P22ON

FGV | SÃO PAULO SCHOOL OF BUSINESS ADMINISTRATION
Center for Sustainability Studies

OCTOBER I 2018

Natural Capital

IN PARTNERSHIP WITH:

On behalf of:
Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
of the Federal Republic of Germany

Implemented by
giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

CNI
Confederação Nacional da Indústria
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MINISTÉRIO DO MEIO AMBIENTE

FUNDAÇÃO GRUPO BOTICÁRIO
DE PROTEÇÃO À NATUREZA

PROJETO TEEB
REGIONAL — LOCAL

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

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

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

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

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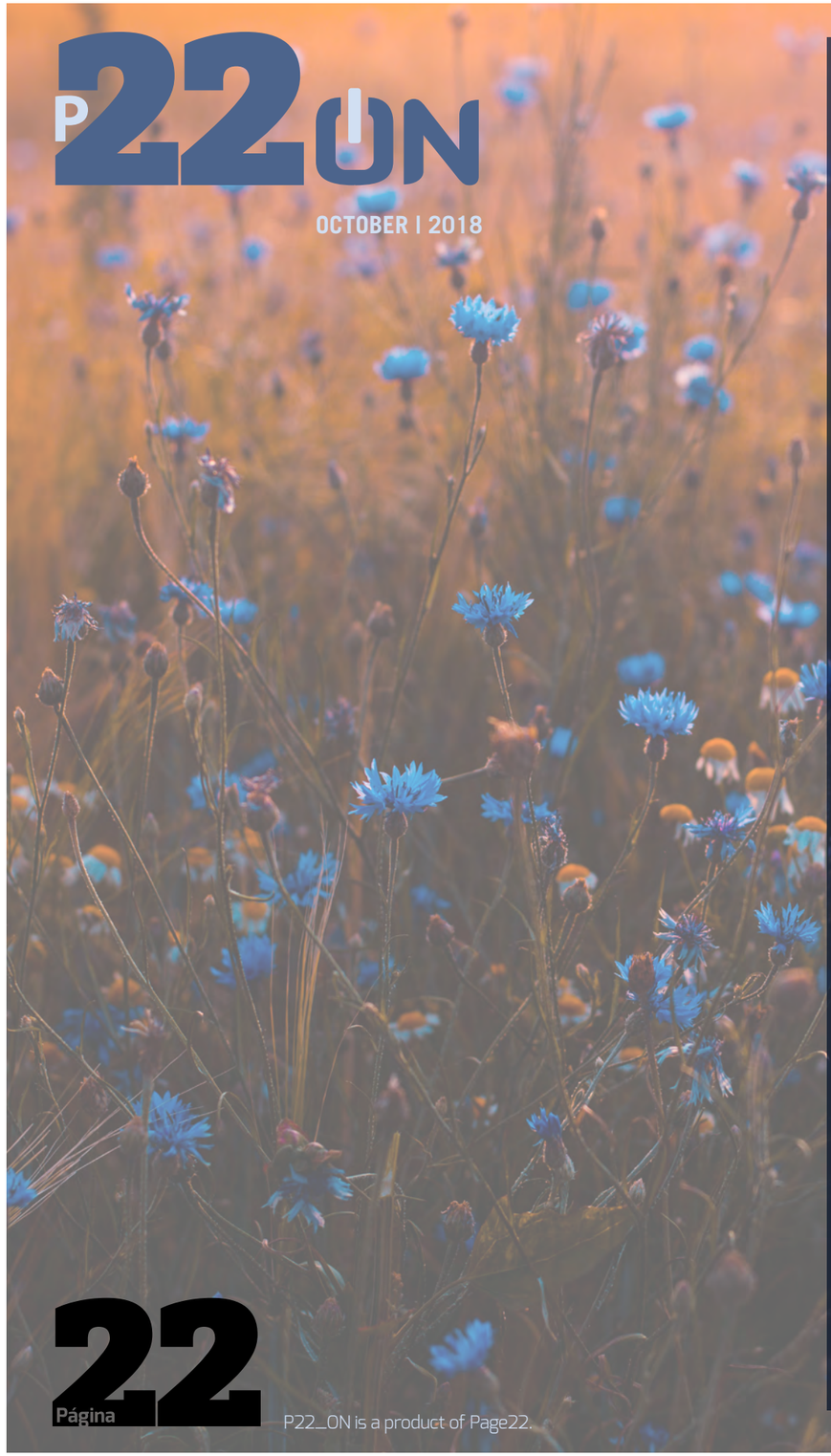
giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

CNI National Confederation of Industry Brazil
CNI THE STRENGTH OF THE BRAZILIAN INDUSTRY

MINISTRY OF ENVIRONMENT



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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 FGVces, 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!

BY AMÁLIA SAFATLE

KEITH BREMNER/ UNSPLASH

A WAY TO ACKNOWLEDGE THE VALUE OF NATURE

For the new economy to advance, natural capital needs to be incorporated into the business strategy

In 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 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 Yangtse 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, devaluation of local currency in Malaysia and its replacement with exchange controls', wrote Sukhdev in the first *TEEB Report*.

And, then, he questioned: 'Why is individual wealth desirable, and why are people interested in its loss, but not in public wealth?'

According to him, sometimes, acknowledging the intrinsic, spiritual or social value of the 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 and, often, an intangible value – that cannot be monetized, such as the affective, spiritual and cultural values (more about ***cultural ecosystem services here***).

The problem of not acknowledging 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-

one at any given time, increasing the risk of depleting them.

Fábio Scarano, coordinator of the Intergovernmental Panel on Biodiversity and Ecosystem Services (IPBES), alerts to the anthropocentric bias that the expression 'natural capital' suggests, and says the challenge is to really make a distinction between the ideas of price and value. 'Nature is priceless', he emphasizes. According to him, the risk of confusing these two concepts is higher when natural capital is incorporated into business management.

This topic is covered in the *TEEB Report*, according to which setting a value for ecosystem services does not mean they should be converted into securities that can be exchanged in the marketplace: 'TEEB does not propose that placing blind faith in the ability of markets to optimize social welfare by privatizing the ecological commons and letting markets discover prices for them. What TEEB offers is a toolkit for integrating good stewardship because it's a good economic practice.'

SEARCHING FOR BETTER MANAGEMENT

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 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. 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 Eaesp (FGVces). It was also supported by the Boticario Group Foundation (***learn about the selection process here***).

Ideally, concerns with natural capital are incorporated into the business strategy and regular management. In other words, it is not just about having an isolated project that seeks conservation of natural capital while the core business is driven by the 'old economy'.

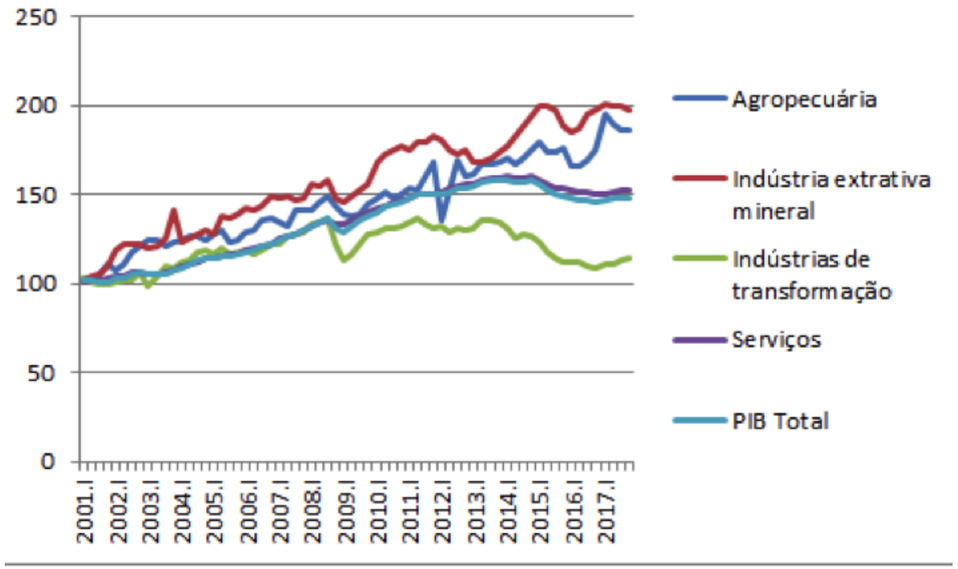
That is a risk, as alerted by Carlos Eduardo Frickmann Young, Associate Professor of the Institute of Economics at Rio de Janeiro Federal University and a researcher at the National Institute of Science and Technology of Public Policies, Strategies and Development. "In the agribusiness industry, for instance, there are really cool conservation initiatives, but most of the investment goes to '***spurious competitiveness***', as Fernando Fajnzylber used to call it', he explains.

The message conveyed by Young is for natural capital conservation business initiatives not to be isolated, but rather systemic – particularly considering the context of once again having the Brazilian economy as a whole focused in the primary sector. That trend seeks competitiveness at low costs, strongly based on commodities, such as fresh crops and crude ore, usually with low job creation and high generation of negative ***externalities***.

