includes the civil society, representatives from farmers, businesses, coffee certification agencies, governmental agencies, and local and federal governmental agencies (De-Partement of Water and Power – DAEW, and the State Forest Institute – IEF), as well as the local university, the Cerrado University Center (Unicerrado).

The method to monitor risks and opportunities in ecosystem-related services to coffee farms was conceived in a partnership between Nespresso and the International Union for Conservation of Nature (IUCN) and, later, on, with IPP Institute (in charge of assessing technical and environmental metrics). ‘In meetings with all the stakeholders, we came up with a common vision that the water is the result of the landscape we build,’ states Amado.

The major focus of the actions is on conservation and rational use of water, which includes short-term actions (quality of irrigation systems, rainwater harvesting, and management of vegetation cover) and long-term actions (reforestation, isolation, enriching and natural regeneration of scattered native vegetation). The project, which involves 125 estates, is funded by Nespresso and the consortium. The partnership also focuses on capacity-building and training, as well as strengthening the regional identity and adopting sustainable production processes. The third pillar is to offer qualification of ecosystems through sharing information and knowledge, as well as training sessions on sustainable production practices.

Meanwhile, the Cerrado Water Consortium is also planning to put into practice a payment for environmental services (PES) financial mechanism. Currently, Nespresso is working with consultants to value the service. ‘When we figure out a value, we will look for funders. But we do not want to create any expecta-
DRINKING WATER

Apart from the dams, another initiative is underway in the State of São Paulo to build the reservoirs and, according to Mara Ramos, Water Resources Manager, 75% are covered with Atlantic Forest native vegetation. The areas that are still uncovered (25%) are located in the system of water springs protection in Sistema Cantareira, where there was a cattle ranch in the past.

She explains that the Green Belt for Water Springs is based on three pillars: protecting the areas around the four water supply systems. Altogether, the areas account for 14% of the Atlantic Forest remnants in the State of São Paulo. Those estates were purchased in the 1970’s and 1980’s to build the reservoirs and, according to Mara Ramos, Water Resources Manager, 75% are covered with the Atlantic Forest native vegetation. The areas that are still uncovered (25%) are located in the system of water springs protection in Sistema Cantareira, where there was a cattle ranch in the past.

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Natural resources consist of relevant capital to businesses, not only in their operation, but also across the entire supply chain. To do business as usual and just expect a perfect operation of the processes involved, from sourcing to disposal of products, may pose important risks and may even have a boomerang effect; your company might eventually have to pay the consequences of that approach. Tuned to the challenge, many companies are incorporating into their business a careful look at other stages in their product life cycle, whether to reduce operational and reputational risks, or to reduce negative externalities caused by their activities.

Three of them were selected in the “Natural Capital Business Management” call: for cases Casa Jaya, a vegan restaurant and agroecological space, which has an unusual proposition of composting their own organic waste associated to a pretty unique model of reverse logistics; AkzoNobel, a paints industry that has been using reclaimed water in its latex products and is gradually eliminating solvent-based coats from glazes and varnishes; and C&A, with the case of the basic cotton T-shirt designed to be transformed into organic compound that will germinate new food, which, very soon, will be again in that same kitchen, where a new production journey will start.

When the Casa Jaya partners launched their project, 10 years ago, enthusiastic about the idea of closing the loop in the organic input life cycle, they managed to gather a group of 12 vegetarian and vegan restaurants in the region willing to separate and provide their waste for composting. The composting would be produced on a ranch on the outskirts of Sao Paulo, and from there it would be sent to the vegetable gardens of small farmers in Sao Paulo Metropolitan Region as part of the payment for organic greens and vegetables provided to the 12 restaurants, and so on and so forth. "Together, we would create a consumption club of restaurants closing that cycle that I call, maybe incorrectly, reverse logistics,” he explains.

Avanzo had just found his dream business model. But he was not aware it is forbidden to transport organic waste across the city of Sao Paulo, except through a company licensed by the Municipal Authority of Urban Cleaning (Amlurb). In other words, organic waste produced in Sao Paulo urban perimeter has necessarily to end its life cycle in landfills. Given such a discouraging outcome, the first episode of the Casa Jaya history came to an end.

Julio Avanzo still feels indignant about it: “Every single day, the city produces 6,300 tons of totally compostable organic waste, which is systematically discarded in landfills, accounting for the generation of 30% of all greenhouse gases released in the municipality.”

At that point, the only possible alternative would be to compost the organic waste at the same place it was produced. Either that or nothing. There would be a loss in scale, but a gain in energy efficiency, since all activities would be concentrated in the same place. The group transformed the small snack bar into a bistro. In addition to delicious vegan dishes and a buffet with salads free of chemical fertilizers and agrochemicals, the kitchen produces 46 kilos of food leftovers (organic waste) daily, which are transported in pails to the cylinders lined up on a slab built on the kitchen for that purpose.

