

## GREEN ECONOMY POLICIES IN BRAZIL: CHALLENGES AND OPPORTUNITIES

### *La política de economía verde en Brasil: retos y oportunidades*

Carlos Eduardo FRICKMANN YOUNG<sup>1</sup>

Fecha de recepción: marzo del 2013

Fecha de aceptación y versión final: noviembre del 2013

**RESUMEN:** el artículo presenta las posibilidades y dificultades vinculadas con la implementación de políticas de “economía verde” en Brasil. Al comienzo se analiza el problema de la tendencia actual en las actividades de la “economía marrón”, para demostrar que la transición hacia el desarrollo más sostenible exige un nuevo paradigma competitivo, con el cambio de actitudes, tanto para el sector público como privado. Esto requiere nuevos enfoques para la formulación de políticas económicas en todos los niveles, incluidas las políticas macroeconómicas (monetaria y fiscal), de regulación y financiación. Es necesario también establecer nuevos indicadores para evaluar si de hecho la economía se ha vuelto “verde”. Esto significa que la transición hacia la “economía verde” no será posible sin reformas estructurales, el cambio del papel del Estado brasileño y la legislación.

**PALABRAS CLAVE:** “economía verde”, política económica, desarrollo sostenible, Brasil.

**ABSTRACT:** This paper discusses the possibilities and difficulties in implementing green economy policies in Brazil. It starts with a discussion about the current trend of specialization in “brown” activities, and argues that a transition towards an alternative, more sustainable development pattern requires a new competitive paradigm, with changing attitudes for both the public and private sectors. This requires new approaches for economic policy making at all levels, including macroeconomic (fiscal and monetary), regulatory and financing issues. New metrics are also necessary to evaluate how “green” the economy is. This means that the transition towards a green economy will not take place without structural reforms, changing the role of the Brazilian state and the regulatory framework for this to happen.

**KEYWORDS:** green economy; economic policy, sustainable development, Brazil.

---

<sup>1</sup> Carlos Eduardo FRICKMANN YOUNG – Ph.D., University College London; MSc and Ba, UFRJ. Professor at the Institute of Economics, Federal University of Rio de Janeiro (UFRJ), Senior Researcher at the National Institute of Science and Technology on Public Policies, Strategies and Development (INCT PPED), and coordinator of the Research Group on Environmental Economics and Sustainable Development.

## 1. INTRODUCTION

Brazil is the fifth largest (8.5 million km<sup>2</sup>) and arguably the most biologically diverse country in the world, even though a huge part of its biodiversity remains unknown to scientists. Its economy is diversified, with important agricultural, industrial and service activities. More than 84% of the population live in urban areas (according to the 2010 Demographic Census), but the country has the largest areas of tropical forests on the planet. Therefore, Brazil faces a wide range of environmental problems, mixing problems that are typical of developed countries, associated with high degree of urbanization, waste and industrial pollution, and those of developing countries, such as deforestation and poor sanitation. To solve these problems, financial and human efforts will be required at levels that exceed considerably the resources that are currently destined to sustainable issues in Brazil<sup>2</sup>.

Green economy solutions – understood as those that results in “improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities”<sup>3</sup> – represent a great opportunity for the country to reconcile its development needs with sustainability concerns. Even though the short run results from the UN Conference on Sustainable Development (Rio +20, held in June 2012) were very limited, they show that green economy policies present potential solutions towards sustainability, with more weight for institutions that “act locally”, including governments, companies and civil society organizations. The main principle is that environmental policies should not be seen as costly restrictions imposed by the state bureaucracy or pressure from radical environmentalists, but as opportunities for innovation to reduce production costs in the medium and long term (for example, avoiding waste and inefficiencies in the consumption of energy and raw materials) or ways to conquer new markets by improving the image of the company and its products to consumers. That is, costs can be reversed on benefits: what would be

---

<sup>2</sup> Young, C. E. F.; Rocha, E. R. P.; Bakker, L.; Santoro, A. F. (2012), “How Green Is My Budget? Public Environmental Expenditures in Brazil (2002-2010)”, in: *XII Biennial Conference of the International Society for Ecological Economics* (ISEE).

