(043-0992)
Value Creation and Sustainable Palm Oil in Brazil

Julio Ribeiro de Almeida
McS Escola de Administração de Empresas de São Paulo da Fundação Getulio Vargas – FGV- EAESP.
474, Itapeva St. – ZIP Code 01332-000 – São Paulo - Brazil
almeidajulio@hotmail.com
+ 55 11 3799-3606

Luiz Carlos Di Serio
Professor of Escola de Administração de Empresas de São Paulo da Fundação Getulio Vargas – FGV- EAESP.
474, Itapeva St. – ZIP Code 01332-000 – São Paulo – Brazil
luiz.diserio@fgv.br
+ 55 11 3799-3606

Renata de Oliveira Silva
PhD Candidate at Escola de Administração de Empresas de São Paulo da Fundação Getulio Vargas – FGV- EAESP.
474, Itapeva St. – ZIP Code 01332-000 – São Paulo - Brazil
reoliveir@gmail.com
+ 55 11 3799-3606

ABSTRACT
The purpose is to analyze sustainable value creation initiatives in companies producing palm oil in Brazil. A qualitative approach was conducted. As a result, programs of family farming, production processes with utilization of waste and clean energy were found. However, initiatives need to be addressed in order to reach sustainability.

Keywords: Palm Oil, Sustainable Value Creation, Sustainability.

Introduction

Palm oil comes from trees, which bears fruits from 24 to 30 months after field planting. Field Maintenance operations include weeding, water management, pruning, pest and disease management and manuring. Harvesting is done manually and, in a conventional milling process, the fresh fruit bunches are sterilized and stripped of the fruitlets. Two different oils derive from fresh fruit bunches: palm oil, and, with an output about 10 times smaller, palm kernel oil.

Originating from West Africa, palm oil has become a global agricultural commodity used in a variety of food and industry products. Industry's proportion has significantly increased along the years: while in the decade of 1970 it represented 3 percent of food, so far from 2001 to 2008 it increased to 24 percent. Today palm oil has been considered an important input for the production of biodiesel.

Palm oil production has expanded considerably in recent decades and now palm oil is the most traded vegetable oil in the world. Together, Malaysia and Indonesia produce more than 85 percent of the world's palm oil. Indonesia is the number one producer and Malaysia number one exporter. The palm is grown entirely in developing countries, of which the major producers are Indonesia, with a production of 25.4 million tonnes in 2011/2012 followed by Malaysia with a production of 18 million tonnes in the same period (FAS 2012). The best areas for cultivation are located near the tropics where generally constitutes an important resource for local economies, both in exports serving as raw material for local industry (Teoh, 2010). But the advancement of plantations is taking over native forests, attracting the attention of society and endangering the expansion project of culture in the region. Between 1990 and 2000, Malaysia lost an average of 78.500 hectares of forest per year and Indonesia impressive 1.871.500 hectares. In just 15 years (1990 to 2005) together countries lost 25.6% of its forests (ORSATO; WEISS, FALCÂO, 2011).

Among other factors, greater crop yield and lower production costs explain the growth. The major world producers, however, destroyed large areas of forest to accommodate the growth of planting and employed cultivation techniques that brought severe environmental impacts. Campaigns led by environmental groups like Greenpeace have damaged the image of big food manufacturers before consumers, forcing supply practices reconsiderations. Currently, large companies have committed to sustainable principles through exclusive purchasing sustainable palm oil due to coming years. Palm cultivation, on the other hand, is able to offer opportunities for sustainable development as it regularly produces fruit throughout the year, allows income improvement for small farmers and has high capacity for carbon sequestration from the atmosphere. In May 2010, the Brazilian Government launched the Sustainable Palm Production Program, which, among others, specific credit lines to producers and outlines areas for cultivation, which are currently degraded. There are currently in Brazil 31.8 million hectares suitable for planting, whereas the total area cultivated in 2009 in the world was 12.2 million hectares.

From an economic standpoint, it is the most traded vegetable oil in the world. In 2010, was sold 71.6 million tons of palm oil compared with 18.5, 8.4 and 6.7 million tons of its main competitors, soy oil, sunflower and canola.

Some factors help explain the rapid growth of the production of this crop as high productivity and low cost of production (FAO, 2006). Lofrano (2008) attributes the growth to a significant change in the manufacturing process of foods, motivated by the search for oil more pure and free of the hydrogenation process. Palm oil is an extremely versatile product and can be found in over 50% of the products found in supermarkets, since cooking oil, margarine, ice creams, chocolates, biscuits detergents and cosmetics. Global brands such as KitKat and Dove contain ingredients derived from palm oil (Teoh, 2010).