The wet waste produced by the restaurant is weighed daily to monitor the evolution of waste reduction, and then they add dry plant debris (litter) provided by Eletropaulo, through the Term of Pruning Waste Partnership. “Composting in a controlled environment, as well as in nature, needs moist and dry nitrogen-rich material for the perfect balance,” teaches Avanzo. Every week, two cylinders are disassembled, and the composting is bagged and sent to small farmers who are Casa Jaya suppliers, keeping the organic material “reverse logistics” model, as initially planned. The greatest project challenge is the lack of space, without which it is not possible to have more cylinders and allow for longer processing time to the composting, which would add value to the product.
come yellowish over time’, says the corporate Sustainability co-ordinator, Flávia Yumi Takeuchi. The goal of the ‘Water: Color Essence’ project, by AkzoNobel, is to increasingly sell more water-based products, using less and less water resources. Despite of some resistance from consumers, by 2010 at least 20% of all lines of glazes and varnishes will rely on this feature, doubling the current volume. ‘Increasing the water-based product portfolio will not account for a higher consumption of this natural resource, because we will be reusing the wastewater treated in our treatment plant. By 2020, all the treated water will be reused in the manufacturing facilities and in the products,’ informs Takeuchi.

Another important aspect concerns the cost of the new paints. The sustainability coordinator explains that raw materials for water-based products are imported and are subject to greater price volatility when compared to solvent-based raw materials. ‘Additionally, last year, one of our suppliers was heavily affected by Hurricane Harvey, what raised their costs even further,’ she tells.

As the sustainability coordinator explains, in order to enable the changes, a sewage treatment plant was built and it does more than usual physical, chemical and biological treatment. ‘We have installed an ultrafiltration membrane, with such small pores that virus and bacteria cannot go through it. Only salt can go through it. The water is not proper for drinking, but the quality is good enough to manufacture paint,’ she describes. The plan is to produce latex paints with reclaimed water: ‘So far, we have a pilot project, and we are waiting to cut through red tape to launch. But by 2020 all our latex will be produced with reclaimed water.’

The initiative address is the Tan-gará Reserve, an estate of 70 hectares in the municipality of Mauá, Sao Paulo Metropolitan Region, where the AkzoNobel plant is located. All the water consumed by the company is sourced in that area, from springs or zones where the artesian wells are refilled to supply water for industrial production. The eucalyptuses growing in the reserve have been gradually replaced with native trees from the Atlantic Forest, with the goal to improve the quality of the water, avoid wildfires (since the Atlantic Forest is moister than eucalyptuses), form a biological corridor, keep a safe distance from neighboring communities and enhance the company reputation. The three AkzoNobel projects have different drivers, but they converge in valuing water resources and are connected to the strategy, since water is a fundamental raw material for the company. ‘We not only aim at reducing environmental impacts, but also rely on that resource to produce paints,’ states Takeuchi.

**WATER TO PAINT**

One can understand that professional painters keep using glazes and varnishes in spite of the polluting volatile organic compounds released during manufacturing. What if they had access to a formula that replaces that solvent-based glazes and varnishes with water, ensuring a similar finishing effect and 45% less greenhouse gas emission? Do you think they would change products? It is hard to know. But the Dutch-multinational AkzoNobel, a leader in paints manufacturing, is trying to convince professional painters and consumers using the following argument: the new products are more beneficial to the environment, they dry quickly, they have no smell at all, and they do not become yellowish over time’, says the corporate Sustainability co-ordinator, Flávia Yumi Takeuchi. The goal of the ‘Water: Color Essence’ project, by AkzoNobel, is to increasingly sell more water-based products, using less and less water resources. Despite of some resistance from consumers, by 2010 at least 20% of all lines of glazes and varnishes will rely on this feature, doubling the current volume. ‘Increasing the water-based product portfolio will not account for a higher consumption of this natural resource, because we will be reusing the wastewater treated in our treatment plant. By 2020, all the treated water will be reused in the manufacturing facilities and in the products,’ informs Takeuchi.

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**COMPOSTABLE T-SHIRT**

Estimates say the global fashion industry produces 80 billion pieces of clothing annually, not to mention the informal market. The life cycle of most of that production is linear, going from cradle to grave. In other words, they are produced, sold, used and reused until they are discarded in landfills. Last year, C&A, one of the world’s top retailers, broke that linear cycle, launching in Europe, Mexico and Brazil, a T-shirt manufactured with raw materials considered to be biological nutrients, created to be reused, recycled into new products, or safely composted.

It is a Cradle to Cradle (C2C) Certified Gold T-shirt, and the certification ensures circularity. In addition to having a noble end of life, the product is manufactured with organic cotton (free
of fertilizers and pesticides); the dyes and inks used are safe to the soil and to the health of the employees involved in the dyeing process; the energy consumed in manufacturing is renewable and offsets carbon emissions; the water used in the production process is treated before returning to the environment; and people involved in the clothing manufacturing comply with legal norms in their corresponding countries.

In an interview by email, without identifying a speaker, C&A informed that until now over 13 million pieces were introduced into the market and the product was very well received. The demand for a more sustainable production is a reality in this industry. Customers are increasingly aware of the social and environmental impacts, they demand it from businesses in this industry, and they stay tuned to our initiatives, they informed.

Here in Brazil the pieces debuted in September 2017 and were available in 300 brick and mortar stores, as well as via e-commerce. Customers were very receptive to the initiative, which encouraged the company to repeat the launch in April this year, along with the #WearTheChange movement, the umbrella term for sustainability communication in C&A.

The company listed its greatest challenges to make the C2C certification more comprehensible within its production line and those challenges have been addressed in partnership with Fashion For Good (an initiative that encourages compliance with best practices in the fashion world). The Fashion Industry lacks a larger offer of certified dyes, inks and chemicals products; alternatives for elastane fabric; antimicrobial polyester and recycled polyester; more certified buttons, zippers, rivets and finishing materials.