<sup>3</sup> UNEP (2010), *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication*, UNEP, Nairobi, p. 631.

a problem (to meet environmental standards) becomes an advantage, because of the potential gains in efficiency and competitiveness, simultaneously improving the quality of life of the population. Reversing the myth, it can be said that economic growth and environmental quality are complementary in a virtuous cycle of sustainable development.

But this “win-win” will not materialize spontaneously, especially in the Brazilian case. It is necessary that the private and the public sector build up a relationship of synergy, so that the regulatory framework encourages proactive behavior by firms and, in turn, companies become more responsible on social and environmental grounds. It is also necessary to guarantee stable sources of financing under conditions which prevent the myopic perception that privileges short-term results at the expense of future problems. In other words, beyond the conventional environmental regulation, fiscal and financial policies are also crucial to achieve the goals of sustainability.

Indeed, as discussed in this paper, the current development path in Brazil points out to the other direction, with growing specialization in economic activities that present high potential impacts for the environment. The objective of this paper is to discuss the possibilities for green economy policies to revert this trend, discussing challenges and opportunities for the public and private sectors.

## 2. THE CURRENT SITUATION

In the last decades, the Brazilian economy has experienced a reversal from a condition of low rates of growth and very high inflation into a successful example of emerging market. Nevertheless, this boom in economic activity and investment has been accompanied by a structural change in its GDP and exports composition, with an increasing specialization in raw materials exports or products that are intensive in natural resources and energy. Not surprisingly, the best performance activities are associated with higher pollution potential<sup>4</sup>, and there is an increasing share of carbon-intensive activities in the Brazilian export structure<sup>5</sup>.

---

<sup>4</sup> Young, C. E. F. (2011), “Growth Potential of the Green Economy in Brazil”, *Environmental Policy*, Vol. 8, pp. 88-97.

<sup>5</sup> Gramkow, C. L. (2011), *Da restrição externa às emissões de gases do efeito estufa: uma análise da insustentabilidade econômica e ambiental do atual modelo econômico brasileiro*.

The problems associated with the specialization in such commodities are not restricted to the environmental dimension. From a social standpoint, an economic model based on “mining” natural resources reinforces exclusion, since the economic benefits tend to be concentrated within a relatively small group (these activities are characterized as low-intensive in labor demand), while environmental degradation has worse effects to the poor<sup>6</sup>. One important example is the expansion of the agricultural area through deforestation: benefits go to those located at the “top-up” of the agribusiness chain, but at the cost of serious social imbalances, including the displacement of indigenous and other traditional communities by the expansion of commercial large-scale agriculture, increasing violence in these areas due to land property conflicts, and health problems caused by infectious diseases brought by migration and air pollution caused by burning forests in the land clearing process. The interference on the provision of environmental services has more impacts on the poor, too. In the countryside, traditional communities have been deprived of the natural resource base which their livelihood depends on.

Similar problems to the well-being of poor families are also observed in mining and export-oriented industrial centers. These activities expand without proper investment in housing infrastructure and sanitation conditions, and the poor tend to live in a periphery with increasing environmental degradation.

There are also losses in the economic dimension due to the increasing specialization in “brown” activities. The expansive cycle of growth in commodity prices conceals an old discussion about the long-term trends of the terms of trade: is that because commodities have shown an upward trend since the 1990s, in the long run they will always remain growing in relation to technology-intensive products?

But the most evident problem is the change in consumer behavior, especially in developed countries, where the ecological footprint of goods and services is considered in the purchase decision. The growing interest in environmental certification shows that this is not temporary, but a firm trend that extends to a growing body of products and sectors, including the domestic market,

---

MSc Thesis, Institute of Economics, Federal University of Rio de Janeiro.