The great expansion of culture in the world, however, was really drawn the attention of major NGOs from the "the year the world caught fire" campaign (WWF, 1997).

That year, which coincided with the Asian financial crisis, large fires occurred in Indonesia, Papua New Guinea, Brazil, Colombia and Africa. A study by the World Wide Fund for Nature (WWF) and International Union for Conservation of Nature (IUCN) has identified that the use of fire to clear land and ready it for planting of oil palms was a major reason the fires Indonesia (ROWELL, MOORE, 2000). The study also related various market actors, including Unilever and some financial institutions

such as ABN-AMRO and ING BANK explosion to the cultivation of palm oil in Indonesia.

Despite the great pressure exerted by NGOs in Southeast Asia, the culture of palm can contribute significantly to sustainable development. Its potential for reduction of poverty in rural areas and development of related industries, as fats and biodiesel, is high according to Teoh (2010). Its great capacity for absorbing carbon (MPOC, 2010) and ability to protect the soil against erosion of degraded areas and leaching (Macedo et al. 2000) are examples of contributions.

The research question is whether initiatives that promote sustainability are able to create sustainable value for companies producing palm oil in Brazil?

To address this problem, this study proposes a comparative analysis between sources of sustainable value creation described in the literature with the practices and perceptions of Biopalma about it. As defined by Hart and Milsteim (2003), the creation of sustainable value reconciles interests of sustainable development and its facets environmental, social and economic with the creation of value for shareholders in the various forms of acceleration of innovations, best reputation and reducing risks and costs.

Methods

A qualitative approach through a case study was conducted. Data were collected from a field visit, documents provided by the company and from interviews with executives.

Data were collected from primary and secondary sources and were obtained from interviews with company executives, public documents and institutional presentations and direct observation spot. We conducted semi-structured interviews supported by the literature on the subject used. The researcher spent two days in Moju, where the largest plantation company and industry are overwhelming and a day at the headquarters of company in Belém (PA). The list of respondents is comprised by five professionals: Director of Sustainability, Environment Manager, Head of Quality, Senior Technical Palm Development Coordinator and Engineering Manager.

The Palm in Brazil

With a planted area of 88,700 hectares, Brazil has a productivity bit average 10,000 kg of clusters / hectare or about 2.1 tons of oil per hectare. (WFP / IBGE, 2005). In 2010, Brazil produced the equivalent of 265 000 tons, representing significant growth over the last decades.

Program for Sustainable Production of Palm

The main opportunities for promoting Sustainable Palm Oil reside the use of already degraded lands for cultivation as a way to mitigate the environmental impacts tied to the expansion of culture. Brazil took a step forward in this direction, when on 6 May, 2010 released the Program for Sustainable Production of Palm prohibiting the felling of native forest for production of palm and establishes clear rules for the expansion of cultivation, harmonizing protection and restoration of the environment, investment, technological innovation and income generation in family farming (MMA 2010). The program consolidates important legal instruments that define potential areas for ace cultivation, restricting the expansion of production only to disturbed areas, ie already deforested in the past, strictly prohibit the felling of native vegetation to planting palm oil and drive the expansion of productive activity for recovery degraded areas (MAPA, 2010).

The Program for Sustainable Production of Palm Oil in Brazil has five inducers instruments: the first is that ZAE to ensure sustainability of production delimits the area authorized to 13.6% the area apt. The second instrument is the credit supply through three programs: Eco-PRONAF, and PROFLORA and PRODUSA. Investments in research and innovation and expansion of service constitute the third and fourth inductors instruments. Finally, creating the Chamber of Palm Oil is created to identify opportunities for development of the productive chain (MDA, 2010). Regarding the suitability and availability of land, the potential for expansion of the culture of palm in Brazil is high. According to recent studies of agro ecological zoning of palm oil (ZAE), Brazil has more than 58 million hectares in areas suitable for palm plantation, this ARE all in deforested areas in Amazon (EMBRAPA, 2010). However, the current program is intended by the bill to restrict the cultivation of palm oil in 31.8 million hectares of suitable areas, with the prohibition of removal of native vegetation throughout the national territory (MAPA, 2010). By 2009, the culture of the world palm held about 12,263,000 hectares. Of these, approximately 5.396 million hectares (44%) are situated in Indonesia and 4,047,000 hectares (33%) in Malaysia, which means a production area of more than nine million hectares only in these two countries. (WORLD, 2010). The cultivation of palm is an option to promote the recovery of deforested areas in the Amazon, most soils mapped in ZAE. This exploitation of long term can provide positive social and environmental impacts, such as carbon sequestration in farming systems and income generation for smallholder farmers. From the socioeconomic perspective, besides generating development, employment and income for the region, the expansion of this culture can replace imports of palm oil (ROCHA, 2011).