The company also said that, to move towards sustainable fashion, it is promoting the Good Fashion Guide, by Fashion For Good, which will help suppliers willing to develop Cradle-to-Cradle™ certified products.

Regarding goals to incorporate more sustainable practices into the fashion supply chain, the company said it created a Global Sustainability Platform in 2015, with goals to be met by 2020, based on three pillars: sustainable products, sustainable supply chain, and sustainable lives. It also announced that soon there will be more launches aligned with the circular economy concepts.

By looking beyond their own needs, Casa Jaya, Alkzen Nobel, and C&A have been promoting a positive impact on the ecosystem and on business actors that have not realized yet that without circularity there will be no continuity.

### Initiative X-Ray

#### Design to be Recycled

**Proposites:** C&A & large-scale private company from the chemical sector

**Beginning date:** September 2017

**End date:** non applicable

**Place of realization:** Brazil and Mexico

**Approximated investment:** non applicable

**How it generates value for the company:** Through this initiative, the company stands out for innovation. Product development brings together partners who together contribute to the circular economy, reducing negative impact of the industry. Given the fact that the certification process demands changes in production systems and techniques improvement, the legacy is extended to the supplier, who can empower the acquired expertise and adopt more sustainable production techniques. By sharing their learnings across the value chain, the company understands that the value generation is for the entire industry.

**How it generates value for the ecosystem and players involved:** Cradle-to-Cradle™ T-shirts are made from more sustainable cotton, with safe materials and chemicals and are produced in a socially and environmentally responsible manner. The dyeing is 100% non-toxic, which allows the T-shirt to compost once it’s discarded. Composting can significantly reduce the volume of organic waste, while the produced composite can be used in agriculture. Cradle-to-Cradle certification, which is the only one performed by third parties, can certify circular products, which is the source of the raw materials, chemicals, water or energy used in manufacturing, material reuse and social conditions in the chain value.

**How it relates with other global initiatives:** Aligned with the Global Goals 12 on Sustainable Production and Consumption, and the initiative is found at the center of the company’s global sustainability strategy, also including the work on a clean environment in its supply chain. The company’s vision is to be part of a restorative circular economy upon which nothing is wasted while making or discarding the clothes.

### Organic Residue Composting and Reverse Logic

**Proposites:** Casa Jaya – small-scale private company from the food and sustainability sectors

**Beginning date:** March 2011

**End date:** non applicable

**Place of realization:** Brazil, Sao Paulo (SP)

**Approximated investment:** R$ 10 thousand

**How it generates value for the company:** For the restaurant, the ecologically appropriate management of waste generates purpose for the product and value for the image. It also incites a reflection from the team, suppliers and customers. Various waste reduction practices, such as the full usage of food, has already saved more than 10% of the monthly cost of raw materials, particularly vegetables and vegetables. The produced composite returns to the producer association, which in turn significantly reduces the monthly cost of agricultural inputs and obtains image gain.

**How it generates value for the ecosystem and players involved:** In the first phase of the system’s implementation, about 1.5 tons of composite is produced monthly. This represents a reduction of a 1.3 tons of organic kitchen waste and 3 cubic meters of plant litter and pouring by a treatment plant, which would be destined to landfill sites. By handling this waste in its own space, Casa Jaya adds value to this material and returns it to its farm- ers and other urban farmers. The initiative tightens bonds with producers of organic fruits and vegetables. This reduces the costs for those involved and creates ecological awareness and new models of consumption and generation of effluents is reduced, reducing treatment costs – which should be liquidated until 2020. The company’s initiatives to lead the transformation movement of consumers and painters and intends to establish itself as a brand of solutions that brings more benefits to both the environment and consumers.

**How it relates with other global initiatives:** The policy is in agreement with the 2012 Solid Residues Management Policy. Another landmark to be considered of great importance is the “Casa Jaya is the ‘Compost in the city of Sao Paulo’ Seminar, held in 2014, and the Six Goals of Composting developed in 2017 – being Inspiring for the Sustainable Development Goals.

### Water: Color Essence

**Proposites:** Alkzen Nobel - large-scale private company from the chemical sector

**Beginning date:** 2017

**End date:** 2020

**Place of realization:** Maui (SP)

**How it generates value for the company:** Aiming to sell more water-based products, promoting reuse, and conserving an area of the Atlantic Forest, the initiative generates intangible values, which, although not yet calculated, recognize water as an essential raw material for the company. The dependence of water resources causes actions to be developed for the origin, manufacture and promotion of consumers products.

**How it relates with other global initiatives:** The initiative is aligned with Sustainable Development Goal 6 (Ensure availability and sustainable management of water and sanitation for all), 9 (Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation), 11 (Make cities and human settlements inclusive, safe, resilient and sustainable) and 15 (Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss).
Agriculture relies on the right balance of water, fertile soil, climate, biodiversity and pollination; it is closely linked to goods and services provided by nature. Therefore, it is quite obvious that farmers must conserve the natural capital basis if they are willing to keep their activities profitable over time.

Although this mindset is not predominant in the entire rural sector, where production practices that harm the natural capital still persist, some innovative initiatives that promote sustainability attributes, are noteworthy. Cargill, for instance, was among the companies that bet on programs to strengthen rural farmers sustainability attributes.