<sup>6</sup> Young, C. E. F.; Lustosa, M. C. J. (2001), “Meio ambiente e competitividade da indústria brasileira, *Revista de Economia Contemporânea* (printed), Vol. 5, No. especial, Rio de Janeiro, pp. 231-259; Young, C. E. F.; Lustosa, M. C. J. (2003), “A questão ambiental no esquema centro-periferia”, *Economia* (ANPEC Journal), Vol. 4, No. 2, pp. 201-221.

and it is almost a requirement in some export destinations<sup>7</sup>. The demand for environmental certification is no longer restricted to final consumers. Businesses and governments are incorporating sustainability criteria into their purchasing policies. Large corporations are being pressured to present their results of environmental responsibility not only for their own activities but also throughout their entire supply chain. On the other hand, public procurement policies are increasingly cited as a tool for development and dissemination of green technologies and products, which certainly affects the dynamics of the supply chain.

In summary, since environmental issues are increasingly examined along the production chain, there is a considerable risk to specialize in “brown” activities where competitiveness is based on an unsustainable relationship with the environment, even if the commitments to sustainability are still restricted to voluntary agreements and limited initiatives of governments, business leaders and civil society organizations. Hence, the Green Economy requires a new competitive paradigm, and businesses have a key role in the transition to this new model.

### 3. INNOVATION: THE KEY TO A GREEN ECONOMY

The key for this transition is innovation, understood in its broadest sense, as argued by Schumpeter<sup>8</sup>: new products, new production methods, new markets, new sources of raw materials providers and other inputs, and new market structures. Empirical studies for the Brazilian industry<sup>9</sup> show that there is a statistically significant relationship between companies that present higher en-

---

<sup>7</sup> Young, C. E. F. (2012), *Setor financeiro: Suporte fundamental de transição para a Economia Verde*, FBDS, Rio de Janeiro.

<sup>8</sup> Schumpeter, Joseph A. (1942/50), *Capitalism, Socialism, and Democracy*, 3d ed., Harper and Brothers, New York.

<sup>9</sup> Lustosa, M. C. J. (2002), *Meio ambiente, inovação e competitividade na indústria brasileira: a cadeia produtiva do petróleo*, Ph.D. Thesis, Institute of Economics, Federal University of Rio de Janeiro; Young, C. E. F. (2011), “Growth Potential of the Green Economy in Brazil”, op. cit.; Podcameni, M. G. V. B. (2007), *Meio ambiente, inovação e competitividade: uma análise da indústria de transformação brasileira com ênfase no setor de combustível*, MSc Thesis, Institute of Economics, Federal University of Rio de Janeiro; Queiroz, J. M. (2011), *Determinantes da inovação ambiental: uma análise das estratégias das firmas da indústria de transformação brasileira*, MSc Thesis, Institute of Economics, Federal University of Rio de Janeiro.

vironmental concerns and those that are most likely to adopt or generate innovations. That is, the innovator is also more likely to become “green”, creating an important synergy between innovation and environmental policies.

The reciprocal by the market is perceived in the financial evaluation of companies which have outstanding behavior in the areas of social and environmental responsibility. Companies with greater social concern perform better, with higher growth in their stock prices and ensuring higher returns to their shareholders<sup>10</sup>. Thus, the attraction of new investments is facilitated, and the company ends up getting financial benefits and longer-term growth. The environmental performance of the company also ensures the public recognition of corporate leadership, facilitating their work with various interest groups, such as legislators, public administrators, NGOs (especially in the environmental area) and financial agents, in addition to the positive impact on consumers. There are also benefits in productivity because employees themselves come to identify more with the company when the firm's objective is no longer exclusively profit, incorporating social issues into their agendas.

The funding of “sustainable enterprises” should also be facilitated. Companies that care about the future tend to be more responsible and therefore present less risk. Best corporate governance practices reduce the risk potential for investors and facilitate access to new sources of funding. The diffusion of best corporate governance practices anticipates future changes in legislation – therefore, the cost of borrowing and credit insurance premiums should be lower than for the competitors that do not assimilate these new practices.