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

THE CALL OF CASES: VIDEO TESTIMONIALS AND METHODOLOGY

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

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)

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.

The initiative, pioneer in Brazil, 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 Eaesp (FGVces). It was also supported by the Boticario Group Foundation.

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 were then assessed according to the eligibility criteria. One of the requirements was that the proponents were for-profit organizations, and that the initiative addressed business management, so as to engage the business sector. In addition to clearly filling out all fields in the questionnaire they received, businesses had to show measurable results. Widely known experiences were not a priority, because the idea was to open up room for experiences that still need greater visibility. In order to ensure diversity in topics, one single case was selected per company.

Out of the 33 initial cases, 21 were pre-selected and 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 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.

BY SÉRGIO ADEODATO

VALUATE TO CONSERVE

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

VALORAÇÃO DE EXTERNALIDADES/ FIBRIA

Developing metrics to convert into dollars 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 Kajiura, 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 taking 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 plant, a volume that is the equivalent to the water consumption in a city of 500,000 inhabitants.

Thanks to that extra volume produced, the petrochemical company escaped harmless 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 (Fiesp) – 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 resource', explains André Villaça, 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 management. Captured by the senior management radar, the pilot experience results will support investments and action plans for 2023. Additionally, metric-based learning will be replicated to the supply chain and customers, aiming at expanding their gains.

The strategy is rather urgent, taking into account the ***World Bank*** projections of a 6% decrease in the global Gross Domestic Product (GDP) growth rate by 2050, as water disputes intensify. Given that scenario, the World Water Council estimates the need for investments around US$ 650 billion per year, up to 2030.

MEASURING *EXTERNALITIES*

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 provision, 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. As the eucalyptus flourishes over five years before harvest, there is a great offer of nectar and pollen to bees. In addition to that activity, in the Wood and Food Integrated Production Project, they opened the area for family farmers to plant manioc and other products between the eucalyptus saplings for the first year and a half after the forest plantation. As a result, the value of the benefit reached BRL 9.9 million in 2016. Out of the total, BRL 9.7 million referred to goods produced by bees, accounting for 65% and 35% of the honey production in the states of Espirito Santo and Sao Paulo, respectively.

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 Sarita Severien, from the Forest & Environment Department at Fibria. Those who do not valuate 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 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$ 96 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 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.

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

'The numbers allow for raising the managers awareness in their decision making', highlights Augusti. At Fibria, the variable started to be applied early during new project definition, 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 Jacarei (Sao Paulo state) plant in landfills, the data collected about the impacts rose a question that had never been asked before: what alternative will release less greenhouse gases?

HOW TO QUANTIFY THE IMPACT OF RESTORATION

In order to manage, you must take measurements. Biodiversity is no exception. At Pontal do Paranapanema, close to the Ilha Solteira Hydroelectric Power Plant, the largest one in Sao Paulo, sensitive equipment hidden in the forest do something unusual for an energy company; they capture the sound made by animals. The goal of the work, conducted at a distance by an automated database, is to identify and quantify the fauna species that are living again in the area after a forest restoration project that planted 2.4 million trees to form a corridor of 7.4 miles (12 km) of Atlantic Forest.

Organized by IPÊ (Ecologic Research Institute), the plantation connected strategic Conservation Units to protect black lion tamarins (*Leontopithecus chrysopygus*) and other endangered species native of the West of Sao Paulo state, with impact that has also been quantified in carbon capture, and the quality of soil and water. 'It is an innovative development of reliable methodology as basis to assess investment return on ***natural capital***', explains Aljan Machado, Environment Director at CTG Brasil, a power generation equipment provider with revenue of BRL 5.5 billion in 2017.

'The result will also help legitimate our operations with overseeing and control institutions', adds the executive, according to whom natural capital valuation and monetization lack methodological standards worldwide.

In addition to identifying animals, especially birds and amphibians, the technology quantified 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 challenges was to design all variables 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 investments: 'solving the financial equation is critical to do more with less', states Machado, planning to replicate the method 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: By assessing the potential impact of water scarcity and subsequent comparative with the implementation of a reuse project, Braskem is able to assess which alternative is most interesting under economic bias. It enables the knowledge of how much it would be willing to pay for an alternative water source project to compensate for the impact of lack of water in its operations, 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 valuation of an ecosystem service and the approximation of the sustainability of business decisions.

How it generates value for the ecosystem and players involved: The initiative will allow the company to obtain water from alternative sources (such as reuse, desalination), reducing the risk of watersheds from which water is collected. It can support other companies to appraise the impact of their operations water resources and subsidize projects search that for alternative sources of water. There is, therefore, a replicability factor.

How it relates with other global initiatives: This is directly related with all ***Sustainable Development Goals***, more specifically goals 6 (Ensure access to water and sanitation for all) and 14 (Conserve and sustainably use the oceans, seas and marine resources), as well as 17 (Revitalize the global partnership for sustainable development). It also relates with the Brazilian Business Commitment to Water Security by the Brazilian Business Council for Sustainable Development (CEBDS), signed by the company.

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: Aracruz (ES), Três Lagoas (MS) and Jacareí (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 pilot 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 better distinguish the environmental impacts suffered by the company from the social impacts caused by it. By monetizing externalities, it allows impacts to be placed in a financial perspective that is aligned with corporate planning and management practices. It is expected that liabilities, risks, and business opportunities related to environmental externalities will gain visibility among executives and investors who have no technical knowledge of environmental issues, thus having a better chance of influencing the company's strategic planning.

How it relates with other global initiatives: This contributes directly to the 2030 Agenda and target 6 of Sustainable Development Goal 12 (Responsible Consumption and Production). Goals 2 (End hunger, achieve food security and improved nutrition and promote sustainable agriculture), 6 (Ensure availability and sustainable management of water and sanitation for all), 13 (Take urgent action to combat climate change and its impacts) and 14 (Conserve and sustainably use the oceans, seas and marine resources for sustainable development). The work is related with the TeSE initiative by GVces in accordance with the Paris Agreement the intended Nationally Determined Contribution (iNDC) and Natural Capital '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 ecological data compatible with natural capital valuation models allows for better management of reforestation projects and, at the same time, the volume and consistency of the data guarantee the legitimacy of the monitoring process by the inspection agencies. The company expects that the ecological data collected, when applied to natural capital valuation models and ecosystem services, can indicate potential ecological and economic assets. Even though there are no official accounting methodologies for the incorporation of these assets in the balance sheet and in the income statement, CTG Brasil understands that with this project, a new trend is being prepared.

How it generates value for the ecosystem and players involved: CTG is closely dependent on water as a natural resource for power generation. Water, in turn, has its quality and availability directly related to the conservation and preservation of forests and soils, an aspect that encourages the company to align its management strategies with the logic of natural capital. The ecological corridor has restored an area equivalent to 1,200 soccer fields (1,200 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 associated with Sustainable Development Goals: 6 (Ensure availability and sustainable management of water and sanitation for all), 13 (Take urgent action to combat climate change and its impacts), 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) and 17 (Strengthen the means of implementation and revitalize the global partnership for sustainable development).

GOOD FOR ECOSYSTEM, GOOD FOR BUSINESS

BY MAGALI CABRAL

SABESP/ DIVULGAÇÃO

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, some 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 business water risk that two of the companies selected in the ***Natural Capital*** Business Management call for cases presented actions related to this theme.

Namely, Sabesp – a semipublic corporation that provides services to 368 municipalities in São Paulo in water distribution, sewage collection and treatment – with the case 'Green Belt Program for Metropolitan Water Springs'; and Nespresso, a coffee business unit within the Swiss multinational Nestlé, with the program 'Water Cerrado Consortium'.

During the worst water crisis in São Paulo, from December 2014 to the beginning of 2016, Sabesp was criticized by many actors, not only for the way it managed the company, but also for a supposed lack of positioning on water shortage-related environmental issues. The response to all the criticism came in 2017, in the digital book ***Muito Além da Água*** (Way Beyond the Water). The goal of the publication was to publicly announce the 'Green Belt for Water Springs' program, which covers the regions in the supply system (Cantareira, Alto Cotia, Rio Claro and Fazenda Capivari, in São Paulo Metropolitan Area).

In the foreword, Sabesp's CEO, Jerson Kelman, admits that the severe water crisis in Sao 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.

Somehow Nespresso adopts a similar strategy with the program 'Water Cerrado Consortium'. As Guilherme Amado, the company green coffee expert, explains, the goal of the program is to ensure a future for coffee. 'In the Cerrado area in Minas Gerais State (a region known as 'Triângulo Mineiro'), if you analyze 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 Sabesp supply systems 'evaporate', 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 a decrease in productivity and lower quality', says Amando.