Agribusiness companies bet on programs to strengthen rural farmers sustainability attributes.

According to Renata Nogueira, Cargill Sustainability Manager, the company is interested in soy supply chain providers adopting best practices, to meet the demands of European consumers, who demand certified products. Additionally, by signing the New York Declaration on Forests, in 2014, the company made a commitment to prevent deforestation across its entire agricultural supply chain by 2030 worldwide.

New York Declaration on Forests is a voluntary international declaration to prevent global deforestation. It was firstly endorsed during the U.N. Climate Summit, in September 2014. It has 191 signatory nations, out of which 40 are governments, 20 are subnational governments, 57 are multinational companies, 16 are groups representing indigenous communities, and 58 are non-governmental organizations. Learn about its 10 goals.

**IT IS NOT JUST ABOUT SELLING THE PRODUCT**

Through a program called Mata Viva (Living Forest) Restoration and Environmental Education, Basf’s selected case, customers who reach a certain volume in purchase may use services such as guidelines to restore areas of permanent preservation (APP) in their rural properties. (Among other services provided to the company’s most loyal customers, are estate management, soil and environmental education, zoning rural properties – agricultural areas, Areas of Permanent Preservation (APP) and Legal Reserves – with specific norms for land use and occupation. It also establishes financial mechanisms that go beyond command and control, such as credit restriction to farmers who do not comply with the Code. In the beginning, there was a boom of adherence to the program, aiming at Code compliance, but we still have customers who are interested in it,” says Graziano.

Up to the moment, the program has supported 27 customers, among cooperatives and agricultural companies, in 153 municipalities located in 9 different Brazilian states, and restored about 702 hectares, having planted 1.12 million tree seedlings along the shorelines of water springs and bodies of water.

But how does it benefit Basf? As a great portion of the crop production in the country depends on the environment, the company considers rural property environmental regularization a critical step to ensure agricultural production – which directly affects its business associated with the sale of products.

Additionally, Basf says the agricultural activity is inherently associated with agricultural best practices and to natural...
I want longevity, not quantity. I only applied to sick plants. According to Graziano, that technology offers use drones. According to Gra- is in the industry’, he declares. produce the use of crop protection tion between one thing and the cal products sale, Graziano decries the company chemi- biological control –, this would sustain and recover that natural agricultural activities; thus, pro- so that they are competitive and sustainable. By achieving opti- levels, farmers will make better use of the technology. I offer. It is not just about selling sustain the well-being of rural employees, are traceable, and have their carbon emissions managed. A product carrying the 3S label – ‘Luis Ogius’s soybean oil – has been available for and consumers in some Brazilian supermarkets since March this year. A critical element of the initia- tive, which has a structuring nature – i.e., it is not isolated – is its high potential for rep- lication, even to other crops, such as corn, vegetables, fruit. But, as Renata Nogueira explains, there are still significa- nt challenges. The major one is engaging rural producers, who do not immediately realize the benefits of having the label. ‘This happens because, although international buyers are interested in products with sustainability attributes, they are not willing to pay more for them’, states the manager. Thus, the costs to implement the label have been totally covered by Cargill, which invests BRL 250,000 per year on the program. There are four stages involved in 3S implementation: sensitization of farmers, prop- erty diagnosis, elaboration of an individual action plan, and con- tinuous improvement actions. According to the company, even though farmers realize 3S label contributes to better manage the property and make it stron- ger by adopting sustainability attributes, customers need to acknowledge the value of the initiative, so as to allow a return of those investments to farm- ers. Otherwise, the program will not be financially feasible. Cargill has been investing in 3S label for 7 years, and up to now it got adhesion of 200 produc- ers from the states of Goiás, Paraná, Mato Grossso and Pará, summing up 152,000 hectares out of a total of 6,000 produc- ers in its supply chain. For that purpose, it relied on partner- ships. BioSistemico Institute (IBS) offers technical assistance, and the property carbon emissions are calculated by Espaço Eco Foundation, owned by Bef. To expand the program – in the 2018/2019 crop, the goal is to extend it to Mato Grosso do Sul state – the company bets on new partners, such as financial institutions and companies that sell agricultural inputs. Trans- forming the soy chain in Brazil is a task that will demand engage- ment of a variety of actors. 

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MONEY THAT GROWS ON TREES

Nature physical or intangible assets provide good money, showing that every seedling may be worth it and make a difference

New models of sustainable development and environmental diversity may generate revenue in larger scale and become competitive when compared to activities that cause deforestation, enabling conservation of natural resources and bringing benefits to the planet. In many cases, practices adopt the agroforestry concept, through a consortium between native forest and commercial species that diversify production.

In Pato de Minas (state of Minas Gerais), a seed was planted, seven years ago, driven by the demand of the German aviation industry for biofuel. The strategy was as an alternative option for conventional petroleum-based fuel. The strategy was a response to the pressure to reduce carbon emissions. Challenged, scientists coordinated by Leuphana University, Lower Saxony, Germany, travelled around the world looking for vegetable oils capable of feasibility and safely supplying the new market. Palm (dendê) and soy were considered as potential fuel sources, but lost points because of deforestation and excessive use of agrochemicals. Then, after a lot of research, the European team found in Brazil a promising native palm: macacuá (Acrocomia aculeata).