Another important feature is that the “sustainable competitiveness” does not depend on the nature of the industry, but on its capacity to generate and absorb new technologies. Until the 1980s, it was believed that the manufacturing industry was naturally “more advanced” than the primary sector. However, what we can see today is that the competitiveness opportunity occurs due to the innovative capacity of the company, regardless of the area they serve. The development of organic products, for example, can be highly complex, and product differentiation can be a valuable asset. The requirement of environmental certification commodity markets will occur regardless of what is decided in the rounds

---

<sup>10</sup> Eccles, R. G.; Ioannis, I.; Serafeim, G. (2012), “The Impact of a Corporate Culture of Sustainability on Corporate Behavior and Performance”, *Harvard Business School Working Paper* 12-035, available at <http://www.hbs.edu/research/pdf/12-035.pdf>.

of international trade regulation, because this movement is not led by governments but by consumers themselves.

This transition to a Green Economy requires an active participation of the public sector on different levels of regulation: 1. macroeconomic (fiscal and monetary), 2. regulatory / industry, 3. financing. In the Brazilian case, changes on all of these levels are necessary in order to promote green economy policies in a sustainable way, as discussed below.

#### 4. MACROECONOMIC POLICIES

Macroeconomic policies have effects that may contribute or harm an effective environmental management. Firstly, one should remember that investment decisions are extremely sensitive to monetary policy. Rising interest rates shorten the time horizon of decisions, favoring quick return investments to the detriment of those whose return is given in the long run. That is, as the opportunity cost of capital is higher in countries with financial difficulties, it creates a bias in favor of decisions that result in gains in the shortest time possible, because the costs and benefits of long-term investments are less important in spreadsheets projects with very high discount rates. It is the antithesis of sustainable development, which requires that actions in the short term create liabilities to be settled only by future generations.

Therefore, the recent reduction in interest rates in Brazil creates a unique opportunity to lengthen the time relevant to the analysis of investments as a result of lower interest rates. For example, sustainable forestry practices have always suffered with the problem of the long period required for the extraction cycle in order to allow natural forest recovery. This “immediacy” for quick profits explains in large part why certain business options with solid, but slow, earnings potential over time, such as sustainable logging in native forests, are not attractive to investors. Thus, between the long-term yield that a forest can provide, and immediate feedback generated by grazing or cultivation, the land use decision is biased towards the option to “clear the land” (i.e., to remove the forest) and convert it in more agricultural space. As a result, the deforestation process continues, wasting the opportunity to sustainably produce timber and other forest products, and eliminating vital environmental services.

Therefore, emissions of carbon dioxide (CO<sub>2</sub>) generated by fires during the “cleaning” of the forest land were, in 2005, more than three times the sum of all emissions from energy, transport and industry. To illustrate this point, given the extremely low productivity of Brazilian livestock, the emissions caused by the conversion of 1.5 hectare of forest into pasture land (the average area of pasture required for one cow in the Amazon) are higher than the annual emissions generated by more than 150 cars, an incredible amount of pollution to generate very little added value.

The recent reduction in Brazilian interest rates provides a positive background for a change in this predatory pattern of using natural resources since it reduces the bias against activities characterized by long term economic returns, such as sustainable forestry and fisheries management, and non-conventional sources of power (wind, photovoltaic, etc.). It also supports investment in innovation – the ability to generate and absorb new technologies is fundamental to achieve “sustainable competitiveness”. Policies that foster innovation are also environmental policies, and those who achieve the best solutions for dealing with environmental demands imposed by regulation or voluntarily by the buyers will have new opportunities to gain competitiveness.

Fiscal issues are also relevant. In this sense, the “Green Economy” should guide the efforts of public spending to revive the economy with sustainability conditions.

Unfortunately, in the Brazilian case, there is a clear disproportion between the ever expanding budget for the infrastructure sector and the relative stagnation of spending on environmental control and preservation. As a consequence, the environmental pressure caused by the expansion of large infrastructure projects is not followed by the required investment in the control of these impacts. It is particularly worrying that spending on infrastructure expansion in transport has increased four times (road building is the crucial impulse to deforestation), without significant changes in spending on environmental control<sup>11</sup>.