COFFEE PRODUCTION

Coffee beans are a demanding crop. To produce premium quality crops, a constant volume of water is needed, and it must be well distributed, spanning from 1,200 to 1,500 millimeters per year. Although the Cerrado climate is great for coffee bean production, it is a sensitive biome, overwhelmed in high-production regions. The scenario is not different in Patrocínio, in the Triângulo Mineiro area, where Nespresso has suppliers. 'Heavy and quick showers are increasingly more frequent and, when they fall on compacted soil, they leach fertilizers and agrochemicals, affect 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 Triangulo Mineiro area started in the 1970s, after successive frosts 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 Embrapa in 2004, and the ***other*** conducted by the University of Vermont (New England, USA), in 2018. Scenario modelling for different agricultural regions around the world estimate that, if the planet average temperature rises 4 degrees in the next 100 years, at least 90% of the current croplands will not be feasible anymore. 'We are really concerned, because the Cerrado area in Minas Gerais State is included in those studies and we buy a huge amount of coffee from them. There are growing risks; therefore, it makes a lot of sense to conduct 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 deploy 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. Under the sustainable landscape pillar, the strategy is to restore natural environments to ensure the provision of ecosystem services. Under the supply chains pillar, the Consortium aims at increasing the competitiveness levels by strengthening the regional identity and adopting sustainable production processes. The third pillar is to offer qualification by sharing information and knowledge, as well as training sessions on sustainable production practices.

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 (Department of Water and Power – DAEE, and the State Forest Institute – IEF), as well as the local university, the Cerrado University Center (Unicerp).

The method to monitor risks and opportunities in ecosystem services related to coffee farms was conceived in a partnership between Nespresso and the International Union for Conservation of Nature (IUCN) and, later on, with Ipê 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 ***Critical Ecosystem Partnership Fund***; and Imaflora raised the funds. The fund released US$ 200,000 to partially deploy the action plan and totally run a diagnosis.

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

GOOD FOR ECOSYSTEM, GOOD FOR BUSINESS

WATER CERRADO CONSORTIUM

tion, because we always make it clear to farmers that they must stand on their own feet.'

DRINKING WATER

Apart from the dams water mirror, Sabesp has about 35,000 hectares in Conservation Units, thus protecting the water springs in its four large supply systems. Altogether, the areas account for 1.4% of the Atlantic Forest remnants in the State of Sao 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.

She explains that the Green Belt for Water Springs is based on three pillars: protecting the areas around the four water shed reservoirs; increasing the Cantareira vegetation cover; and maintaining the seedling nursery to support the reforestation. 'In the first action, the plan is to conserve 35,000 hectares of forest. We must monitor and oversee the area to avoid potential invasion. In the second action, our goal is to expand the vegetation cover from 75% to 78% in the Sistema Cantareira unit by 2020,' she tells.

From over a hundred different tree species produced in Sabesp's nurseries, samples of angico-branco (*Anadenanthera colubrina*), inga-do-brejo (*Inga Vera*), tamboril (*Enterolobium contortisiliquum*), peroba-rosa (*Aspidosperma polyneuron*) and cedro-rosa (*Cedrela fissilis*) should be among the 350,000 seedlings to be planted in the next two years.

In a 30-year period, the vegetation cover in Sistema Cantareira jumped from 61% to 75% – over 200 hectares were reforested. The uncovered areas left (25%) currently account for about 1,500 hectares. Between 2007 and 2010, 1.4 million trees were planted in partnership with The Nature Conservancy (TNC), The Ecologic Research Institute (Ipê), and with the public company Desenvolvimento Rodoviário S.A. (Dersa), from Sao Paulo. This year, the nurseries have been managed by Associação Mata Ciliar, who promises to bring more agility to the restoration projects and expand its reach through partnerships with local administrations and other local institutions.

This is not a mere environmental initiative. Water is the core business of the company and, by taking care of it, Sabesp generates value to itself, increasing water security and the quality of the water to be treated. Green belts hinder irregular invasions; prevent waste, pesticides and agrochemicals from being dragged into the dams; reduce flood risk; protect biodiversity; and improve the quality of water.

According to Sabesp's data, the Water Quality Index (IQA) of Sao Paulo State Environmental Company (Cetesb) for waters in the Sistema Cantareira scored 70 (in a 0-100 range) in year 2000, which indicates 'good quality'. During the 2010-2017 period, with an increase in vegetation cover around the dam, the index went up 10 points, representing 'great quality', according to Mara Ramos.

In Brazil, it is a commonplace for sustainability to gain momentum only when risks to business have already emerged. Although scientific research and the media have been broadcasting climate change effects for over a decade, many people still think seeing is believing. In 2015, the light turned yellow (or red, according to some people) to the effects of climate adversities, and made businesses, particularly those much dependent on water resources, give a more careful thought to their relationships with the ecosystems. It was the year nature 'spoke' to those who can listen: 'Do you need me? So, help me help you'.

INITIATIVE X-RAY

METROPOLITAN SPRINGS GREEN BELT PROGRAM

Proponent: Sabesp – large-scale private company from the sanitation sector

Beginning date: 2017

End date: 2018

Place of realization: São Paulo Metropolitan Area

Approximated investment: Ecosystem value to be calculated

How it generates value for the company: The initiative' results can be measured by the Water Quality Index (IQA) of the Environmental Company of the State of São Paulo (Cetesb). In 2000 the waters of the Cantareira System had an index of 70, indicating "good" water quality. During the period from 2010 to 2017, the index rose 10 points, and Cantareira waters presented "excellent" quality.

How it generates value for the ecosystem and players involved: Planting and maintaining forests stunts irregular occupations, prevents litter, pesticides and pesticides from being carried into dams, reduces the risk of floods, protects biodiversity and contributes to ensuring water security for more than 20 million people in the Region Metropolitan of São Paulo.

How it relates with other global initiatives: Ensuring availability and sustainable management of water and sanitation for all is Sustainable Goal Objective 6 (Ensure availability and sustainable management of water and sanitation for all) and one of priorities included in the company's environmental policy as well as actions established in its strategic planning. The "Metropolitan Springs Green Belt Program", an action of forest restoration at the beds of urban springs, is insert in this context.

WATER CERRADO CONSORTIUM

Proponent: Nestlé – large-scale private company from the food sector

Beginning date: 2015

End date: non applicable

Place of realization: Bacia do Córrego Feio – Patrocínio (MG)

Approximated investment: non applicable

How it generates value for the company: The water issue is considered to be a central aspect of coffee production in the Cerrado Mineiro region, both in present and future scenarios. The project, which aims to create productive and sustainable landscapes, consolidates the vision of Nestlé's shared creation through the strengthening of the coffee supply chain. A higher climatic resilience contributes to future coffee supply both in quantity and quality.

How it generates value for the ecosystem and players involved: Through the Cerrado Consortium of Waters, all participating producers are able to implement good production and conservation practices, in order to ensure a sustainable use of local natural capital. The focus on water is multiplied in actions such as good irrigation system, rainwater harvesting and cover crop management, as well as reforestation, isolation, enrichment and natural regeneration actions taken on fragments of native vegetation. With this it is possible to align all concepts, technology, training and engagement of the actors involved on the project's success.

How it relates with other global initiatives: The initiative is associated with all ***Sustainable Development Goals***, more specifically goals 6 (Ensure availability and sustainable management of water and sanitation for all), 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) and 17 (Strengthen the means of implementation and revitalize the global partnership for sustainable development) – with the Nature Capital Protocol and commitments assumed on the COP 21. It is also aligned with the Cerrado Manifest, to which Nestlé is a signatory.

BY MAGALI CABRAL

CASA JAYA/ DIVULGAÇÃO

VIRTUOUS CYCLE

Companies show that a careful approach to natural capital during their product life cycle also benefits business

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 ecocultural 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 recycled.

FROM YOUR DISH TO YOUR DISH

The fascination felt by biologist Julio Avanzo Neto with the transforming power of composting made Casa Jaya, located at Rua Capote Valente, number 305, in Pinheiros neighborhood, Sao Paulo, more than just a good restaurant and a space for cultural events. He created a new business model. 'Taking something nobody wants and turning it into something valuable seems like magic,' he says. In fact, it is fascinating as magic to see the waste produced in the restaurant kitchen 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 14% 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.

AERIAL VIEW OF THE AKZONOBEL FACTORY NEXT TO THE RESERVATION

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 coordinator, 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 Tangará 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.