Case Study

The Biopalma, company object of this case study is the largest producer of palm oil in Brazil with a total area of 135 thousand hectares and production of 100 tonnes of fresh fruit bunches (FFB) per hour in the first set of six poles. Today Biopalma is the largest plant operating in Brazil with 60 tons of FFB / hour (Biopalma, 2010). Biopalma is a producer of palm oil based in Belém-PA and since February 2011 is controlled by Vale company. It's project is to become the largest producer of palm oil in the Americas.

The project covers an area of about 135 hectares, an area that has one of the lowest Human Development Index (HDI) in the country. Of this total, 60 thousand hectares will be used for planting palm, totaling 9.3 million seedlings to 2013. The remainder (75,000 hectares) will be protected and recovered by the consortium. With this, Vale contributes to the recovery and conservation of ecosystems of the Amazon biome, establishing the reference region for these practices (Biopalma, 2011). Currently Biopalma generates about 3,200 jobs between themselves and others, but with the evolution of the business is expected that more jobs are created. Additionally, the family farming program aims to cover 2000 families region including the production of palm oil in its properties with monitoring practices and with guaranteed purchase by the company (Biopalma, 2011). The Small Producer project was launched in February 2010 and now involves 24 families, who are deploying 240 hectares of palm. Over one hundred families will join the project in 2011, each families planting ten hectares of palm. Farmers contemplated by the project receive technical assistance and credit by Biopalma and Pronaf Dendê Federal Government program funding, totaling R$ 80,000 through the Amazon Bank for the purchase of seedlings, planting and maintenance of livelihood needs in the three early years of planting until the beginning of the harvest (Biopalma, 2011).

Along with family farmers and their employees, the new Biopalma want expand its business in the coming years and become the largest producer of palm oil from the Americas, contributing to wealth creation in the Amazon and the construction of cleaner energy matrix (Biopalma, 2011).

As for the environmental part, there will be no deforestation for planting. There will be reforested 60,000 hectares of deforested area with palm trees and there will be a recovery of 70,000 hectares of native forest reserve in the region (Biopalma, 2011).

Programs of family farming, production processes with total utilization of waste and clean energy production from biomass generated in the production process are examples of sustainable value creation in the Brazilian market for palm oil. There are, however, situations that needs to be addressed, so companies can reach sustainable value creation. The conduction of a Life Cycle Analysis is an example.

The following table showing the main data collected in the survey:

AUTHOR	RECOMMENDATION	BIOPALMA	EVIDENCE RESEARCH	GAP
Vermeulen, Goad -2006	Difficulty in raising capital for expenditure in planting. They usually lack the necessary guarantees for funding banking	OK	Line Proflora Eco-palm and system guarantor crossed of the Brazilian Bank	N/D
	Difficulty acquiring seeds	OK	The Biopalma, who has the size, seeds can import and deliver the subsidized seedlings to AF	N/D
	Limitation that small producers have to market your product because of the small number of buyers and lack of organization and cooperation that prevents, among others, the obtain better conditions of sale.	OK	The Biopalma guarantees purchase of all producing the farmer.	But still not set as pay by clusters, either way collection thereof.
Rocha - 2011	System for regulating land. Environmental permit is granted only for whom owns land legalized	X	The INTERPA is doing georeferencing of the land Pará state with the objective of regularize the history.	37% of the land belonging to Biopalma lands are tenure.
	It is necessary that families are defaulting and have complete documentation for have your financing proposal accepted by financial institutions	OK	The company pointed to coordination working with families involved in AF program to work awareness among families.	N/D
Brito - 2006	High labor costs and fertilizer	OK	These costs are added approximately 88% of the cost total production.	Sectorial engagement Chamber of Palm

