Market for Carbon Credits and Swine Production: An Analysis of Projects and Regions of Brazil

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Abstract

By Brazilian Institute of Geography and Statistics (IBGE) growth in the swine herd and milk production in Brazil in 2009. The disclosure, made by the agency in Rio de Janeiro, indicates an increase in other products. The milk has reached 29.112 billion gallons, up 5.6% over the previous year. The main producers were Minas Gerais (27.2%), Rio Grande do Sul (11.7%) and Paraná (11.5%). Among municipalities, the largest producer of milk was Castro (PR). The national pork totaled 38.045 million head in 2009, up 3.3% over 2008, according to research released by the IBGE. According to experts the disclosure document of research since 2003, the herd of these animals shows steady expansion.

Key Words: Carbon credits; swine production;GHG Protocol.

1. Introduction

The Brazilian Institute of Geography and Statistics (IBGE) said growth in the swine herd and milk production in Brazil in 2009. The disclosure, made yesterday at the headquarters of the agency in Rio de Janeiro, indicates an increase in other products. The milk has reached 29.112 billion gallons, up 5.6% over the previous year. The main producers were Minas Gerais (27.2%), Rio Grande do Sul (11.7%) and Paraná (11.5%). Among municipalities, the largest producer of milk was Castro (PR).The national pork totaled 38.045 million head in 2009, up 3.3% over 2008, according to research released by the IBGE show. According to experts note in the disclosure document of research since 2003, the herd of these animals shows steady expansion. Together, the Southern States accounted for 48.5% of the actual Brazilian pig that year. Among municipalities, Uberlândia was the main producer, with 1.8% of the national total, followed by Rio Verde (GO) and Toledo (PR).In 2006, Brazil is the second country in CDM projects.

Among the countries of Latin America, Brazil leads with 58 projects registered Projects of energy generation by landfills, biofuels and other renewable energy, reforestation and hydroelectric repowering (as in the case of CPFL Energia Small Hydroelectric) have already been accredited by the Interministerial Commission on Climate Change to receive carbon credits for having contributed to reduce volumes of gas. The credits are called Certified Emission Reductions (CERs), issued by the CDM Executive Board.In August 2006, the Executive Board had 259 registered CDM projects (Clean Development Mechanism), with 127 of them (49%) of Latin American origin. The largest number of projects was India (80 projects), followed by Brazil with 58 - one more confirmation of the potential of the country in sustainable development actions. The other countries with the largest number of registered CDM projects were Mexico (20), China (15) and Chile (13). In operation, the 259 projects have the potential to reduce 84 million tons of carbon dioxide.

There are currently 2010 registered CDM projects in 2135 in the Executive Council of the UN which annually generate 352 million carbon credits to 74 projects in the registration process. China remains at the forefront of projects registered with 792, followed by India (499) and Brazil (171).China, India, Brazil and Mexico account for 76.5% of CDM projects, generating about 232 million Certified Emission Reductions (CERs) per year. China stands to account for 57.9% of the CERs. Projects under the CDM in Brazil and worldwide. (*) K CERs (Certified Emission Reductions) (*) = k HCR 1000 HCR

Among the different existing methodologies for carrying out GHG inventories, GHG Protocol, developed by the World Resources Institute (WRI) in partnership with the World Business Council for Sustainable Development (WBSCD) is the tool most used worldwide by companies and governments to understand quantify and manage their emissions.

The Brazilian GHG Protocol, developed by FGV, makes an adjustment to the national context. In two years of existence, the program has 23 officially published inventories of GHG emissions, are among the founders Ambev, Petrobras, April, Embraer, Boticario, Wal Mart and Sadia.With new membership, the Brazilian program is to bring together 45 companies.They are among the new members: SESI, Hi, Souza Cruz, 2 GOL Linhas Aereas Inteligentes, Allegro Group, LWART Chemistry, American Stores and Post Office. The Brazilian established three labels to indicate the degree of deepening business inventories and a differential recognition: Inventory Part 2 Bronze, Silver-Inventory Complete Inventory Complete Gold 2, verified by third party. The guide to corporate inventories is available for download at the program:http://www.ghgprotocolbrasil.com.br.

In his reflections at the Cultural CPFL, geographer White American Culture, Ministry of Science and Technology, noted that there are five main criteria for the Interministerial Commission on Climate Change approved projects eligible to receive carbon credits through the CDM. The criteria are:

1. Promote local environmental sustainability; 2. Assist in the development of working conditions and net generation of employment; 3. Promote income distribution; 4. Assist in development and technology training

2. Cooperate with regional integration and linkages with other sectors

In the assessment of White American, CDM can also mean new opportunities for Brazil in terms of promoting energy efficiency, promote renewable energy and cogeneration of energy, among other areas.
Brazil, the so-called carbon market consists mainly trading certified emission reductions (CERs) generated from projects of Clean Development Mechanism developed country in spite of the immense potential to generate CERs from Brazil and to develop a broad national market trading these assets, the truth is that our market is not mature trading.

Some points are raised by market players as impediments to the development of the domestic market. But one of them is recurrent: the legal uncertainty generated by lack of a well-defined regulatory framework in the country. This point directly affects the performance of the lawyer who operates in this area. No specific rules or doctrinal understandings on key issues consolidated, as the legal nature of CERs and the accounting and taxation of his generation and negotiation, the lawyer remains in use "legal entrepreneurship", understood as a pragmatic and creative search for new structures and solutions for their customers, using tools available on the market. If these tools are limited, it is the lawyer entrepreneurs expand them, through creative interpretation, but technically grounded, the existing legal framework, which allows customers to their ultimate goal of doing business, even in an environment of apparent uncertainty.