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 dying 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 1.3 million pieces were introduced into the market and the product was very welcomed. 'The demand for a more sustainable production is a reality in this industry. Consumers 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 30 brick and mortar stores, as well as via e-commerce. Consumers were very responsive to the initiative, which encouraged the company to repeat the launching 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 comprehensive within its production line, and those challenges have been addressed in partnership with Fashion For Good (an institution that encourages compliance with best practices in the fashion world). The fashion industry lacks a larger offer of certified dyes, inks and chemical products; alternatives for elastane fabric; antimony-free 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-CradleTM 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 'walls', Casa Jaya, AkzoNobel 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

DESIGNED TO BE RECYCLED

Proponent: C&A – large-scale private company from the retail sector

Beginning date: September 2017

End date: non applicable

Place of realization: Europe, Brazil and Mexico

Approximated investment: non applicable

How it generates value for the company: Through this initiative, unprecedented in the fashion sector, 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 item 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 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, attests 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 ODS 12 on Sustainable Production and Consumption, 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

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

Beginning date: March 2011

End date: non applicable

Place of realization: Rua Capote Valente, 305, São 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 project 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 1.3 tons of organic kitchen waste and 3 cubic meters of plant litter and pruning by Eletropaulo, volumes that 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 farmers and other urban farmers. The initiative tightens bonds and promotes cocreative relationships with suppliers, especially with producers of organic fruits and vegetables. This reduces the costs for those involved and creates ecological awareness and new models of business relationships. The initiative also helps to strengthen the urban agriculture movement in São Paulo and, with the separation of waste, facilitates the sorting and collection of recyclables by the collectors' cooperative.

How it relates with other global initiatives: The policy is in agreement with the 2012 Solid Residues National Policy and recommendations of the 2014 Solid Residues Management Policy. Another landmark to be considered of great importance to Casa Jaya is the "Composting in the city of São Paulo" Seminar, held in 2014, and the Six Goals of Composting developed in 2017 – being inspires by the Sustainable Development Goals.

WATER: COLOR ESSENCE

Proponent: AkzoNobel – large-scale private company from the chemical sector

Beginning date: 2017

End date: 2020

Place of realization: Mauá (SP)

How it generates value for the company: Aiming to sell more water-based products, promoting reuse actions, 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 sale of consumers products. With the reusage of water, the dependence of extraction and generation of effluents is reduced, reducing treatment costs - which should be liquidated until 2020. The company's strategy is 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 generates value for the ecosystem and players involved: The Tangará Reserve, maintained by the company and from which it extracts water for its productive processes, accounts for almost 10% of Mauá's green area. In 2015, it was confirmed that the Atlantic Forest of the reserve, which contained eucalyptus, is regenerating. About 2 thousand children have visited Reserves in environmental education programs. The Reviver Station, dedicated to the treatment of effluents from the company, returns superior quality water to the environment due to the fact that, in addition to the conventional physical-chemical and biological processes, it has an ultrafiltration membrane that retains even viruses and bacteria. One of AkzoNobel's main impacts is the emission of volatile organic compounds, which accounts for more than 20% of its carbon footprint. Thus, the company encourages the use of water based products, which generate 90% lower emissions.

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).

BY AMÁLIA SAFATLE

CARGIL/ DIVULGAÇÃO

CHAIN REACTION

Agribusiness companies bet on programs to strengthen rural farmers sustainability attributes

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, with sustainability attributes, are noteworthy. Cargill and Basf, for instance, were selected in the *Natural Capital Business Management* call for cases to present projects capable of disseminating those practices and inspiring other players in the industry and actors in their corresponding supply chains.

Whereas Basf shares forest restoration knowledge and techniques with its customers, and provides environmental education services in the regions where it operates, Cargill encourages farmers to adopt in their estates a certification program that is more accessible to all farmers, aiming at deforestation control, employee welfare, and carbon emission management.

Readers may ask themselves how consistent those projects are, since they come from two agribusiness multinationals – namely, Basf, an agrochemical manufacturer, and Cargill, known for selling soybeans, whose cultivation may be seen as a threat to biomes such as the Cerrado and the Amazon Forest. Is there any contradiction between the selected propositions and the core activity of the companies?

'If farmers do not properly manage the ecology in their estate, taking care of fauna and flora, conserving the riparian forest areas, and applying products exactly as they must be applied, they lose productivity', answers Emiliano Graziano da Silva, Sustainability Manager at Basf for South America. 'And, without using crop protection correctly, the agricultural production is not efficient and competitive'.

According to Renata Nogueira, Cargill Sustainability Manager, the company is interested in soy supply chain providers adopting best practices, to meet the demand 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 leaching analysis etc.)

Counting with an approximate investment of BRL 7 million up to the moment, the Mata Viva (Living Forest) project was launched 32 years ago, with the purpose of recovering riparian forests in Basf manufacturing plant area, in Guaratinguetá (Sao Paulo), on a piece of land overlooking the Paraíba do Sul River that used to be pastureland at that time. In 2008, after the successful initiative, which recovered local biodiversity, protected the soil and the water body in that area, the company decided to provide this service to its customers, who need to adjust to the New Forest Code.

The New Forest Code, approved in 2012 by Law # 12,561, updated the legislation, which dated back to 1965. It proposes 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 funding, and compliance with environmental laws is a mandatory step to get certifications that will allow for competitive differentiators to trade agricultural products, 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

MATA VIVA PROGRAM

resource conservation. According to the company, water and soil are vital 'inputs' to ensure sustainability and longevity for agricultural activities; thus, protecting water springs and other bodies of water is key to maintain and recover that natural capital.

When questioned if, by contributing to recover native forests – which naturally help in biological control –, this would decrease the company chemical products sale, Graziano replied there is no contradiction between one thing and the other: 'Our moto is, 'we create chemicals for a sustainable future'. We are investing to reduce the use of crop protection as much as possible, because it is not the reason why Basf is in the industry', he declares. As an example, he refers to the investments made in the past few years in start-up programs, highlighting applications that use drones. According to Graziano, that technology offers higher precision, demanding a reduced amount of crop protection at specific spots, so it is only applied to sick plants.

'I want longevity, not quantity. I want to be on the farmers' side, so they are competitive and sustainable. By achieving optimum levels, farmers will make better use of the technology I offer. It is not just about selling the product and end of story', he argues.

A MORE ACCESSIBLE GATEWAY

The search for continuous improvement in rural properties is also one of the goals of Cargill, who launched the Solutions for Sustainable Supplies program – 3S Program. It is a program that is more accessible to rural producers, who often find it challenging to comply with more sophisticated systems used for soy certification. By offering a more simplified system, Cargill hopes the program will be able to change the soy supply chain, making it more and more sustainable.

According to the company, the plan is to generate benefits to all people involved in soy supply chain, assuring consumers the products purchased are deforestation-free and comply with agricultural best practices, respect the well-being of rural employees, are traceable, and have their carbon emissions managed. A product carrying the 3S label – Liza Origens soybean oil – has been available for end consumers in some Brazilian supermarkets since March this year.

A critical element of the initiative, which has a structuring nature – i.e.; it is not isolated – is its high potential for replication, even to other crops, such as corn, vegetables, fruit. But, as Renata Nogueira explains, there are still significant 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, who invests BRL 250,000 per year on the program. There are four stages involved in 3S implementation: sensitization of farmers, property diagnosis, elaboration of an individual action plan, and continuous improvement actions.

According to the company, even though farmers realize 3S label contributes to better manage the property and make it stronger by adopting sustainability attributes, customers need to acknowledge the value of the initiative, so as to allow a return of those investments to farmers. 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 producers from the states of Goiás, Paraná, Mato Grosso and Pará, summing up 152,000 hectares - out of a total of 6,000 producers in its supply chain. For that purpose, it relied on partnerships: BioSistemico Institute (IBS) offers technical assistance, and the property carbon emissions are calculated by Espaço Eco Foundation, owned by Basf.

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. Transforming the soy chain in Brazil is a task that will demand engagement of a variety of actors.

INITIATIVE X-RAY

SOLUTIONS FOR SUSTAINABLE SUPPLIES – PROGRAM 3S

Proponent: Cargill – large-scale private company from the agricultural sector

Beginning date: 2010

End date: non applicable

Place of realization: Brazil

Approximated investment: R$ 250 million/year

How it generates value for the company: The initiative serves the goal of promoting a style of production that respects people, the environment and ensures healthy food around the world - as Cargill wants to be recognized as a trustworthy source for products and services with sustainable attributes. The 3S Program aims to generate benefits to all those involved in the soybean production chain. For the consumer, it ensures that the product being purchased is free from deforestation and meets requirements of good agricultural practices, well-being of the rural worker, is traceable and its greenhouse gas emissions are managed, meeting the main demands of the market for certified products.

How it generates value for the ecosystem and players involved: Through the program, the company understands that it will be able to transform the soy production chain and make it increasingly less impacting, with deforestation control, worker well-being and encouragement of good agricultural practices. So far more than 152 thousand hectares of soybean production are distributed amongst 165 properties. With the project, there was an increase in the program's indexes for three general themes of sustainability (environmental, social and productive), going from 43.60% to 51.37% in the environmental, 47.48% to 52.56% in the social and 49.48% to 54.81% non-productive. The environmental improvement of the properties includes correct management of soil and water, less usage of toxic pesticides, and care with waste disposal, waste generation and environmental pollution.

How it relates with other global initiatives: The company took on the commitment of putting an end to deforestation on all agricultural supply chains worldwide until 2030 by signing the New York Declaration for Forest in 2014. The program is also aligned with the European Feed Manufactor's Federation (Fefac) sustainability guideline as well as the RED European Normative for biofuels.