The implementation of economic instruments for environmental management (taxation, tradable certificates), discussed below, can help to minimize the problem. But the use of economic instruments in Brazil is very poor on the restraining damaging activities, with much more emphasis on positive incentives

---

<sup>11</sup> Young, C. E. F. (2012), *Setor financeiro...*, op. cit.



that are limited to specific sectors or circumstances<sup>12</sup>. It is necessary to establish more effective “polluter-pays” mechanisms to penalize externalities, in spite of the unpopularity of these measures. The best solution is to replace conventional taxes by new schemes that consider the ecological footprint of the activity in their calculation, synchronizing fiscal policy and environmental regulation that lead to the Green Economy.

## 5. ENVIRONMENTAL REGULATION

The fundamental principle of environmental regulation in a green economy is the “internalization of externalities” through the adoption of economic instruments for environmental management. Popularly known by the polluter (user) pays in producing sustainable products based on natural resources must incorporate environmental externalities, negative and positive, in product pricing. This requires the calculation of economic externalities, making these variables relevant to decision making and resource allocation.

The resistance, however, is still very large and, in times of economic crisis, it is often argued that pricing the externalities reduces the competitiveness of exports, worsening external circumstances and hurting economic growth and employment. This argument is not correct because the costs of pollution and other externalities are concrete and reduce the systemic productivity and competitiveness of the economy (work time lost due to illness or congestion, costs of treatment and hospitalization, etc.). However, there is strong resistance from the polluting sectors to accept charges against externalities, and political lobbies operate to protect their specific interests, even if contrary to the greater, (but diffuse) collective interest in a more balanced environment. A recent example was the agriculture pressure to reduce environmental standards in the Brazilian Forestry Code, with the argument that conserving forests would damage the competitiveness of the country’s agribusiness.

The current structure of environmental management in the country remains based on “command and control” instruments. Even though the Brazilian environmental protection system can be considered as relatively advanced if

---

<sup>12</sup> Young, C. E. F. (2005), “Financial Mechanisms for Conservation in Brazil”, *Conservation Biology*, Vol. 19, pp. 756-761.

compared to other Latin American countries, important issues remain unresolved, and the indicators of environmental quality in Brazil are still well below satisfactory.

This is due, on the one hand, to the lack of investment in infrastructure and urban services (sanitation, public transportation, garbage collection, public housing), the persistence of large pockets of poverty (proliferation of slums and other degraded environments, as well as advancing agricultural frontier in deforested areas) and consumption patterns that result in worsening of environmental conditions (the fast growing fleet of private cars is the most glaring example). Environmental aspects are still poorly integrated in the formulation of public policies, and the problem is compounded by the lack of information about the extent and significance of the problems resulting from environmental degradation. But the dynamics of erratic economic growth, rapid urbanization and the crisis of the state can be identified as part of the question, with the management model adopted also proved inadequate to address several problems.

Therefore, the actual environmental managers recognize the need to seek more efficient ways of control. There is growing consensus on the need to ensure greater flexibility to the economic agents, and seek new sources of funding that are directly related to the causes of environmental problems.

There is already a series of experiments in Brazil considering the “internalization of externalities” and payment for ecosystem services, incorporating economic instruments based on the principle of “polluter / user pays”, in which the use of natural resources becomes charged accordingly to legal standards<sup>13</sup>. The great advantage of these proposals is more flexibility, in order to minimize the social costs of adjustment to environmental goals.

Internationally, carbon markets are the most quoted example of economic instruments for environmental management. However, the Clean Development Mechanism (CDM) has been very limited in Brazil, especially in the energy sector, since most of the electricity is already supplied by hydropower and the country is the world’s pioneer on biofuels, introduced before the Kyoto Protocol (so, they don’t present the additionality required for the validation of carbon credits).

The proposal for credits from the Reductions of Emissions from Deforestation and Forest Degradation (REDD) creates a new window for carbon mar-

---

<sup>13</sup> Ibid.

kets in Brazil, but resources will be available only after the new rules for the successor of the Kyoto Protocol are established.