Specific regulations see a practical example: at the time of structuring the first investment fund in Brazil or CERs should not be considered securities for regulatory purposes. There was also no specific regulation of the Securities Commission (VCM) or the Central Bank of Brazil (BCB) concerning the trading of these assets in Brazil, except with respect to the Central Bank, the forecast for remittance of funds abroad for the purchase of CERs. No specific rules of the Internal Revenue Service of Brazil, had not legal certainty on how the product would be taxed. It was not known therefore whether or not these assets could be traded by mutual funds in the country, and what type of fund would be authorized to attend the Carbon Market - Equity Funds, multimarket, Credit rights, etc.

The CVM, said the CERs as securities, if traded for a national investment fund, enough to consider financial assets. And since financial assets for regulatory purposes, the CERs could be traded by hedge funds, for these funds are no clear rules regarding the taxation of transactions. Regardless of whether or not operating with CERs and their futures. Project Share of power generation by landfills, biofuels and other renewable energy, reforestation and hydroelectric repowering (as in the case of CPFL Energia Small Hydroelectric) have already been accredited by the Interministerial Commission on Climate Change to receive carbon credits for having contributed to the reduction of gas volumes. The credits are called Certified Emission Reductions (CERs), issued by the CDM Executive Board.

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3. The application of the carbon market in the rural sector

In 1824, Joseph Fourier enunciated the principle of so-called greenhouse effect, which is "the ability of gases to retain greater amounts of heat emitted by the sun, similar to the process that occurs in the greenhouse gases by replacing the glass in the atmosphere." With population growth and industrialization, there was a dramatic increase of greenhouse gases, which led to the Kyoto Protocol, negotiated in 1997 and in force since 2005, establishing as problematic for the global warming Greenhouse gases: CO2 Dioxide Carbon; CH4 Methane, Nitrous Oxide N2O, HFCs Hydrofluorocarbons; Perfluorcabonos and PFCs, SF6 Sulfur Hexafluoride. The protocol also initiated an exchange mechanism between the parties in order to promote the reduction of the presence of these gases in the atmosphere. In the early industrial revolution, atmospheric CO2 was around 280ppm; over the decade from 1990 it reached 365ppm and is now at a level of 380ppm. Between 1990 and 2004 there was a 40% growth in emissions from the sectors of Land Use, Land Use Change and Forestry and 27% in emissions from the agricultural sector.

The United Nations Framework Conference on Climate Change UNFCCC (United Nations Framework Convention on Climate Change) has established two types of carbon market in the world: markets volunteers and officials. Operating in the field of voluntary markets are those companies, organizations and institutions that seek to strengthen a highly positive image of conducting its business. For these companies, it is important to combine the fight against increased anthropogenic emissions with projects that have high marketing appeal, which would result in a double gain for companies: they are contributing positively to mitigate the effects of GHG Greenhouse Gases in atmosphere, and still winning the loyalty and adherence to traditional and new customers interested in contributing, with consumption, and to support responsible businesses. In this list of actions we find the exchanges, including the BMF in Brazil, as well as several joint initiatives implemented between companies from countries with commitments to reduce emissions and organizations of all kinds in developing countries (NGOs, private companies, foundations, etc.).

Another type of voluntary market that emerges are companies selling emissions offsets, a sort of environmental tax. This practice has existed for years and gained prominence with the initiative of former U.S. vice president Al Gore, who has been militating in the field of climate change at a time when it decided to offset their travel through the country by investing in projects to reduce carbon . Another great example was the meeting of the Intergovernmental Panel on Climate Change which was offset their emissions by the French government. Besides these several other large events are adopting this practice. There are several airlines that have begun to offer packages to sequester carbon, after finding that the tourism industry turns alarming amounts of carbon into the atmosphere, mainly from air travel.

In the official market, represented by the Kyoto Protocol, governments are included, establishing goals and internal procedures to combat the effects of climate change. Usually governments and companies operating in the official market are already in a situation that requires investments to avoid a negative ad of your business. Prominent exception, so far, the United States. Within the Kyoto Protocol, were created three process options to reduce GHG emissions in the countries, two directed to countries with reduction targets set and agreed: emissions trading (ETU's) and Joint Implementation Projects (JI) and a second focused on the countries that has no reduction target, usually by being in a condition of "developing country": the Clean Development Mechanism CDM.

Within the cycle of rural projects in the CDM, and the perspective of the landowner, two points are crucial: the first is on the obligations in terms of preparing the Project Design Document - PDD and Baseline and Monitoring - LB / M, that must be delivered to the UNFCCC and the second relates to the receipt of Certified Emission Reductions CERs.

To obtain Certified Emission Reductions CERs within the CDM project activities shall employ the methodology of the baseline and monitoring plan approved by the United Nations Framework Units Climate Change - UNFCCC (COP 09, 2006, MCT 2006). These credits can be transferred or sold to investors through emissions trading schemes from the accounts of the different C reservoirs (FAO, 2006). Are considered reservoirs of carbon: the above-ground biomass, below-ground biomass, litter, dead wood and soil organic carbon (UNFCCC, 2006a). Seven have been approved to date methodologies by the Executive Board of the UNFCCC and the first, the AR-AM0001, as was also the registered PDD and received the CERs (25,795).