MATA VIVA (LIVING FOREST) ENVIRONMENTAL EDUCATION AND RESTORATION PROGRAM

Proponent: Basf – large-scale private company from the chemical sector

Beginning date: 1984

End date: non applicable

Place of realization: Brazil

Approximated investment: R$ 7 million

How it generates value for the company: The program contributes to sustainable development in the agribusiness chain by providing the clients' (rural producers) adequacy to the Forest Code, gaining reputation and image, spontaneous publications in the media, good business relationships and partnerships. Through the initiative, the company improves its relationship with public agencies, obtains recognition from the general public –which allows social license to operate –, disseminates the concept of sustainable development for different audiences.

How it generates value for the ecosystem and players involved: Up until now, the Mata Viva Program has restored 702 hectares with the planting of more than 1.12 million native tree seedlings. As a result, it promoted improvements in ecosystem services by acting on the protection of water bodies, soil and biodiversity. In the forest restoration actions, the greatest number of native species is used, aiming the re-establishment of biodiversity. Surveys were conducted to know the diversity of bird and bee species in areas restored by the program, and an expressive number of both groups was noted.

The company requires counterparts from rural producers that participate in the program, such as supporting and carrying out small interventions in seedlings as directed by the Espaço Eco Foundation team. This brings forth he commitment of the participant so that the restoration actions can be successful. In addition, for a client to join the program, meetings are held to raise awareness of the importance of the commitment of all stakeholders involved.

How it relates with other global initiatives: The Mata Viva Program relates with some of the Sustainable Development Goals, particularly 13 (Take urgent action to combat climate change and its impacts) 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).

BY SÉRGIO ADEODATO

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 and economic use of biodiversity 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 Patos de Minas (state of Minas Gerais), a seed was planted, seven years ago, driven by the demand of the German aviation industry for biofuel research in order to propel aircraft 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 feasibly and safely supplying the new market. Palm (dendê) and soy were considered as potential fuel sources, but lost points in the sustainability criterion, since they are associated with deforestation and excessive use of agrochemicals. Then, after a lot of research, the European team found in Brazil a promising native palm: macaúba (*Acrocomia aculeata*).

'But the attention was drawn to the potential of nobler 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 prospection efforts. Among other advantages, the plant was largely available in the national territory, presented high yields of vegetable oil, and could grow in harmony with pasturelands.

After studies of financial feasibility were conducted for harvesting 300 tons of the fruit in pasturelands and planting the palm in areas of family farming, the goal was to achieve 2,000 hectares, and 100 small farmers to process 8.5 tons per hour. As a pilot project, a small plant installed in the rural community of Carmo do Paranaíba (Minas Gerais) started to process 110 lb (50 kilos) 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 macaúba planted there, 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 pastureland 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 pastureland, improving cattle thermal comfort, which provides for productivity gains. Also, they avoid erosion on the hills, attract wild fauna and capture 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, macaúba (*Acrocomia aculeate*), also known as bocaiuva, feeds native fauna species, such as macaws, cotias (*Daisyproctas*), capybaras, tapirs and rheas americanas. Featuring lots of thorns, the tree has been eliminated from the landscape over the years, as it was not useful to the population anymore.

Currently, a new perspective emerges, based on the demand for food and cosmetics. Using

INOCAS/ DIVULGAÇÃO

the oil to propel aircraft, which was the possibility that first boosted the research, became a low priority. Maybe one day the plan will gain momentum again, considering the goal of the ***aerospace industry*** to zero its emissions by 2027. 'A plant that was forgotten is now being rediscovered as a source of raw material, target of competition between huge industries', states the businessman.

ALMONDS COMBINE PROFIT AND CONSERVATION

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 centenary 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.

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.

The business proposition is mainly to value and empower environmental-driven rural labor, which includes the creation of agroforestry mosaic models

to recompose the ***Legal Reserve***, in which macadamia, an exotic plant, is combined with native species, also in the perspective of gains with carbon stock. 'We adopt the new process agriculture approach, rather than 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, flour and olive oil. In the cosmetics industry, it can fight free radicals and rejuvenate the skin, so it is used in soaps, shampoos and exfoliating products.

In Montenegro's opinion, 'it is a promising market, considering the country's production is still small'. With ten nut processing plants in operation, Brazil produces 1,100 tons per year, whereas in South Africa and Australia the volume is almost 12 times greater. Worldwide, the macadamia market doubled in the past 10 years, with 52,000 tons in 2017, but the product accounted for only 1% of total nut and almond consumption, according to data from the ***International Nut and Dried Fruit Council Foundation***. The United States and China are the main importers.

GUIDED TOURS TO THE CHOCOLATE FACTORY

When it comes to food produced keeping the forest standing, ***natural capital*** is converted into different activities, like tourism. In Combu Island, close to Belém, state of Pará, the riparian inhabitant Izete dos Santos Costa, most commonly known as 'Dona Nena', made her living harvesting native cocoa, rudimentarily processed for sale to middlemen at very low prices. As in most of the Amazon, life as a hostage of merchants who buy forest products would be doomed to never change, if it were not for an idea that came up when local women tried, not very successfully, to make money selling biojewelry made of seeds at a street fair in the capital.

As there were many stands selling the same products, they needed to think of something different, and the group thought that family recipes might be the solution. That is when Dona Nena remembered when her mother made homemade chocolate, manually ground and wrapped in the cocoa leaf, like a mini 'pamonha' (a Brazilian recipe made of grated sweet corn wrapped in corn husk). They soon found a way to remove sugar and make the product go into the organic trend and healthy diet. Thus, it became famous at the street fair. There was media coverage and, consequently, more popularity, until the entrepreneur decided, in 2011, to formalize the business, named 'Filha do Combu' (Daughter of Combu).

'The model was expanded and added more value to the forest', explains Mario Cesar Carvalho, then the brand consultant. After designing the packages, which conveyed an identity to the project, she started coordinating a well-organized structure that now provides different revenue sources to the locality.

With the income earned at the street fair, the riparian businesswoman built a new house to expand her activities, previously conducted in an informal manner in her own house. She also launched a popular visiting tour, including a 20-minute shuttle on board of a traditional boat from Belem to the island, at the Guajará Bay, and a trail amid the cocoa trees in the lowland forest. The activity shows the potential of a business model based on the cocoa production environment – in other words, based 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.

Attractions include visitation to the chocolate production area, degustation of 'brigadeiro' (a traditional Brazilian dessert made of condensed milk, cocoa powder and butter) and, finally, shopping in the store. With 300 tourists per month on average, from January to June 2018, the revenue was BRL 36,000 from guided tour activities. Out of that sum, about 55% are immediately set apart for Dona Nena, to pay for food services and tour tickets. The remaining 45% are used to compensate other partners: tour guides, boatmen, and the tour management and planning team.

As a consequence, a creative economy group was created, focused on recovering the culture of 'caboclos' (people of mixed Indigenous Brazilian and European ancestry). 'The plan is to expand learning with cocoa for gains in other activities, such as the harvest of açaí berries and the production of basketry and flour, creating a kind of outdoor museum to exhibit the riverine life', reveals Carvalho. According to him, it is necessary 'to roll up our sleeves and get to work, so as not to depend on the government, because destroying the forest is like shooting yourself in the foot'.

INITIATIVE X-RAY

MACAÚBA PROJECT: EXTRACTIVISM AND PLANTING OF MACAÚBA TREES IN THE SILVIPASTORIL SYSTEM

Proponent: 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 September)

How it generates value for the company: Given the fact that the project is the company's own business, it generates value by itself. In addition to being economically attractive to investors, the Macaúba Project aligns Inocas and its commercial partners with fundamental values of human rights (increased income and access to public policies by family farmers), sustainable agriculture (intensification and diversification of production, microclimate of pasture, prevention of erosion) and environment (carbon hijacking, habitat guarantee for native species, reduction of deforestation).

How it generates value for the ecosystem and players involved: The Macaúba Project preserves natural capital and contributes to the provision of ecosystem services through the supply of raw materials for the pharmaceutical, chemical, energy and cosmetic industries; food for native wildlife, cattle and humans; water and local climate regulation; seizure of 600 thousand tons of CO^2; prevention of erosion and maintenance of soil fertility; indirect reduction of deforestation of tropical forests; among others. The project supports the extractivists, through the training in good practices and access to public policies, such as the Minimum Price Guarantee Policy and the Social Fuel Seal, in addition to guaranteeing the purchase of the fruits collected. For the small farmers of the planting, the payment of a compensatory fee is guaranteed by the temporary suspension of the pastoral activities, as well as the purchase of the fruits.

How it relates with other global initiatives: The project is aligned with the UN 2030 Agenda, specially with ***Sustainable Development Goal*** 2, through the promotion of sustainable agriculture linked to the rural development of the less favored of the countryside; 7, through the allocation of macaúba oil for the production of biofuels; 9, through the creation of pioneering and sustainable industry of macaúba and its by-products; 12, due to sustainable management and efficient use of natural resources; 13 through actions to combat climate change and its impacts; and 15 through sustainable forest management.