But the attention was drawn to the potential of native applications, of greater value and scale, such as the food and cosmetics industry, tells Johannes Zimpel, Director at Inovas, a company based in Pato de Minas (state of Minas Gerais), member of the early prospecting efforts. Among other advantages, the plant was found to be available in the national territory, presented high yields of vegetable oil, and could grow in harmony with pasturlands.

After studies of financial feasibility were conducted for harvesting 500 tons of the fruit in pasturlands. The planting of the palm in areas of family farming, the goal was to achieve 2,000 hectares, and 100 small farmers to process 6.5 tons per hour. As a pilot project, a small plant installed in the rural community of Carmona do Paraná in Minas Gerais started to produce 110 lb (50 kg) per hour in order to encourage production and demonstrate the capacity of the natural input as raw material for different industries.

If half of the current pasturelands in the Cerrado had macacuá planted, the volume of oil would probably be higher than the volume obtained from palm to use in most industrialized food worldwide, estimates Zimpel, thinking of the positive social impact. Combining palm with pasturland to get different sources of revenue, the revenue of beef cattle or dairy cattle farming could double to BRL 1,000 (the current average is BRL 500.00 per hectare in the region). In addition to adding biodiversity, the trees help to provide shade to the pasturland, improving cattle thermal comfort, which provides for productivity gains. Also, they absorb carbon from the atmosphere. Twenty rural properties, summing up 150 hectares, joined the project in 2018, in partnership with Campinas Agronomic Institute and other research centers, aiming at overcoming scientific barriers, convincing about the plant potential, and replicating the results in the field. Take, for instance, a technical challenge that was overcome in the last decade, solving the difficulty to break the seeds strong dormancy, which hindered the feasibility of commercial plantation. According to Zimpel, they are currently looking for efficiency in fruit processing, to obtain raw material compliant with the requirements of the cosmetics industry, which is the one that pays higher prices for the product.

Once explored to produce oil for street lighting at a time there was no electric power, macacuá (Acrocomia aculeata), also known as bocaiuva, feeds native fauna species, such as maccaws, catis (Dasyproctas), capybaras, tapirs, and rheas americans. Featuring lots of thorns, the tree has been eliminated from the landscape over the years, as it was not useful to the population anymore.

In São Paulo, a novelty that diversifies production on the farms is an Australian nut, much appreciated in gastronomy: macadamia. The species can grow in the native forest for restoration purposes, with economic use, explains the entrepreneur Edwin Montenegro, who bet on the flavor and started growing it in his family century sugarcane estate in the municipality of Bocaina (State of São Paulo) as an economic alternative to reduce the risks of the sugar and alcohol crisis in 2005.

Successful, he founded Arroba Sustentabilidade, a business that does more than processing and selling the nut in the market. The idea is to build a relationship between entrepreneurs and rural farmers who desire to be in line with the environment, adopting a productive strategy for land use, using the agroforestry concept. As a lab for innovation, the old farm tested different types of macadamia gardens; one containing only plants of that species, another one integrated to a coffee plantation, and a third one associated with the native forest. The goal is to help production planning in 16 municipalities throughout the region, identifying areas in the properties with steep slopes and large environmental liabilities that could receive the almond trees, reveals Montenegro, who prepared seedling nurseries to supply to neighbors. Out of the 650,000 hectares mapped for the project, 94,000 are available for the new crop, and 24,000 correspond to areas required by law to have their native vegetation restored.

The business proposition is mainly to value and empower environmental-driven rural labor, which includes the creation of agroforestry mosaic models that potential demand involves 17,000 small farmers, each one with the possibility to achieve an annual, revenue of BRL 40,000-50,000 per hectare after 12 years, when the gardens are considered mature. Subtracting production costs, half of that amount goes to families as profit. Unlike timber species, cut down for commercial purposes, macadamia yields all year long because the trees are standing. According to data provided by the company, profitability of the species per hectare is higher than soy, corn, and coffee, and twice as much as sugarcane.
to recompose the Legal Reserve, in which macadamia, an exotic plant, is combined with native species, also the perspective of gains with carbon stock. ‘We adopt the new process agriculture approach, because the inputs approach, using less manure and crop protection’, explains the entrepreneur. On the farms, macadamia goes through machines to have the fibrous outer husk bark removed, then it is dried and cold-stored, targeted at buyers of different profiles. In addition to being consumed as a snack, almonds are the base of many types of food, such as granola, where the macadamia is combined with native cocoa, rudimentarily processed for sale to middlemen. As a consequence, a creative initiative was launched a popular visiting tour, named ‘Filha do Combu – Daughter of Cumbu’.

**GUIDE TOURS TO THE CHOCOLATE FACTORY**

When it comes to food produced to keep the forest standing, natural capital is converted into different activities, like tourism. In Cumbe Island, close to Belém, state of Pará, the riparian inhabitants have an activity that is most commonly known as ‘Dona Nena’, made her living harvesting native cacao, rudimentarily processed for sale to middlemen at very low prices. As in most of the Amazon, life is a hostage of mercantile buyers of forest products, and the cocoa trees in the lowland forest. The project shows the potential of the cocoa crop, which is based on the cocoa production environment – in other words, based on both on provision and on cultural ecosystem services. On the way, they show the biome where cocoa grows, and dozens of other tree species responsible for keeping balance in this environmental protection area.