There is a tendency for countries like Brazil, India and China, take some sort of commitment for the second phase of the Kyoto Protocol (ROCHA, 2006; SOUZA, 2006; SANTOS, 2006), which allows the inclusion in Article 17 protocol, in a more flexible trading of emissions, resulting in greater utilization of the great potential that the rural sector has to contribute in reducing Greenhouse Gas emissions. The rural projects should have increased their demand and it is possible to present projects and forest conservation tillage on the Chicago Climate Exchange CCX. Ederson Augusto Zanetti is a forest engineer, a teacher at the Universität Freiburg di Germany. Visiting Professor at the Harper College Chicago / USA.

Robson Zanetti is a lawyer in Curitiba. Doctorate in Droit Privé Université Panthéon-Sorbonne.Corso Singolo Università degli Studi Privatti Diritto di Milano.

4. Value of Carbon Credit

The CDM (clean development mechanism) projects are developed in accordance with methodologies approved by the Board. Most of the activities of registered projects in Brazil's energy sector (86). The country also has 69 projects to reduce methane gas, divided in swine (41), landfill (26) and fugitive emissions (2). They are located in the Southeast 49% of CDM projects in Brazil, São Paulo being the state with participation more meaningful.
CERs (Certified Emission Reductions) obtained from CDM projects initiated in 2009 to fall throughout the year brought some changes and ended the year with a value of approximately € 11. The value of the CERs is pegged to the U.S. European carbon market (European Union Allowances) and influenced by the energy market (oil, gas and energy). The ETS began the year worth around € 11 and maintained this level until March, in April showed an increase reaching a value of € 14, 15.

About 6 billion euros per year! At least that is the country's potential. Carbon credits are certificates issued by the Executive Board of Clean Development Mechanism (CDM) - a UN body - when there is an emission reduction of six greenhouse gases. That is, if you prove that you are avoiding releasing these gases into the air, earns a certificate, which can be sold to companies that pollute too much. But why did they buy? Because they are obliged under the Kyoto Protocol, an agreement signed by 175 countries to reduce global warming. In fact, by 2012 only 36 of these countries have targets to cut emissions. Are precisely the most industrialized countries, which could have a huge impact on their economy to reduce their emissions "dirty." Therefore, the UN allowed to buy companies in these countries made reductions in other countries, like Brazil, which for now does not have any goal. And as the trading happens in the stock market in places like the Chicago Climate Exchange, founded in 2003, or even the Bovespa in Sao Paulo. The so-called carbon market still takes his first steps, but tends to grow year. In Brazil alone, 61 companies have already managed to earn credit - indeed, the first credit in the world was delivered to a business in Nova Iguaçu-RJ in 2004 - and several have already sold them to companies in rich countries. So far Japan, Netherlands and United Kingdom are the biggest buyers, while India and Brazil are the ones that sell.