“Green” criteria in public procurement policies are a tool to enhance sustainability in the purchase of goods and services. These initiatives seek to encourage contracts and bidding documents for procurement that emphasize sustainability criteria, including guides to sustainable procurement. However, public procurement practices in Brazil are still dominated by preference rules for products with lower price – it is quite common to hear criticism of the Law 8666/93, which regulates the process of public procurement in the federal administration, in a way that it is biased against products with higher quality but higher price.

## 6. FINANCING

Financial institutions have the capacity to influence decision-making in the economy through the policies adopted in credit allocation, including socially responsible economic practices. Typical activities in the financial sector are not directly related to the use or processing of raw materials and resources linked to biodiversity and entailed ecosystem services. However, financial institutions represent an important link in the production chain, since they are responsible for funding a wide variety of sectors and activities that are directly responsible for the use of natural resources. Financial institutions are increasingly seeking to associate their brands with sustainability in their lending processes, in terms of the environmental impacts of the business. This can occur voluntarily or be induced by public policies and laws that restrict lending to enterprises that do not meet environmental legislation.

That change came in part because the financial institutions have become a “moral co-responsible” for the impacts of the businesses they support since, in modern management, a company cannot be considered as a fiefdom isolated from community life. The company and its management, including its funders should consider the impact of company activities at the community and strive to avoid harmful changes to the members of the community and environment in which they are inserted.

The incorporation of the principles of environmental responsibility is beneficial to lenders because it considerably reduces future risks, since envi-

ronmental and social demands will increasingly affect the success of a business. Current action should avoid liabilities that may derail the project in the future, even if in the present such socio-environmental problems are not yet routinely considered in decision making. For example, companies can now be processed by the damage caused by the accumulation of toxic waste, even if such waste originated in a time when there was little effectiveness in the implementation of environmental standards.

The concern of financial institutions with environmental themes occurred initially as a way to avoid legal liability for future damage produced by goods that were received as collateral for loans. Later, the concern was extended to the “chain of custody” since the liability of producers of final goods was also extended to the supply chain. Finally, the issue of corporate image has become increasingly regarded as an asset to be preserved, especially when campaigns denouncing the pernicious effects of the projects became more frequent.

The requirement of sustainability criteria in financing operations has become increasingly frequent in order to avoid losses on transactions that may be blocked in the future for environmental reasons. Internationally, the most prominent initiative is the “Equator Principles”<sup>14</sup>, which establish minimum criteria for granting credit, ensuring that the funded projects are socially and environmentally responsible. The Equator Principles establish a code of conduct for voluntary financial institutions to assume their share of responsibility on the impact and damage caused to the environment by financed operations. In practice, this means that developing credit assessment criteria became more selective in terms of externalities associated with the projects to be financed, especially in the provision of funding for large projects<sup>15</sup>. An example is the safeguards system suggested by the International Finance Corporation (IFC) in the evaluation of project financing. The implementation of these safeguards is the responsibility of the banks, which must invest in the training of loan officers to meet these requirements. If the borrower fails to comply with one of the social and environmental clauses, the lender will work with the borrower to find solutions.

In Brazil, public financial institutions have a predominant role since most of the funding to investment is concentrated in public agencies. Indeed, the

---

<sup>14</sup> Equator Principles, <http://www.equator-principles.com>.

<sup>15</sup> Young, C. E. F. (2012), *Financial Sector: Basic Support for Transition to Green Economy*, op. cit.

Federal Government launched the “Green Protocol” in 1995 with the objective of encouraging sustainability conditions in the credit operations of its financial institutions, including the National Bank for Economic and Social Development (BNDES) and the Bank of Brazil (BB). The idea was to incorporate environmental principles into all levels of these institutions, going beyond the minimum legal requirements, introducing environmental criteria for lending, and creating specific credit lines with more favorable conditions for projects that would result in environmental gains. However, as a whole, there was no great effectiveness in the implementation of the Green Protocol. Different institutions adopted heterogeneous criteria concerning environmental issues, but their action has been mostly restricted to demand the enforcement of existing environmental legislation in their routine operations.

Another difficulty to go beyond legal requirements is the need for complementary actions, such as customer information, parameter setting, establishing baselines, qualification and hiring personnel. This would require partnerships between banks, regulatory agencies and environmental NGOs, because the fund managers do not have the technical capacity to make this assessment. But these partnerships are yet to be established.