**INICIA PROJECT: INOCAS – SMALL-SCALE PRIVATE COMPANY FROM THE AGRICULTURAL SECTOR**

Proprietor: Inocas – small-scale private company from the agricultural sector
Beginning date: July 2015
End date: non applicable
Place of realization: Patos de Minas (MG)
Approximated investment: R$ 6 million (R$ 24 million exchange of the end of Sep- tember)

**MACACOA PROJECT: EXTENSIVISM AND PLANTING OF MACACAUS TREES IN THE SILVOPASTORAL SYSTEM**

Proprietor: Inocas – small-scale private company from the agricultural sector
Beginning date: July 2015
End date: non applicable
Place of realization: Patos de Minas (MG)
Approached investment: R$ 6 million (R$ 24 million exchange of the end of Sep- tember)

**RESTORATION OF LEGAL RESERVE AND ADEQUACY TO FOREST CODE AND COMMERCIAL ENOUGHNESS OF THE MACADÂMIA**

Proprietor: Arroba Sustentabilidade – small-scale private company from the food sector
Beginning date: 2017
End date: 2045
Place of realization: Bocaina (SP)
Approximated investment: R$ 3 million

**GUIDE TOUR OF DONA NENA’S CHOCOLATE FACTORY**

Proprietor: Filha do Combu – small-scale private company from the artisanal, food sector
Beginning date: July 2017
End date: non applicable
Place of realization: Corumbá Island, Belém (PA)
Approximated investment: not estimated

**How it generates value for the company:** The client becomes more willing to pay for the products and tourist experience as she becomes more informed about the origin, peculiarities and chal- lenges involved in the production of organic chocolate in the middle of the Amazon rainforest. In addition, word of mouth is lever- aged. About 55% from obtained profit is immediately returned to the benefit of this population. The remaining 45% compensate other partners such as guides, boatmen and the management structure and tour planning. In addition to these values that only enter through payment of visits, the average ticket related to consumption in the Casa do Chocolate store increased considerably, together with the activity of the chocolate factory.

**How it generates value for the ecosystem and players involved:** The change of the local land- scape with the introduction of productive fruit forests, instead of being occupied by the monoculture of sugar cane, allows the creation of natural barriers of wind, the reduction of pests and the decrease in the increase of agrochemicals, besides improving the climate and the temperature of the region.

**How it relates with other global initiatives:** The initiative can be replicated, contributing to the expansion of reforestation in the state of São Paulo where more than 300 thousand hectares of land should be restored. **GUIDE TOUR OF DONA NENA’S CHOCOLATE FACTORY**

Proprietor: Filha do Combu – small-scale private company from the artisanal, food sector
Beginning date: July 2017
End date: non applicable
Place of realization: Corumbá Island, Belém (PA)
Approximated investment: not estimated

**How it generates value for the company:** The client becomes more willing to pay for the products and tourist experience as she becomes more informed about the origin, peculiarities and chal- lenges involved in the production of organic chocolate in the middle of the Amazon rainforest. In addition, word of mouth is lever- aged. About 55% from obtained profit is immediately returned to the benefit of this population. The remaining 45% compensate other partners such as guides, boatmen and the management structure and tour planning. In addition to these values that only enter through payment of visits, the average ticket related to consumption in the Casa do Chocolate store increased considerably, together with the activity of the chocolate factory.

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ENRICHING THE BRAZILIAN CARBON ACCOUNT: A CASE STUDY FROM THE AMAZON

Sírgio Acedoato

The Brazilian government, through the Brazilian Forest Code (Decree 98.375/2001), formalizes the use of market-based mechanisms to support efforts to reduce deforestation. The use of such tools is set by the reduction of the area considered deforestation. In addition, the government has developed strategies for Forest Certification, such as the Brazil Chain of Custody (BCC) and the FSC (Forest Stewardship Council). These strategies are used to ensure that timber products come from sustainably managed forests. However, the use of these tools is limited by the lack of information on the amount of deforestation occurring in the country. Therefore, the Brazilian Forest Code establishes the use of market-based mechanisms to compensate for the loss of carbon stock in the forest. The scope of this paper is to present a case study of how the Brazilian Forest Code can be used to support the use of market-based mechanisms to reduce deforestation.

The paper presents a case study of how the Brazilian Forest Code can be used to support the use of market-based mechanisms to reduce deforestation. The case study is based on the experiences of the Brazilian Forest Code in the state of Mato Grosso, which is one of the states with the highest deforestation rates in the country. The case study shows how the Brazilian Forest Code can be used to support the use of market-based mechanisms to reduce deforestation. The case study also shows how the Brazilian Forest Code can be used to support the use of market-based mechanisms to reduce deforestation.

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In Almirim (State of Pará) the work supports the paperwork that proves the sustainable management of Brazil nuts, focused on forest margins. The partnership helps women in the production and processing before having it sold under the product name by women. It is important not to rely solely on a single product and to use the forest in multiple ways, suggests Ramos.

The objective, he says, is not limited to trading trackable products from fruits and seeds, but rather developing the leading role of local communities, based on their own forestry management and access to markets, asserting their economic autonomy and their role as guardians of biodiversity, knowledge and culture in the Amazon.