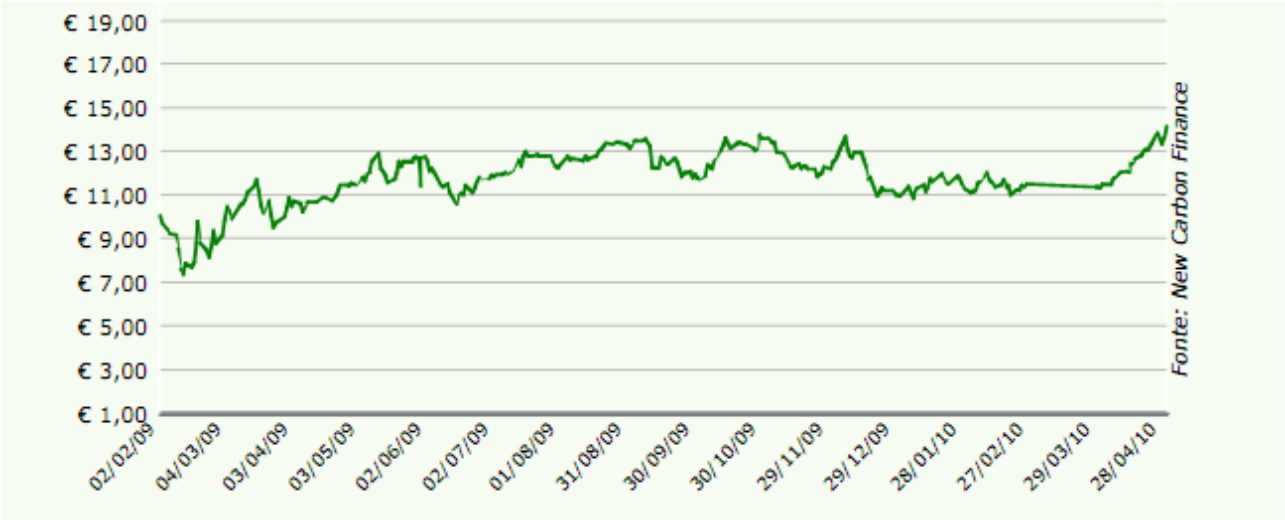


Chart: 1 Carbon credit value
Source: UNFCCC 2 CDM, april of 2010

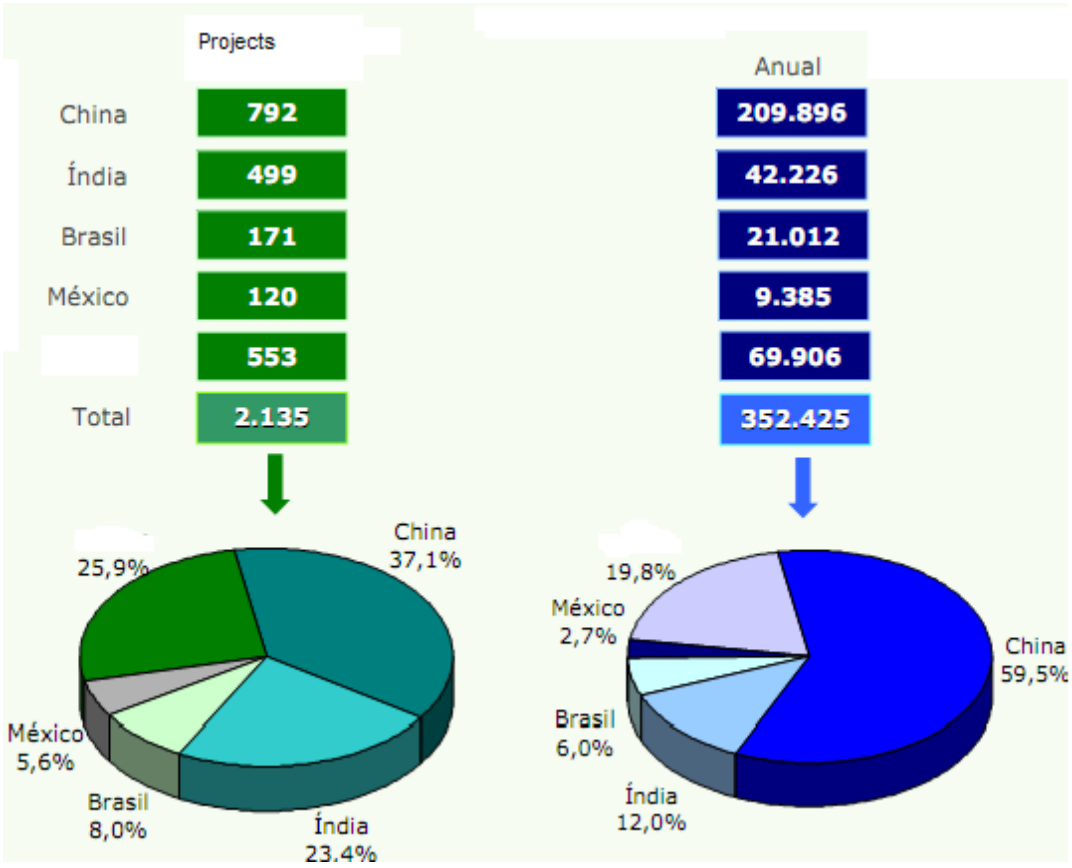


Chart 2 Brazilian projects registered with CDM Executive Board by category
Source: UNFCCC 2 CDM april of 2010

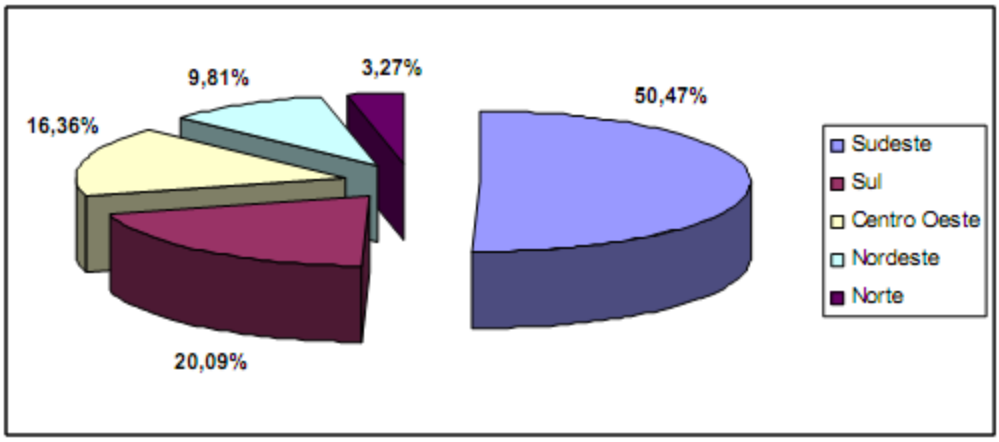


Chart 3 Region Project in Brazil
Source: LUCAS and MELO (2007)

5. Hogs and Carbon Credits

The pig farming can yield credits in the market for carbon sequestration, this possible search environmental preservation and reduction of emission of gases that produce greenhouse gases. The pig is a big part in reducing the methane gas that is produced from organic matter decomposition of pig slurry. A system has been around for thousands of years, the system of digesters, is returning to the participation process which facilitates the formation and capture of methane gas. Biodigestor in the process of the microorganisms in the oxidation matter produce gases, these gases can be used on burning, producing energy. Thus the methane will not be released to the atmosphere. In the 70 and 80 has intensified the use of digesters among pig farmers in Brazil, with government incentives for small farms as an alternative energy production.

Past three decades about the digesters resurfaced as an alternative carbon credits, energy production and use of bio fertilizers. Came the plastic sheeting to facilitate low-cost deployment. The digesters are to remain efficient, requiring constant monitoring, improvement in technical knowledge to ensure that violations of simple mistakes that might discredit the system of the digesters in the past. Each ton of gas that is no longer emitted to the atmosphere can be gained by countries that have reduction targets. Brazil currently ranks among the countries that can benefit from these claims, but should develop good projects with monitoring and use of correct techniques. You can help the environment with the production process clean (CDM). The use of biogas digesters at swine farms allows adding values such as carbon credits improve the process of waste treatment and use biogas to generate thermal and electrical energy, providing a broad vision of environmentally sustainable pig farming Brazil.