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

Proponent: Arroba Sustainability – small-scale private company from the food sector

Beginning date: 2017

End date: 2045

Place of realization: Bocaina (SP)

Approximated investment: R$ 3 million

How it generates value for the company: The value is generated by the business model with consortium of exotic and native species that promote sustainability and fulfill a positive social and environmental function, regularizing rural properties according to the Forest Code and offering an agroforestry alternative of healthy and nutritious food. The main return to the companies involved is the local supply of raw material for the processing industry. From a single native species, such as macaúba, can be extracted oil, pulp, food, cosmetics, aviation fuel, noble oils, biomass, organic matter. The initiative also generates jobs in the production chain, leads to the acquisition of new machines and equipment and to the increase in activities related to the food, export and services trade.

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

How it relates with other global initiatives: The model can be replicated, contributing to the expansion of reforestation in the state of São Paulo where more than 300 thousand hectares should be restored.

GUIDED TOUR OF DONA NENA'S CHOCOLATE FACTORY

Proponent: Filha do Combu – small-scale private company from the artisanal food sector

Beginning date: July 2017

End date: non applicable

Place of realization: Combu Island, Belém (PA)

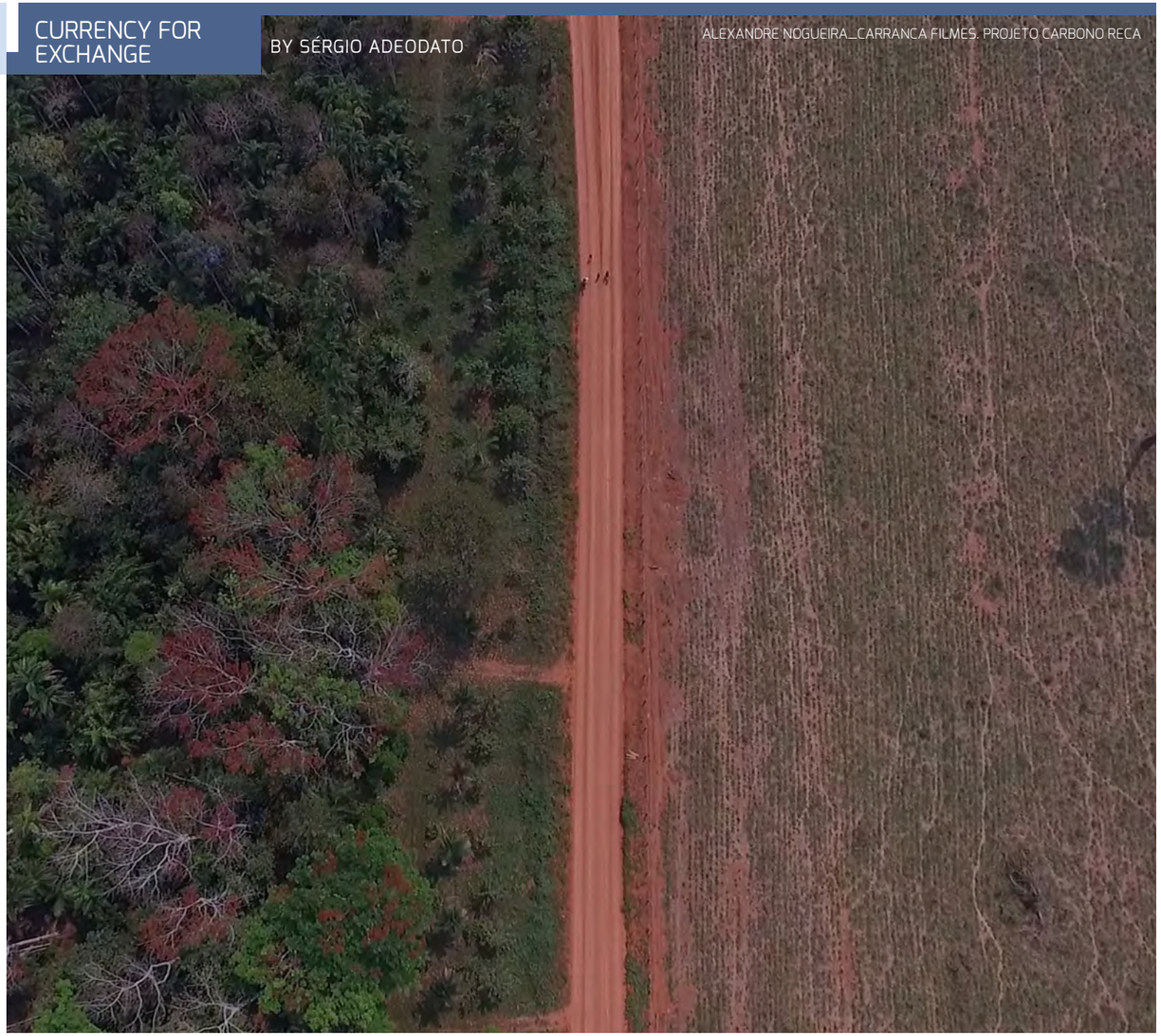
Approximated investment: not estimated

How it generates value for the company: The client becomes more willing to pay for the products and tourist experience as he becomes more informed about the origin, peculiarities and challenges involved in the production of organic chocolate in the middle of the Amazon rainforest. In addition, word of mouth is leveraged. About 55% From obtained profit is immediately returned to Dona Nena for the payment of food services and visitation fee. 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 with the activity of guided tours.

How it generates value for the ecosystem and players involved: The growth of organic cacao is only possible in a balanced biome. The preservation of the Environmental Protection Area in which the plantation takes place is vital so that Dona Nena, protagonist of the initiative, can obtain quality fruits to produce her chocolate and so that the businesses in the area of creative tourism present increasing revenues. As a result, the activity contributes to the environmental preservation of the area and also provides customers with a class of sustainability and valuation of the businesses made by the Amazonians and for the benefit of this population.

How it relates with other global initiatives: The initiative is aligned with the idea of sustainable growth, combining environmental, social and economic dimensions, and can inspire new initiatives on the Island of Combu itself, in terms of the development of businesses based on the maintenance of the standing forest.

BY SÉRGIO ADEODATO



ALEXANDRE NOGUEIRA_CARRANCA FILMES. PROJETO CARBONO RECA

NATURAL TRANSACTIONS

Ecosystem contributions to society are more evident each day and are beginning to show their value, including for trade

Payment to extractivist workers and rural farmers who adopt low environmental impact practices, as well as advances in mechanisms that offset the deficit of mandatory natural reserve areas in rural properties, prove to be efficient conservation tools with economic value. In the first model, adopted as a strategy to fight deforestation, the examples show results that can be replicated in different regions in the Amazon.

Ponta do Abunã, located at the triple frontier between Acre, Rondonia and Amazonas, entered Brazil's History at the beginning of the 20th century as a rubber outpost and as extractivist workforce of the legendary railway Madeira-Mamoré, at the 'white gold' saga, in the middle of the Amazon Forest. Today, the ancient El Dorado, under heavy pressure due to livestock expansion, is territory to a new dream: the construction of a model capable of making sustainable use feasible, with financial offset for those who keep the trees standing, help preserving biodiversity and contribute to the planet climate control.

The region today is the main deforestation frontier of the Amazon. In the Reca Carbon Project, developed by Natura, small local agroforesters, suppliers of andiroba (*Carapa guianensis Aubl.*) oil for cosmetics production, were the protagonists of a pilot ***Payment for Environmental Services*** (PES) initiative – in this case, for the contribution to the world climate balance through productive practices that do not deforest. 'We were looking for a safe formula to be replicated in the Amazon in order to increase revenues without cutting down more trees', said Keyvan Macedo, Sustainability Manager at the company.

In addition to subsistence farming and earnings from the sale of biodiversity assets to the industry, each family started to earn BRL 1,600 per year for the support offered to preservation and use of good practices, after having been trained on commitments, rules and criteria to fight deforestation. As a differentiator, the method provides for additional revenue according to the collective result: in other words, there is a financial incentive for each individual to do their own part and a compensation for the performance of the whole, which is intended to the Reca Association – a way to encourage farmers to engage their neighbors.

At the first stage, from 2013 to 2015, the project handed out a total of BRL 2 million in payments that, from now on, at the second stage, will be handed on an annual basis. As a result, the revenue of the families doubled when compared to the sale of extractivist products, benefitting 125 rural properties and reducing their deforestation rates.

Among the results, the initiative helped land tenure regularization, which is essential to the security of farmers and to the project itself. In joint efforts promoted with the German International Cooperation Agency (GIZ), 49 land tenure titles were issued and 205 applications were submitted to the Rural Environmental Record (CAR), benefitting both Reca's associates and collaborators.

'Since 2007, we have a neutral carbon program in the company and, after a while, we identified the need to enhance our calculations to boost revenue and maximize the social impact, raising farmers' awareness regarding the benefits', explains the executive. The communities of Ponta do Abunã, where the forest has been historically fragmented by pastures and other impacts to the natural landscape, developed a new PES methodology that is applicable in non-adjacent areas. 'This represents innovation, as generally the mechanism has been used in Brazil in longer extensions of contiguous forests', explains Macedo.