SOLUTIONS TO THE TREES DEPICT

Whereas in the Amazon sales thrive and the pace of the community social organization and access to markets, in the Atlantic Forest, in São Paulo, new business models for agroforestry are emerging as an alternative to the patterns of mechanisms that

initiative X-RAY

COMPENSATION OF ENVIRONMENTAL LIABILITIES THROUGH FOREST,SERVITIES

beginning date: 2014
end date: non-applicable
Place of realization: Pêdes (SP)
Approximated investment: R$ 70 thousand
How it generates value for the company: The initiative strengthens long-term relation with suppliers, which contributes to the continuity of the company's environmental management. Applying a socio-economic and environmental diagnostic method, entitled Ka- dar, establishes trust between the parties and increases the understanding of how the company operates in the forest. The intervention forest product can contribute positively to the improvement of the living conditions of the families. With this exchange of knowledge, the company un-

nyard

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ervation. Add to this the fact that the initiative represents an alternative source of income for owners of properties with forest cover that exceeds the minimum limits required by law.

How it relates with other global initiatives: The project is directly aligned with Sustainable De-

growth (SG). Project, re-

store and promote sustainable use of terrestrial ecosystems, manage forests, combat deforestation, and halt and reverse land degradation and halt biodiversity loss.

ARAYAMURU PROJECT

Proponent: Florestec – small-scale private company from the forest products sector
Beginning date: 2016
end date: non-applicable
Place of realization: Pará e Amapá
Approximated investment: not informed
How it generates value for the company: The initiative strengthens long-term relation with suppliers, which contributes to the continuity of the company's environmental management. Applying a socio-economic and environmental diagnostic method, entitled Ka- dar, establishes trust between the parties and increases the understanding of how the company operates in the forest. The intervention forest product can contribute positively to the improvement of the living conditions of the families. With this exchange of knowledge, the company un-

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stands that everyone grows. Nature reinforces its inputting lines with a growing number of organizations on how companies can balance their relationship with the environment. To achieve these goals, the company fully understands that, in this way, it makes sense to establish partnerships and supply with communities, as well as promoting the integration of programs and institutional relationships with stakeholders, building the carbon offsetting agenda and strengthening the relationship with the supplier. In addition, the project assists in managing the environmental, labor, social, cultural and related responsibilities and in the traceability of its products.

How it relates with other global initiatives: The Arayamur Project engages with the 15th Conven tion of the International Labour Organization (ILO), with the Forest Stewardship Council (FSC) certification for Forest and Global Pact, of which 100% Amazonia is a signatory.

CARBONO REC PROVIDES AN ALLIANCE PROJECT FOR ENVIRONMENTAL SERVICES (PSA)

Proponent: Natura – Large-scale private company from the cosmetic sector
Beginning date: 2013
end date: non-applicable
Place of realization: Small Agroforesters Association, integral service project, with a total of 6,756 hectares in São Paulo, Maranhão, and Mato Grosso, in the area of the Forest Stewardship Council. The project is long-term and aims to reduce deforestation in the participating areas. By 2020, 427 hectares of native forest are expected to be preserved. The project is aimed at conserving the landscapes in the proportion of the conservation that obtained and 50% of the amount collected is devoted to a common fund, that will finance structuring activities for the cooperative. The company understands as additional opportunities: the visibility of the PSA projects in the Amazon for small producers, as well as being contributing to the creation of a benchmark for forest projects focused on the future “Brazilian Market of Reduction of Emissions”, set on the National Policy for Weather Change (PMN).

The project is also aligned with Non-Monetary Projects included in the new Access to Genetic Resources, in order to finance the implementation of policies that contribute to the conservation of native species and habitats.

How it generates value for the ecosystem and the companies involved: In most cases, a rural property with a forest surplus is developed and seen as a burden, which puts even more pressure on the remaining vegetation, given the pressure for the conversion of forest areas into agroforestry use. The aggregation of value with the standing forest exports the profitability nature of the company, which that typically fall on rural prop-