To not discredit by the digester technologies and carbon credit, we need to develop good projects, legitimate companies seeking partnerships, transparent partnerships with the swine producer compatible with efficient technologies where the swine producer is aware of the project. The pig manure is part of the production chain, and the digester is more a process within the pig, where efficiency is accounted for and also requires technical knowledge and constant monitoring. (Grzybowski, 2008)

6. Data from the Brazilian swine

World production of about 92 million tons;
Brazil: 3rd largest producer of pork;
Brazil: Production of 2.7 million tons of meat in 2007
Brazil: Owner of 36 million heads of pigs;
Exports with strong growth reaching $ 774 million in 2004;
Generates jobs and income to about 2 million Brazilians

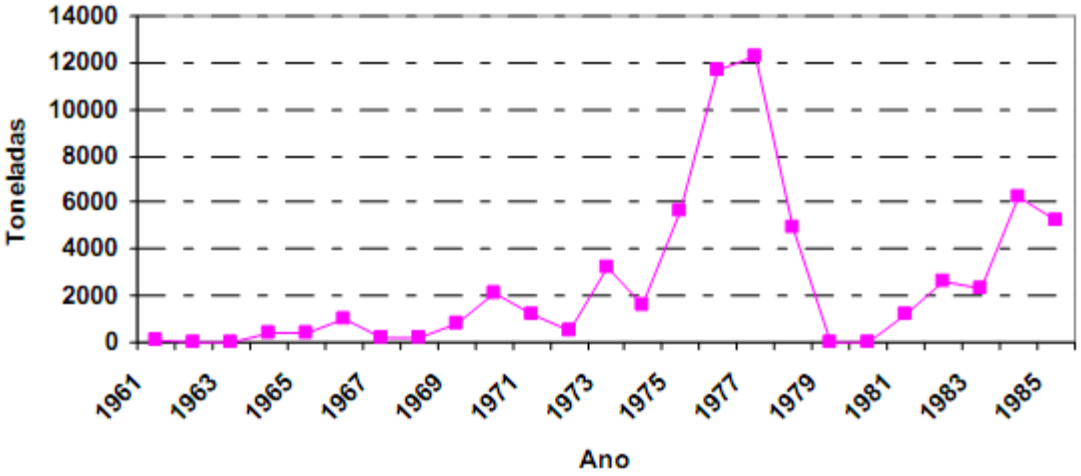


Chart 4. Evolution of Brazilian exports of pork between 1960 - 1985

Source: FAO (FAOSTAT)

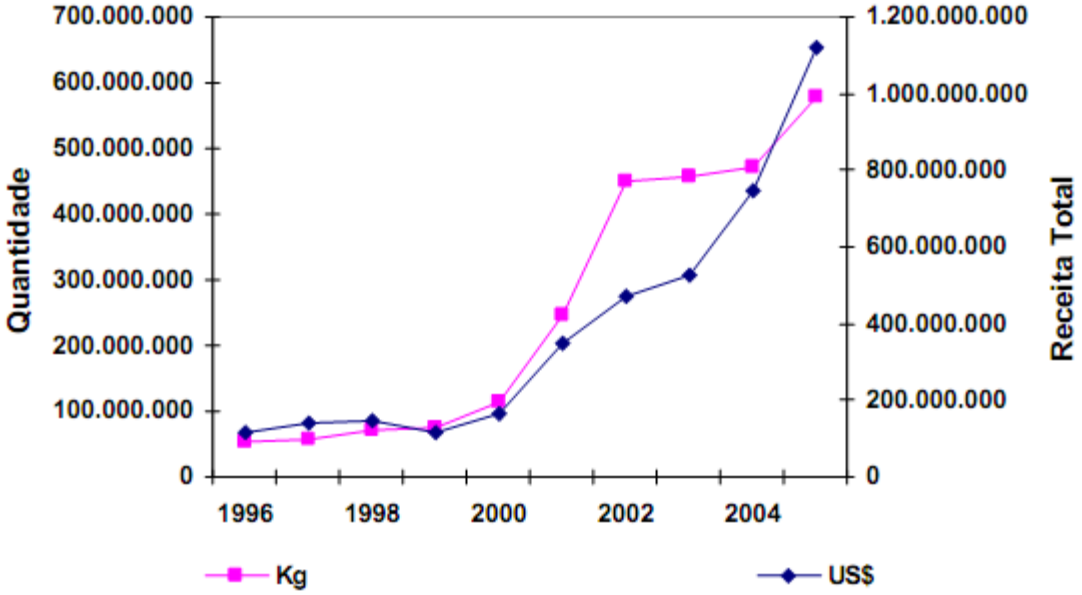
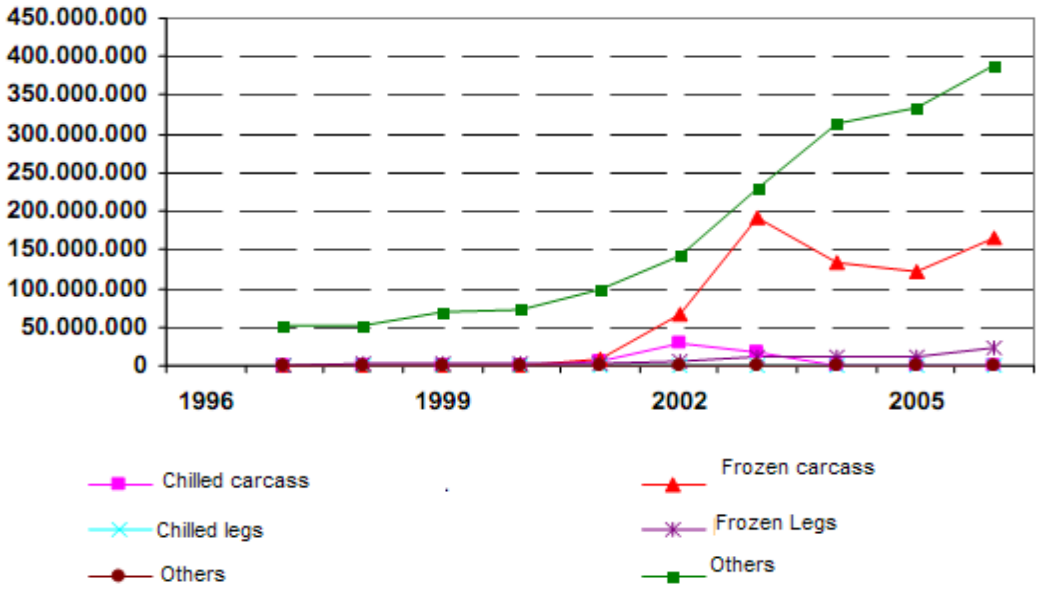