The long-term objective is to make deforestation in the project areas smaller than in the vicinity, zeroing it after 25 years. Since 2013, avoided deforestation in the region is equivalent to 190 soccer fields per year, or 74,000 tons of carbon which is not released into the atmosphere. Despite these results, adherence to sustainable practices, which reached 77% of the families in Abunã, remains a challenge against the expansion of pasturelands. Macedo warns: 'The co-benefit of revenue through delivery of nature commodities to the industry is essential to the feasibility of PES projects'.

BRIDGES BETWEEN THE FOREST AND THE MARKET

Creating fair and transparent commercial relationship models is key to the task of connecting the endpoins of the market, getting extractivist suppliers and industries closer, for the promotion of sustainable use as a biodiversity conservation strategy. 'Consumers have been increasingly more interested in knowing the origin of their forest products, and how they are processed', says Mariana Faro, Director at 100% Amazon, an international commerce company that currently receives the production of non-timber forest products from eight communities to export.

Focusing on territory valuation, consequently keeping the forests used by the local people as a source of revenue and commodities to the companies, is key to the business. Thus, to generate benefits keeping in mind win-win situations and conciliate the market rationale to traditional knowledge, the company has encouraged social organization and mobilized new practices in the Aryamuru Project – a tupi word that means "the strength that comes from the mothers of mothers", in other words, from the grandmothers.

Together with the Fruit Growers Cooperative of Abaetetuba (Para State), the current effort is on the development of methods to trace products from their point of extraction in the forest, proving that the products come from one of the areas regularized by the ***Rural Environmental Record*** (CAR). After having run a social and productive diagnosis, the project advised the communities to adopt commercial relationship protocols with the companies, with prior consent and plans to use the resources: açaí berry, cupuacu and caja, among other processed fruits within their industrial units.

The model follows ***Convention 169*** of the International Labor Organization on indigenous people and traditions. 'In addition to quality, the market demands regularity, standardization and knowledge about the whole supply chain', says Faro. In the community of Monte Herman, in Portel, Marajó Island (State of Para), copaiba (*Copaifera langsdorffii Desf*) is extracted through traceable processes that identify the trees through GPS, which allows anyone to know from which tree the oil purchased came from. As the species is more valued, farmers handle it for commercial purposes, which in turn favors preservation of the forest, under constant threat from illegal loggers.

The deal closed by the communi-

ty to manage their own resources links the local production plan and the companies demand. 'At the same time, we noticed a new culture related to waste, hunting and predatory fishing, as well as the recovery of decayed areas and even positive changes on the dietary habit', completes Carlos Augusto Ramos, the project forest engineer.

In Almeirim (State of Pará) the work supports the paperwork that proves the sustainable management of Brazil nut, focused on foreign markets. The partnership helps women in the production of handicraft using the husk of the fruit after the nuts are removed, which diversifies their revenue options. Part of the revenue goes to a fund created by the community as working capital, to invest in local improvements. 'From an economical point of view, it is important not to rely only on a single product and to use the forest in multiple ways', suggests Ramos.

The objective, he says, is not limited to trading traceable products from fruits and seeds, but rather developing the leading role of local communities, based on community 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 DEFICIT

Whereas in the Amazon sales thrive at the pace of the community social organization and access to markets, in the Atlantic Forest, in Sao Paulo, new businesses emerge following the path of mechanisms that offset the lack of environmental reserves in rural properties that have already been deforested, so as to ensure compliance with the legislation. The New Forest Code establishes that, under certain conditions, those who do not have enough forest to comply can ***offset*** their deficit by paying to another farm with more preserved areas to do that, in the same biome.

'The standing native vegetation must have an economic value', emphasizes the entrepreneur Leandro Viecili, Director at Florestec, a company that entered a new business frontier with a project called Offset of Environmental Liabilities through Servitude of Forest.

At first, in 2012, with the purpose of solving the issue of landowners with insufficient land to turn into forest reserve, the forest engineer acquired a farm of 785,765 square feet (73,000 square meters), in the municipality of Piedade (State of Sao Paulo). The remnant forest area, which resisted to real estate pressure for decades, is currently used to offset environmental liabilities of third parties, perpetually, under the concept of servitude - in this case, the service provided by a property to another. Thus far, 21,527 square feet (2,000 square meters) of the reserve have been negotiated for environmental offsets.

'I came up with the idea when a carrier, which became our first customer, needed a property to adapt to the environmental norms, but it did not want to take care of the estate because their core business was trucks, not forests', tells Viecili. He gained experience on the field and realized it was a trend that came to stay and could become a new niche when he worked at the licensing area of Sao Paulo environmental agency, Cetesb. At that time, he had a pen at hand to decide whether to authorize new projects.

With 16 transactions completed by the end of the first half of 2018, covering areas that vary from 6,781 to 118,403 square feet (630 to 11,000 square meters), the company goal was to negotiate the available quotas at the plot and acquire another estate in a different region, but then an economic crisis occurred. The business is expected to grow as soon as new investments come in, because they will need to offset the lack of forest reserves to comply with the legislation. The traditional alternative of cultivating saplings to solve the liability doesn't always work, not only due to the high costs, but also because there is need for monitoring and caring for the plants.

'It is a long-term perspective and care must be taken to overcome times of uncertainty in the environmental and economic areas, like the period we have been through now, without losses due to the cost of maintenance of permanently preserved areas, as established by the agreements', analyzes Viecili, who invested BRL 70,000 and, since the beginning of the business, in 2014, got a profit of BRL 458,000. Average customers, he says, are landowners who have an urban property with forests and need to cut down part of the vegetation to build a house. But there are different demands, such as ceramic industries that want to expand their production and require a mining license.

INITIATIVE X-RAY

COMPENSATION OF ENVIRONMENTAL LIABILITIES THOUGH FOREST SERVITUDES

Proponent: Florestec – small-scale private company from the service sector (environmental consulting and reforestation)

Beginning date: 2014

End date: non applicable

Place of realization: Piedade (SP)

Approximated investment: R$ 70 thousand

How it generates value for the company: The environmental compensation brought forth a competitive advantage to the consultancy given the fact that, in addition to the production of reports and technical studies to subsidize the environmental licensing, clients still had a solution to obtain environmental licenses at their disposal. Generating win-win solutions is aligned with the business model of the two companies of which the partners are part: Florestec Engenharia e Soluções Ambientais, which is an advisory engineering company, and Florestec Reforestation, which manages forest assets.

How it generates value for the ecosystem and players involved: In most cases, a rural property with a forest surplus is devalued and seen as a burden, which puts even more pressure on the remaining vegetation, given the pressure for the conversion of forest areas into agropastoral uses. The aggregation of value with the standing forest exempts the property from the pressures that typically fall on rural properties so that they are productive, contributing to their preservation. 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 Development Goal*** 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.

ARYIAMURU PROJECT

Proponent: 100% Amazonia – 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 relationships with suppliers, which contributes to the bringing in of new partners for forest management. Applying a socio-economic and environmental diagnostic method, entitled Radar, establishes trust between the parties and increases the understanding of how the commercialization of a particular forest product can contribute positively to the improvement of the living conditions of the families. With this exchange of knowledge, the company understands that everyone grows.

How it generates value for the ecosystem and players involved: In bringing forth the debate about the use of forest seeds and their respective oils to agroextractivist communities, the Aryiamuru project values products that can generate income for the families, maintaining the balance of the local ecosystem. The 100% Amazon Aryiamuru Project has discussed methods of multiple forest use and encouraged the use of tools that can ensure the basic protection of natural resources such as Community Use Plans.

How it relates with other global initiatives: The Aryiamuru Project engages with the 160 Convention of the International Labour Organization (ILO), with the Forest Stewardship Council (FSC) certification for Forest Handling and Global Pact, of which 100% Amazonia is a signatory.

CARBONO RECA PROJECT – VALUING LOCAL AMAZONIA PRODUCERS THROUGH AN PAYMENT 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 of the Reca Project. Ponta do Abunã (RO, AC, AM)

Approximated investment: R$ 11,25 million

How it generates value for the company: Through the initiative, Natura reinforces its ***insetting*** strategy, a vision shared by a growing number of organizations on how companies can balance their relationship with the environment on which they all depend. The company fully understands that, in this way, it makes its actions have greater synergy with supplier communities, as well as promoting the integration of programs and institutions; expand presence with cooperatives and associations; lead the carbon offsetting agenda and strengthen the relationship with the supplier. In addition, the project assists in managing the environmental regularity of cooperative / associated properties and in the traceability of its products.

How it generates value for the ecosystem and players involved: The project is long-term and aims to zero deforestation in the participating properties. By 2020, 427 hectares of native forest are expected to be preserved. The participant of the project is remunerated in the proportion of the conservation that obtained and 50% of the amount collected is destined to a common fund, that will finance structuring activities for the cooperative. The company understands as additional opportunities: boost the viability of PSA projects in the Amazon for small producers as well as contribute 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 (PNMC). The project is also aligned with Non-Monetary Projects included in the new Access to Genetic Heritage Law, in order to finance the implementation of biodiversity conservation actions in supplying communities.