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SUGGESTED READING

Yields and minimizes systemic capital, optimizes resource limits. It is a continuous, positive and restorative economy, an alternative to the ‘take, make, dispose' economic model, a regenerative business usually is done, without innovation or change. Circular Economy – A regenerative and restorative economy by design, according to the Ellen MacArthur Foundation. It is an alternative to the ‘take, make and dispose' economic model, which is reaching its physical limits. It is a continuous, positive development cycle that preserves and enhances natural capital, optimizes resource yields and minimizes systemic risks by managing finite stocks and renewable flows. It aims to keep products, components and materials at their highest utility and value at all times. Cradle to Cradle – One of the approaches of the Circular Economy, developed by the German chemist Michael Braungart, along with the American architect Bill McDonough. That concept, which resulted in the Cradle to Cradle certification, removes the concept of waste (‘waste equals food'), maximizes the use of renewable energies, manages the use of water, and adopts social responsibility practices. Earth Overshoot Day – It is the moment when humanity's annual demand on nature exceeds what Earth ecosystems can regenerate over the entire year. In 2018, the day we were in ‘overdraft' was August 1st. Ecosystem – A dynamic complex of plants, animals, microorganisms and their non-living environment interacting as a functional unit. Examples of non-living environments are: the mineral part of the soil, rainfall, temperature, rivers and lakes – regardless of the species living there. Ecosystem Services: Direct or indirect ecosystem contributions for human well-being. Externalities – Negative or positive impacts of certain activities that affect those who little contributed to generate them, or did not contribute at all. In case of negative externalities, losses caused to society are not paid by those who triggered them, but rather by everybody. Global Platform on Business and Biodiversity – In the Global Platform on Business and Biodiversity, there is a variety of data on business engagement activities, as well as information and tools for companies that want to better understand their impacts and dependencies in biodiversity and the functions of ecosystem services. Legal Reserve – According to the New Forest Code, it is an area located inside a rural property or possession, apart from permanent preservation areas, needed for sustainable use of natural resources, conservation and recovery of ecosystem processes, biodiversity conservation, refuge and protection to native fauna and flora. The percentage property area that shall be set aside as Legal Reserve varies according to the corresponding biome and region. That percentage is:
- 80% in rural properties located at the Legal Amazon forest area
- 35% in properties located in cerrado (savanna) areas at the Legal Amazon, out of which at least 20% shall be in the property itself and 15% in the form of environmental offset in another area, although in the same microbasin
- 20% in properties located at forest areas, other forms of native vegetation in other regions of the country
- 20% in properties located in areas of fields, in any way throughout the country. Natural Capital – It can be defined as ‘stock or reserve provided by biotic or abiotic nature, which yields a valuable flow of natural goods or services into the future', according to an article published by Daly and Farley. Ecosystems are an example of stock, whereas ecosystem services are an example of ‘flow'. Natural Capital Coalition – The organization created the Natural Capital Protocol, a guide to help the business sector assess natural capital. New York Declaration on Forests – A voluntary international declaration aimed at averting global deforestation. It was firstly endorsed during the U.N. Climate Summit, in September 2014. It has 193 signatory nations, out of which 40 are governments, 20 are subnational administrations, 57 are multinational companies, 16 are groups representing indigenous communities, and 58 are non-governmental organizations. Get to know its 10 goals. Payment for Environmental Services (PES): A remuneration system in which the agent that promotes the environmental benefit is rewarded, and the beneficiary shall pay the corresponding economic value. SDG – The Sustainable Development Goals are a global agenda adopted during the United Nations Conference on Sustainable Development, held in September 2015, consisting of 17 goals and 169 targets to be achieved by 2030. The 17 SDGs are as follows:
- Goal 1. End poverty in all its forms, everywhere
- Goal 2. Zero hunger, achieve food security, improve nutrition, and foster sustainable farming
- Goal 3. Ensure healthy lives and promote well-being for all at all ages
- Goal 4. Ensure inclusive and equitable quality education, and promote lifelong learning opportunities for all
- Goal 5. Achieve gender equality and empower all women and girls
- Goal 6. Ensure access to and sustainable management of water and sanitation for all
- Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all
- Goal 8. Promote inclusive and sustainable economic growth, full and productive employment and decent work for all
- Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
- Goal 10. Reduce inequality within and among countries
- Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable
- Goal 12. Ensure sustainable consumption and production patterns
- Goal 13. Take urgent action to combat climate change and its impacts
- Goal 14. Conserve and sustainably use the oceans, seas and marine resources
- Goal 15. Protect, recover and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation, and halt biodiversity losses
- Goal 16. Promote just, peaceful and inclusive societies for sustainable development, provide access to justice for all, and build effective, accountable and inclusive institutions at all levels
- Goal 17. Strengthen implementation methods and revitalize the global partnership for sustainable development Soy Certification – The most popular standards are Round Table on Responsible Soy (RTS), Biomec (Bofut), Sustainability Voluntary Scheme (2BS) and International Sustainability & Carbon Certification (ISCC). Spurious Competitiveness – A concept created by the Chilean economist Fernanda Freytag-Fischer, from the Economic Commis...
The Economics of Ecosystems and Biodiversity, an initiative led by the World Bank to produce the report entitled, The Economics of Ecosystems and Biodiversity, 2013. The work emphasizes the potential natural benefits can provide to ensure and improve human well-being. You can access the book here.

**Trends in Ecosystem Services (TeSE) business initiative (here you will find all TeSE publications)

• Documentery videos entitled ‘Negocios e uso sustentável da biodiversidade no Brasil’ (Business and Sustainable Use of Biodiversity in Brazil) cover the relationship between companies and biodiversity, showing best practices in biodiversity, innovation and relationships with suppliers in five companies (Bacupucu – Theabronc, grandtour), Centralflora (jabarandi – Pitaxocarpus microphyllus), Pele Nova (rubber tree – Hevea brasiliensis), Taboca (baobabus – Grirhyngh phalerata) and Natural Weld (caracouba – Coermicaria prunifera). The videos were produced under the TeSE R-L project.

• Website of the Initiative Brasileiro de Negócios e Biodiversidade (Brazilian Initiative of Business and Biodiversity, coordinated by CN, CEDs and Instituto Lula) – analyses of paths to leverage Brazil’s transition towards a low-carbon economy.


• Operationalising natural capital: managing opportunities and risks from natural resources. (University of Cambridge, 2016): explores how businesses are seeking ways to incorporate concerns with natural resources into their decision making.

• A study entitled Quantificação do Exposicão ao Risco relacionado ao Capital Natural das Instituições Financeiras no Brasil (Quantifying Exposure to Risk related to Natural Capital in Financial Institutions in Brazil), developed by TruCost in partnership with Brazilian financial institutions, commissioned by GIZ and CEDs.

• Weaving ecosystem services into impact assessment: a WRI guide (2016) on how to incorporate ecosystem services into Environmental Impact Assessments (EIA).


**Academic Literature


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