AUTHORS	RECOMMENDATION	BIOPALMA	EVIDENCE RESEARCH	GAP
Hart and Milstein - 2003	LCA for product performance from cradle to grave.	X		Lack of potential economics sources and exposute the campaigns NGOs
Porter and Kramer - 2012	New approaches in areas such as use of water, raw materials and packaging, as well as expansion of recycling have been making use of a rich resource field for generating shared value.	OK	The water resulting from the process follows for fertigation organic peels and fibers run to the boiler for energy production that fuels factory, almonds are the fruit	N/D
Hart and Milstein - 2003	The first way to reconcile sustainability and return for shareholders is the model proposed by waste prevention, which focuses on increase the environmental efficiency of products and current processes.		to be separated and traded refiners of palm kernel oil. The consensado is treated and reused 30% in satisfying the need for crushing plant water.	
Porter and Linde - 1995	Environmental regulations may well defined stimulate innovations that reduce costs products or improve their benefits	OK	The charge for the use of resources Natural Government may bring benefits for sustainability. by example, charges for features water.	N/D
Porter and Kramer - 2011	As suppliers become stronger, environmental impacts generally fall substantially		The program aims to Innovate strengthen their vendors units in Brazil, considered	
Nidumolu, Prahalad and Rangaswami - 2009	The second stage toward sustainability is to make this sustainable value chains stage, companies working together to suppliers and retailers to develop sustainable raw materials and reduce wast	OK	agents of sustainable development in the areas where they operate.	N/D
Porter and Kramer - 2011	For the company, the starting point for creating shared value is to identify all needs and social needs that are or could be in their products. Since then identify those that most affect the company's operations and to then act solve the problem and obtain social benefits for business	OK		Lack of definition in the payment model clusters of farmers. Uncertainty over collection system of clusters of farmers.
Castro, Lima and Cristo 2001	The focus of supply chain proved its usefulness to examine performance of agricultural systems, determine performance bottlenecks and untapped opportunities.	OK	Legalization of Land- -Documentation of Families program participants AF. - Research in Fertilizers - Labour Charges - Import bureaucratic seed	N/D
Nidumolu, Prahalad and Rangaswami - 2009	Adherence to strict environmental standards fosters the ability to anticipate or influence standards and thus take advantage of pioneer in adopting new technologies	OK	The procedure that defines the Valley standards for effluent discharge is the most rigorous of Resolution 357 CONAMA	N/D
Hart and Milstein - 2003	The efficient use of resources and reduction Pollution help promote sustainability Accelerating Innovation through Technology clean	OK	Biomass is used in boiler energy production - Condensate will be reused in water cycle The sludge is used to fertilize organic - Water used for fertigation	N/D
Nidumolu, Prahalad and Rangaswami - 2009	The third stage on the path to sustainability is the creation of sustainable products and services. At this stage, executives realize that Many consumers prefer offers sustainable. To develop products sustainable, companies need to understand the consumer concerns.	X	The vision is not shared between respondents indicates the absence of clarity on the consumer market. A likely explanation for this fact lies in the fact that the project Biopalma provides for the sale within the itself holds for the production of	
Porter and Kramer - 2011	For the company, the starting point for creating shared value is to identify all needs and social needs that are or could be reflected in their products. The Since then identify those that most affect the company's operations and to then act solve the problem and obtain social benefits for business	OK	AF program will empower Farmers and provide a seedling price compatible with the line funding from the Federal Government. - School of Palma.	N/D
Porter and Kramer - 2011	To construct clusters and local increase connection between the success of the company and the community the company needs to focus on disability that is the biggest barrier to growth and productivity of the business and identify areas where the company is better prepared for influencing	OK	"The Biopalma will not solve all Para problems, all problems of Moju, but will create an agenda what is common for convergent and strategic for us "	N/D
Suharto - 2009	Improvement in productivity of small producers	OK	Provision of technical assistance for AF	N/D

Conclusions

This work showed that the palm industry has expanded considerably in decades thanks, among others, the greater crop yield and lower costs production. The major world producers, however, had to destroy large areas to accommodate growth forest planting and cultivation techniques used, as fires and grounding truffle seedlings, which brought severe environmental impacts.

The palm culture, on the other hand is capable of offering opportunities for sustainable growth as it is a culture with regular production of fruits throughout the year, with the possibility of improving the income of small farmers and high capacity for carbon sequestration from the atmosphere. Brazil has 31.8 million hectares of degraded areas for regulated planting palm. This is a good opportunity for the industry in terms of national problems that are leading producers currently face with issues related to sustainability. It is important therefore that companies in the sector work sustainable to exploit this opportunity by undertaking projects profitable and sustainable at the same time. The main empirical contribution of this study lies in the exploration of large Brazil area has the potential to become the world's largest producer of palm oil.