A bottleneck in the process is the fragility of the public environmental management system in Brazil. By conditioning the approval of the credit for obtaining the license, the project is “tied up” with the environmental agencies, which often lack human, financial and technical resources for the rapid dispatch of licenses. As a result, there may be significant delays in project implementation, which contributes little to the spread of the Green Protocol as an output that reconciles economic growth and preservation.

## 7. GREEN ECONOMY INDICATORS

New metrics should be established to evaluate how “green” is an economy. Fundamental aspects such as employment generation, inflation control and competitiveness remain important, but new ways of measuring economic activity should be established at both the macro and micro level.

On the macro level, the establishment of a system of national accounts that effectively incorporate externalities related to natural resource use depends much more on political than technical issues. There are already established

methodologies and techniques to measure the environmental impacts associated with the aggregate economic activities responsible for their generation. The apathy of statistical agencies to institutionally advance on these issue reveals, once again, the lack of political interest on the part of national governments to present the environmental outcome of their actions. In Brazil, although studies have already been carried out since the early 1990s<sup>16</sup>, the elaboration of environmental accounting to measure natural capital associated with the national accounts system remains at the design level.

In the private sphere, the increasing interest of the ecological footprint of companies, including the need of assessing the risk of future problems caused by environmental liabilities, led to the creation of different levels of financial performance for companies with environmental responsibility. The most famous of these indices is the Dow Jones Sustainability Index (DJSI) (Dow Jones Sustainability Index), established in 1999, which helped demonstrate that companies most committed to social and environmental issues had an above average performance. The idea eventually spread into other financial markets and, in the Brazilian case, the Corporate Sustainability Index (ISE) was established in 2005 by the São Paulo Stock Exchange (Bovespa), with support from the International Finance Corporation (IFC). To be accepted in the Index, a company must be evaluated not only according to its economic efficiency and corporate governance, but also according to its environmental performance and contribution to social justice, reflecting a recognized commitment to social responsibility and corporate sustainability.

Finally, the company's competitive strategy has incorporated the need to identify with the principles of green economy increasingly demanded by society. In this case, objective criteria of separation should be established, and there is still plenty of room for progress in building business sustainability indicators that are reliable and practical. The latest advances have occurred in the assessment of environmental impacts for businesses. Leaving the realm of environmental impact studies, companies have increasingly been involved with environmental balances and other forms of incorporation of environmental liabilities in their accounts. However, these actions are still restricted to a relatively small

---

<sup>16</sup> For example, Young, C. E. F.; Seroa da Motta, R. (1995), "Measuring Sustainable Income from Mineral Extraction in Brazil", *Resources Policy*, Vol. 21, pp. 113-125.

set of leading companies, and there is a lack of homogenization of standards of environmental accounting.

There is an international effort to diffuse and homogenize these new accounting practices. But the effective dissemination on a large scale will only occur when the national bodies responsible for the regulation of balance sheets and other accounting business become mandatory consideration of these new forms of natural capital in the routine practices of companies.

## 8. CONCLUSIONS AND RECOMMENDATIONS

The process of redistribution of income in Brazil has brought positive impacts both for employment generation and for improving the quality of life. But it has not been enough: deeper changes are needed so that the momentum is maintained in the long term. The transition to a Green Economy creates a unique opportunity to redefine the direction of Brazilian development. Combined with advances in education, housing and citizenship, in general, the investment required for this transformation can simultaneously increase economic activity in the short term (for example, the need for reordering of large cities) and bring more “authentic” competitiveness in productive sectors, through innovation and professional qualification.

But this requires a redirection of economic efforts, which are currently focused on the model of exporting raw materials or commodities that largely have their competitiveness based on spurious factors, with unsustainable use of natural resources and no significant effects for social inclusion. In other words, the desired transition to a Green Economy will not take place without structural reforms, changing the role of the Brazilian state and the regulatory framework for this to happen.