How it relates with other global initiatives: The project is directly related with the Paris Agreement and contributes to Sustainable Development Goal 2 (End hunger, achieve food security and improved nutrition and promote sustainable agriculture), 13 (Take urgent action to combat climate change and its impacts), 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), besides being in accordance with the Aichi Goals of 2011 – 2020.

GREG SIMENOFF/ FLICKR CREATIVE COMMONS

DICTIONARY, SUGGESTED READING AND VIDEOS

> Dictionary

Area of Permanent Preservation (APP) – As defined in Law # 12,651/2012, APP is a protected area, whether covered or not by native vegetation, having the environmental function of preserving water resources, the landscape, geological stability and biodiversity, facilitate the gene flow of fauna and flora, protect the soil, and ensure the well-being of human populations.

Business as usual: The way business usually is done, without innovation or changes.

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, relief, rains, 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, the 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.

Guides and Tools – Paths that help incorporate natural capital into business management.

Insetting –The term refers to business initiatives to balance their relationships with the environment they depend upon. The idea consists of internally making up for negative social and environmental impacts associated with the business (climate, water, biodiversity, soil, social issues...). The core of the program is to incorporate social and environmental themes into the business strategy and, for that purpose, it is necessary to:

– Ensure participation of supply chains

– Control the environmental footprint

– Preserve resources and the core business

– Reinforce the group values and employee empowerment

– Add value to the product

– Engage consumers and partners

Leaching – When natural vegetation is removed, the soil is exposed to the sun, wind and rain. Leaching is the process of washing out superficial soil minerals caused by rains, which leads to erosions, loss of fertility and silting of bodies of water (accrual of sediments on the river bed).

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 ecologic 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 general, anywhere 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 organizat***ion 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 deterring 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. 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 loss
- 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 systems are Round Table on Responsible Soy (RTRS), Biomass Biofuel, Sustainability Voluntary Scheme (***2BS***) and International Sustainability & Carbon Certification (***ISCC***).

Spurious Competitiveness – A concept created by the Chilean economist Fernando Fajnzylber, from the Economic Commis-

sion for Latin America and the Caribbean (ECLAC). Spurious competitiveness relies on low wages, subsidies and devalued exchange rates, as opposed to authentic competitiveness.

TEEB – The Economics of Ecosystems and Biodiversity, an initiative headed by economist Pavan Sukhdev, who published the document entitled *The Economics of Ecosystems and Biodiversity*, in 2011. The work emphasizes the potential nature benefits can provide to ensure and improve human well-being. You can access the version in English.

TeSE – FGVces Trends in Ecosystem Services (TeSE) business initiative, jointly built with a group of member companies guidelines for monetary and non-monetary valuation of 10 material ecosystems to the companies. You can see the guidelines and the tool in the following link: ***http://www.tendenciasemse.com.br/metodos?locale=pt-br***

Waves – It is a global partnership led by the World Bank to incorporate natural capital into public accounts. You can read about the role of the private sector in acknowledging the value of natural capital to the business here: ***https://www.wavespartnership.org/en/private-sector-role-recognizing--value-natural-capital-focus***

> Hints on Videos, Research and Readings

Book

- Would you like to know the most effective way to protect natural capital? It is through Conservation Units, according to the organizers of the book *Quanto vale o verde: a importância econômica das unidades de conservação brasileiros* ('How much are green areas worth: the economic importance of Brazilian conservation units'), by Carlos Eduardo Frickmann Young and Rodrigo Medeiros. The publication seeks to show that direct and indirect economic gains obtained from conservation units in the country largely exceed expenditures and investments required by the National System of Conservation Units (SNUC – Sistema Nacional de Unidades de Conservação). You can access the ***book here***.

Videos

- **Cultural Services –** The video 'The Value of Conservation Units to the Brazilian Society' illustrates the contributions offered by the conservation units to the Brazilian society. It is about the value of nature and ecosystem services (water, climate balance, research, medicinal products, scenic beauty, etc.) for the well-being, the productive sector, the economy (a seven-fold return when compared to the value invested), defense of traditional populations, etc. The video was produced by ICMbio (Chico Mendes Institute for Biodiversity Conservation), the Ministry of the Environment (MMA), the German Technical Cooperation Agency (GIZ), and TEEB Regional-Local and Snuc Consolidation projects. Please visit: ***https://youtu.be/KZkzp4uJKJY***

- **Ecosystem services –** a new frontier for business competitiveness and resilience ***https://youtu.be/hUfU92cYu7I***

- A video prepared by the UEBT (Union for Ethical BioTrade) on the Biodiversity Barometer, showing the viewpoints of consumers from different countries about biodiversity. With subtitles in Brazilian Portuguese: ***https://youtu.be/lHQv-PLjWig***

- Documentary videos entitled 'Negócios 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 relationship with suppliers in five companies: Beraca (cupuaçu – *Theobroma grandiflorum*), Centroflora (jaborandi – *Pilocarpus microphyllus*), Pele Nova (rubber tree – *Hevea brasiliensis*), Tobasa (babassu – *Orbignya phalerata*) and Natural Wax (carnauba – *Copernicia prunifera*). The videos were produced under the TEEB R-L project.

http://www.portaldaindustria.com.br/cni/interna-video/?v=MmOf5CtOOGw

http://www.portaldaindustria.com.br/cni/interna-video/?v=p0mhrrS8MsU

http://www.portaldaindustria.com.br/cni/interna-video/?v=UwlnaWKHKR8

http://www.portaldaindustria.com.br/cni/interna-video/?v=eiX12X_nJZM

http://www.portaldaindustria.com.br/cni/interna-video/?v=02IBz_5rAac

Websites e plataformas:

- ***Valuation of Ecosystem Services*** **–** To get to know different use cases of economic valuation as an instrument to make ecosystem services tangible for business activities.

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

- An edition on Ecosystem Services containing articles with a very accessible language and a ***PDF version***.

- ***Natural Capital Protocol***, a standardized and comprehensive framework for companies to measure and assess their dependencies and impacts on natural capital.

- ***Natural Capital Coalition website***

- ***Natural Capital Hub website***, containing case studies, news articles and tools on the topic.

- ***ValuES Platform*** – Methods to incorporate ecosystem services into politics, planning and practice.

- ***Website of the Iniciativa Brasileira de Negócios e Biodiversidade*** (Brazilian Initiative of Business and Biodiversity, coordinated by CNI, CEBDS and Instituto Life)

- ***Website of the World Forum on Natural Capital***, held on November 23 and 24, 2015, in Scotland, where you can find information on the topic and read about the relationship with the business sector.

- ***Biodiversity and Ecosystem Services***

- ***ISO 14001/2015***

- ***Union for Ethical BioTrade*** showing the importance of biodiversity for business.

Reports

- The report ***Towards a global map of natural capital: key ecosystem assets*** (UNEP, 2014) maps natural capital distribution globally:

- ***FGVces and Febraban studies*** – analyses of paths to leverage Brazil's transition towards a low-carbon economy.

- ***Financial risk management***. Source: UNEP FI CEO Briefing (2010): Demystifying Materiality – Hardwiring biodiversity and ecosystem services into finance.

- ***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 da Exposição 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 CEBDS.

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

- Report ***Análise do Retorno do Investimento na Conservação de Bacias Hidrográficas: Referencial Teórico e Estudo de Caso do Projeto Produtor de Água do Rio Camboriú, Santa Catarina, Brasil*** (Analysis of the Return on Investment in the Conservation of Watersheds: Theoretical Framework and Case Study of the Project to Produce Water in Camboriu River, Santa Catarina, Brazil)

Academic Literature

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- TEEB (2010). ***The Economics of Ecosystems and Biodiversity: TEEB for Business. Executive Summary***. Bishop, J. (Coord.). 23 p.

- TEEB (2012). ***TEEB para o Setor de Negócios Brasileiro*** *(TEEB for Business Brazil). Preliminary report. Pavese, H. (Coord.). 36 p.*

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- HARDIN, G. Tragedy of Commons. Science, n. 162, pp. 1243-1248, 1968: ***https://www.sciencemag.org/site/feature/misc/webfeat/sotp/pdfs/162-3859-1243.pdf***

- HANSON, C.; RANGANATHAN, J.; ICELAND, C.; FINISDORE, J. ***The corporate ecosystem services review: guidelines for identifying business risks & opportunity arising from ecosystem change***. Version 2.0. Washington, DC: World Resources Institute, 2012.

Projects/Cases

- ***Oasis Project***

- ***Produtores de Água e Floresta na Região Hidrográfica do Guandu*** (Producers of Water and Forest in Guandu River Basin District) Project

- ***Cultivando Água Boa*** (Cultivating Good Water) Program

- ***Evian Case***

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