Chart 5. Evolution of Brazilian exports of pork, fresh, chilled and frozen by quantity (kg) and value (U.S. $)
Source: Secex

Today there are basically two types of Carbon Market: the Regulated Market and the Voluntary Carbon Market. The Regulated Market is reflected by the existence of the obligation of achieving the goal of GHG reductions by Annex I countries, in the case of the EU ETS (European Union - European Trade Scheme), governed by rules of the Kyoto Protocol. Other regulated markets: RGGI / USA, Alberta / Canada, New South Wales / Australia. In the EU-ETS, the largest regulated market, countries have emission targets that are deployed for its industrial park, and so the industries will seek to fulfill them or risk the imposition of penalties for noncompliance.

The goals of reduction, when extrapolated, it can be done via purchase of carbon credits generated in developing countries. The CDM, clean development mechanism, is one aspect of this model and makes possible the sale of carbon credits with leading markets, European and Japanese. In the Voluntary Carbon Market (VCM), buyers purchase the carbon credits according to their convenience and need, be it environmental responsibility, competitive position or financial investments, anticipating future opportunities for trading.



There is no system of reduction targets in this market more flexible allowing the trading of carbon credits between companies and between companies and citizens. One is the OTC-over the count, a scheme that enables OTC marketing of the bonds (carbon credits). The country ranks third worldwide as a developer of CDM projects, behind China and India. Revenues generated from sales of carbon credits, representing 17 of the product with the highest value among the Brazilian exports accounting for an annual revenue of $ 476.5 million. It tends to increase. In the wake comes the Voluntary Market volume in evolution. This market is becoming every year in its general context, the more attractive for domestic and foreign investors for several reasons. One is Brazil's potential to generate carbon projects, whether energy or forestry.

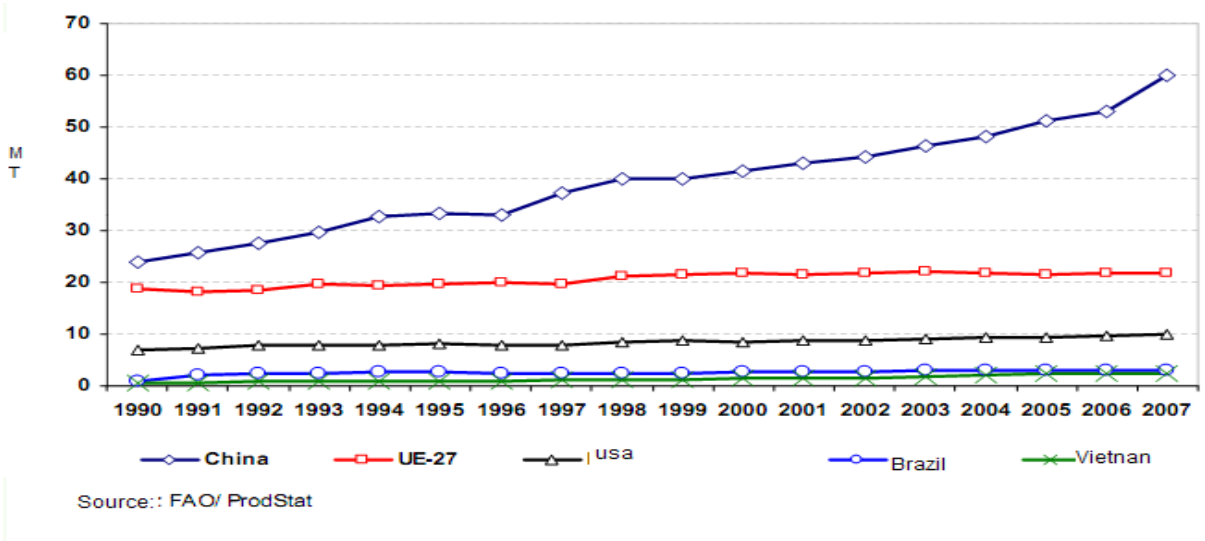


Chart 6. World's leading producers of pork

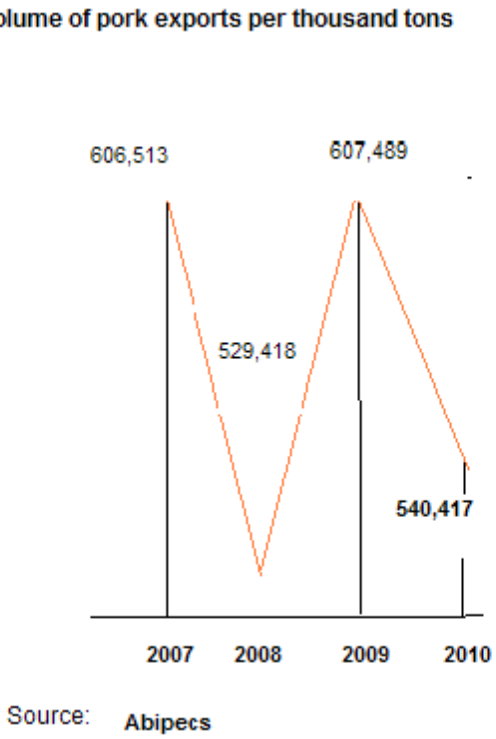


Chart 7.