This includes:

- The internalization of externalities through the implementation of the polluter-pays principle;
- The re-orientation of procurement policies, with the adoption of sustainability criteria and emphasis on socio-environmental certification; and

- The re-orientation of the principles of macroeconomic policy making, stressing the quality of growth rather than the quantity of growth, including principles for “green” taxation and finance.

Only this way Brazil can move towards an economy where the aggregate value will occur by increasing efficiency and innovation, instead of providing the lowest cost of agriculture or industry fostered by public policy misguided investments in large infrastructure projects that care little about the social costs of long-term consequences.

Companies should also seek to insert this new competitive paradigm through a proactive behavior that goes beyond simply meeting legal obligations. Some Brazilian corporations already have been successful, and their competitiveness is strongly based on “modern” image achieved through investment in environmental responsibility, especially in the areas of consumer goods. This issue is already incorporated into the discourse of most Brazilian companies, especially in large corporations. However, there is a big gap from discourse to practical actions widely adopted in the firm.

To stimulate this transition, we need to develop new frameworks for accounting and reporting sustainability criteria, with transparency, comparability and understanding the environmental consequences of corporate action. More important than simply presenting the image of the corporation, this information should be used to guide the decision making of investors, suppliers and consumers.

## BIBLIOGRAPHY

- Eccles, R. G.; Ioannis, I.; Serafeim, G. (2012), “The Impact of a Corporate Culture of Sustainability on Corporate Behavior and Performance”, *Harvard Business School Working Paper* 12-035, available at <http://www.hbs.edu/research/pdf/12-035.pdf>.
- Gramkow, C. L. (2011), *Da restrição externa às emissões de gases do efeito estufa: uma análise da insustentabilidade econômica e ambiental do atual modelo econômico brasileiro*. MSc Thesis, Institute of Economics, Federal University of Rio de Janeiro.
- Lustosa, M. C. J. (2002), *Meio ambiente, inovação e competitividade na indústria brasileira: a cadeia produtiva do petróleo*. Ph.D. Thesis, Institute of Economics, Federal University of Rio de Janeiro.



- Podcameni, M. G. V. B. (2007), *Meio ambiente, inovação e competitividade: uma análise da indústria de transformação brasileira com ênfase no setor de combustível*, MSc Thesis, Institute of Economics, Federal University of Rio de Janeiro.
- Queiroz, J. M. (2011), *Determinantes da inovação ambiental: uma análise das estratégias das firmas da indústria de transformação brasileira*, MSc Thesis, Institute of Economics, Federal University of Rio de Janeiro.
- Schumpeter, Joseph A. (1942/50), *Capitalism, Socialism, and Democracy*. 3d ed., Harper and Brothers, New York.
- UNEP (2010), *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication*, UNEP, Nairobi.
- Young, C. E. F. (2005), "Financial Mechanisms for Conservation in Brazil", *Conservation Biology*, Vol. 19, pp. 756-761.
- Young, C. E. F. (2011), "Growth Potential of the Green Economy in Brazil", *Environmental Policy*, Vol. 8, pp. 88-97.
- Young, C. E. F. (2012), *Setor financeiro: Suporte fundamental de transição para a Economia Verde*, FBDS, Rio de Janeiro.
- Young, C. E. F.; Rocha, E. R. P.; Bakker, L.; Santoro, A. F. (2012), "How Green Is My Budget? Public Environmental Expenditures in Brazil (2002-2010)", in: *XII Biennial Conference of the International Society for Ecological Economics* (ISEE).
- Young, C. E. F.; Lustosa, M. C. J. (2001), "Meio ambiente e competitividade da indústria brasileira. Revista de Economia Contemporânea (printed), Vol. 5, No. especial, Rio de Janeiro, pp. 231-259.
- Young, C. E. F.; Lustosa, M. C. J. (2003), "A questão ambiental no esquema centro-periferia", *Economia* (ANPEC Journal), Vol. 4, No. 2, pp. 201-221.
- Young, C. E. F.; Seroa da Motta, R. (1995), "Measuring Sustainable Income from Mineral Extraction in Brazil", *Resources Policy*, Vol. 21, pp. 113-125.