The sustainable nature of palm culture that offers growth, to promote reforestation on degraded lands, protects companies' eco activism and assures delivery to large companies committed to purchase the product certificate. The main contributions to companies that this study intends to focus are on recommendations based on the gaps identified between sources for sustainable value creation in the literature and practice of the company studied. These are situations capable of being replicated in other companies in the industry.

The company and the industry face unfavorable institutional environment with high costs labor and fertilizer. The company should invest in R & D to apply the best and most efficient fertilizers and engage in Camera Industry of Palma to demand conditions more favorable to the sector which has high capacity to generate income and employment for rural families. We conclude that Biopalma currently developing projects that can propel it in seizing opportunities for sustainable development that are offered in and this should address the gaps identified in this study to enhance this potential.

References

BRITO, T.D. (2006) *Competitividade e Sustentabilidade no Agronegócio: O Caso do Óleo de Palma*. Master theses. UnB. Brasília, 2006. 172 p.

CASTRO, A.M.G. ; LIMA, S.M. V.; (2002) Cadeia Produtiva: Marco Conceitual para Apoiar a Prospecção Tecnológica. Working paper presented on XXII Simpósio de Gestão da Inovação Tecnológica, Salvador, 2002.

EMBRAPA – (2010) National Research Center for Solos. Agroecological zoning for palm oil from deforested legal Amazon. (Synthesis Report)

FAO - FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS. (2011) Biofuels and Commodity Markets – Palm Oil Focus. 2006. Disponível em: < http://www. fao.org/es/ESC/common/ecg/122/en/full_paper_English.pdf>. Acesso em 11 ago. 2011.

HART, S., MILSTEIN, M. (2003) *Creating Sustainable Value*. Academy of Management Executive, 17(2): 56-69. 2003.

LOFRANO, R. (2008) *Food and Fuel with Forest Preserved*. IN: Brazilian *Agriculture Report. Brazil,*. São Paulo:, 2008.

MACEDO, J.L.V; ROCHA, et al (2000) *Sistema produtivo do dendê para a produção de biodiesel.* In CASTRO, A.M.G;

MAPA – Ministry of Agriculture, Livestock and Supply. Instruments inductors Program Sustainable Palm Oil in Brazil. 2010. http://www.agricultura.gov.br/pls/url/ITEM/85D6620F0A777 CDBE040A8C075022DA2 Acessed 2011.

MDA – Ministry of Agrarian Development. "Program for Sustainable Production of Palm Oil." (2010). <http://www. mda.gov.br/portal/saf/noticias/ item?item_ id=4105712>. Acessad 2011.

MMA – Ministry of Environment. Action Plan for Prevention and Control of Fires and Deforestation in the Cerrado. "Conservation and Development."(2010) : < http://www.mma.gov.br/estruturas/182/_arquivos/ppcerrado vcc 1_outubro_182.pdf > Acessed 2011.

OIL WORLD. (2011) <http://www.oilworld.biz >. Acessed 2011.

ORSATO, R.; WEISS, R.; et al (2011). *The Good, The Bad and the Ugly: The Palm Oil Dilemma.* Insead Business Press. 2011.

PORTER, M.E; KRAMER, M.R. (2011) Creating Shared Value. *Harvard Business Review, 89(1):* 62-77, 2011.

PORTER, M.E; LINDE, C.V.(1995) Green and Competitive: Ending the Stalemate. *Harvard Business Review, 95(5):* 120-133. 1995.

PRAHALAD, C.K.; NIDUMOLU, R.; et al (2009) *Why Sustainability Is _ow the Key Driver of Innovation.* Harvard: Harvard Business Review, 2009.

ROCHA, M.G. (2011). *Fatores Limitantes à Expansão dos Sistemas Produtivos de Palma na Amazônia*. Mester Theses. UnB. Brasília, 2011. 145 p.

ROWELL, A.; MOORE, P.F. (2000) *Global review of forest fires*. WWF International & The World Conservation Union (IUCN). 2000.

SUHARTO, R. (2009) *Sustainable production in Indonesia*. Presentation at the China International Oil and Oilseeds Summit Beijing 2009, 8-10. July 2009.

TEOH, C.H. (2010) *Key Sustainability Issues in the Palm Oil Sector*. Discussion Paper for Multi-Stakeholder Consultations (commissioned by the World Bank Group). 2010

VERMEULEN, S.; GOAD, N. (2006) *Towards better practice in smallholder palm oil production*. Natural Resource Issues Series No. 5. International Institute for Environment and Development. London, UK. 2006.

WWF. (1997) "The year the world caught fire" - Discussion Paper, 1997. WWF International.