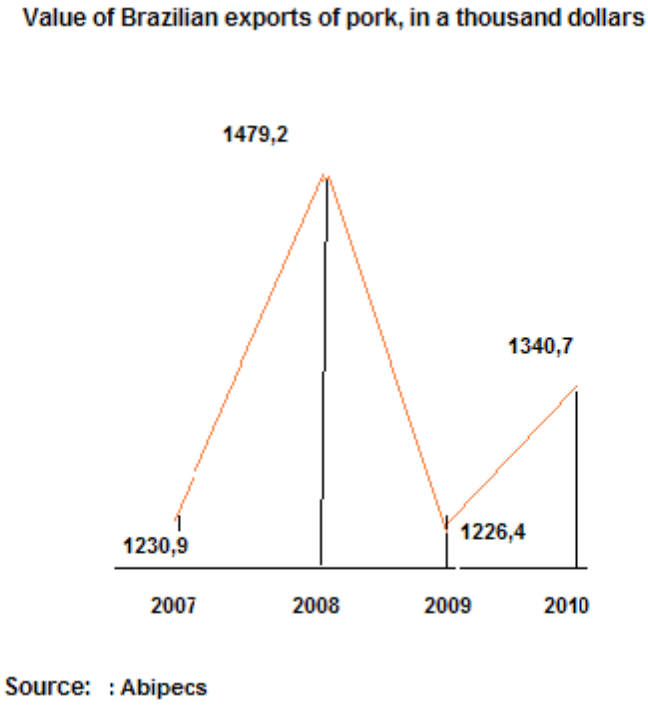


Chart 8.

For the Brazilian Association of ABCS pig breeders, with the appreciation of the real product Brazil lost competitiveness against some competing countries like USA and some European countries; the price of pork has ranged from $ 50 per bushel to $ 70 a bushel (14.69 KG). The volume decreased by 11.04%, increased from 607,500 tons in 2009 to 540,400 tons in 2010.

The supply-demand source, the strong expansion of domestic consumption, the appreciation of the real, rising prices in the domestic and export markets and increased international competition were the main factors that influenced the Brazilian pork exports in 2010. It is important to accelerate the opening of markets in Asia and Europe, including South Korea, Japan and Italy.We must protect itself in the introduction of diseases like foot and mouth disease that would discredit the producers, and cripple the export.

Brazil consumes 13 kg per capita - 4 kg of fresh beef and 9 kg of processed product - while Europe consumes on average 45 kg per capita.

The 61% Brazil embarks on the volume to Russia and Hong Kong. According to the sector, the crisis of the European Union, particularly in Greece, not yet knocked on the door of Brazil. Europe is not a big buyer of pigs in Brazil. With the problems of FMD with the cattle in Japan, some cattle were slaughtered. The expectation is that the state of Santa Catarina is one of the poles to meet the Japanese demand. The pork producers of the State of Santa Catarina expect to export over the next three years more than 40 tons of the product to the United States. The Department of Animal and Plant Health Inspection (APHIS) of the Department of Agriculture (USDA) has issued a measure that cleared the status of the state and added to its list of regions recognized as free of disease. Currently, Russia, which has restricted the import of meat from both pigs and poultry in several countries to try to boost their domestic production, continues to lead off with the volume of imports of pork meat from Brazil, with more than 165 tons, followed by Hong Kong with 62 000, Ukraine (27,000 tons) and Argentina, with 21 tons of the product, according to the Abipecs 2010.

7. Projects Swine

With 21% of the projects are the swine, which innovation occurs in wastewater treatment animals. Treatment left to be done in anaerobic lagoons by exposing methane to the atmosphere, from the introduction of anaerobic digesters. In them the methane is captured by flares and becomes CO2, which is less polluting and energy turns after combustion. The implementation is done in partnership with the company executive and small pig farmers, the farms are co-participants, however, negotiation and drafting of the project lies with the company executive.
Several cooperatives in the south of the country investing in digesters to transform pig manure, and a serious environmental problem in the region in energy. Breaking the digesters cangenerate additional income to farmers with trading of carbon credits. Each cubic meter of swine manure generates one kilowatt of energy. This is the objective of the pilot project developed in Rondon, in western Santa Catarina, by Frimesa (company of the Central Cooperative Agricultural Southwest) and the CooperativeAgro industrial Coopagril that hold fast to produce energy from waste from 12,000 hogs.

In the Basin of Uruguay, Eletrosul in partnership with researchers at University Community Regional Chapecó conducts a study for the installation of digesters 40. The study aims to assess the socio-economic and environmental development of cities for the installation of biogas digesters, which produce electricity from pig manure.

Concern over pollution is growing producing areas of southern Brazil, where the swine herd sum of 16.5 million head, nearly 48% of the national total. Only in Santa Catarina, there are 5.5 million pigs, which produce 47 cubic meters of waste per day. Rich fecal coliform bacteria, heavy metals and methane, half of that crap is thrown in nature, with serious damage to the environment. Calculations by the Company for Research and Rural Extension of Santa Catarina, the volume of pig slurry produced in the state could generate up to 1,300 megawatt hours, enough to power 130,000 homes.

Projects under the CDM swine underwent CIMGC

Of the 235 projects approved by CIMGC, were found at the 38 research projects in the Brazilian branch of swine.

States	Number	Unilateral	Bilateral
São Paulo	1	1	-
Santa Catarina	1	1	-
Minas Gerais	6	5	1
MT/MS/GO/MG	2	2	-
MG/SP	3	3	-
PR/SC	1	1	-
Goiás	3	2	1
PR/SC/RS	3	3	-
Bahia	1	1	-
GO/MG	3	3	-
Rio Grande do Sul	1	1	-
MT/MS/PR/RS/SC	1	1	-
MT/GO	1	1	-
GO/SC	1	1	-
ES/MT/MS/MG	1	1	-
MT/MS/MG/SP	1	1	-
PR/RS	1	1	-
BA/GO/MT/MG/RJ/SP	1	1	-
ES/MG/SP	1	1	-
MT/MG/SP	1	1	-
BA/MG/SP	1	1	-
MT/MS	2	2	-
GO/RS	1	1	-
Total CIMGC	38	36	2

Table 1. Brazil leading producers of pork

Source: NAVARRO and BBRACIALLI (2010)

Overall results of projects under the CDM swine underwent CIMGC

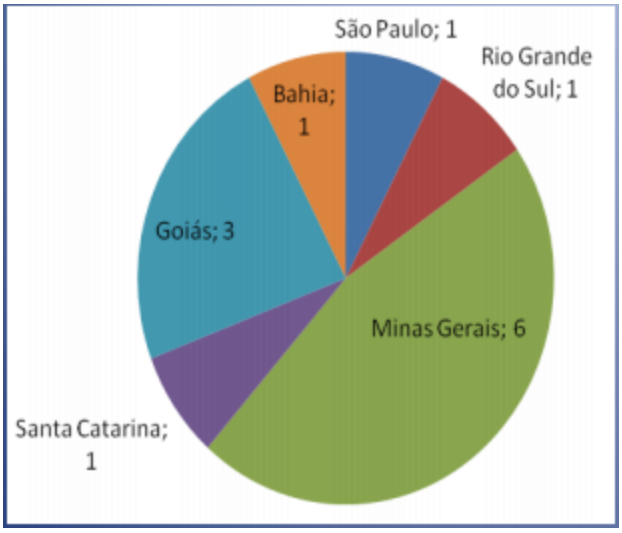


Chart 9. Number of isolated projects submitted by the State CIMGC in the swine industry

Source: NAVARRO and BBRACIALLI (2010)

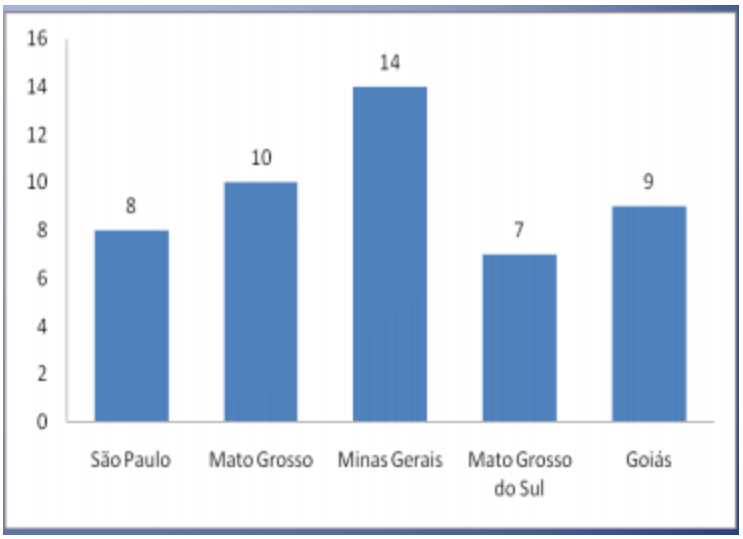


Chart 10. States with the largest number of concurrent projects between States submitted to CIMGC

7. Conclusions

In an effort to bring security and continuity of vision some CDM projects have been traded to delivery to the post-2012 operations promoted by the World Bank funds and investors. Today CDM projects and space lose their attractiveness. See the causes: (I) Future Uncertain: the uncertainty about what will happen after the year 2012, in relationship to a global climate agreement to replace or complement the Kyoto Protocol, has become an important factor for the future of the CDM. (Ii) Time Windows: approaching the year 2012, everything becomes more complex under MDL.O time required to validate, register and issue CERs from a project at the UN usually takes 18 to 24 months and may until discourages investors because it represents an additional risk. (Iii) Cost x Risk: the transaction cost of CDM project could reach 150/200 one thousand U.S. dollars which represents an obstacle for small and medium businesses.

Design the project with own resources while running the risks inherent, has generated withdrawal. (Iv) complexity of the process: the stages of development and approval of the project are complex and undergo evaluations extremely careful and slow. There are cases where projects have to return to the initial step for the full review. In addition, questions concerning the interpretation of criteria, such as additionally, for example, has placed numerous potential projects on the sidelines. (V) Projects approved and registered in China have shown a high degree of suspicion. (Vi) The fact that Japan is buying credits originating in Russia and the region at prices well below average and known from the Hot-Air, has generated further discomfort in the carbon market. Recently the World Bank launched a letter of invitation for such a formula was evaluated with the intention that they understood the reasons that "jam" this modality in Brazil. Now there is an ongoing project in the state of Minas Gerais with 40 sugarcane mills, a German bank and a consulting market.

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