

POVERTY AND SOCIOECONOMICAL ACTUAL CONDITIONS: RESIDUAL COLLECTION IN BRAZIL

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ABSTRACT

In Brazil, a southamerican developing country, the effects of globalization and neoliberal policies stressed social polarization in two poles: the concentration of wealth in a continuous and lesser percentage of the population and the increasing of poverty in a wider portion of the country's inhabitants. As a result of canceling less specialized jobs, less skilled workers suffered the worst consequences. On the other side, in the last fifteen years, the growing environmental consciousness, together with natural resource's preservation, have prompted the implementation of several practical solutions to solve the issue of unemployment. This, in compliance with the recovering of material coming from municipal solid waste helps to recover environmental quality. We refer to the selective collection of urban solid waste and, even more recently, to the collection of already used food oils. In fact, Brazil globally leads the collection and recycling of aluminum cans, recovering 96,2% of them. The country also recycles 47% of the packing (bottles) PET; 46,9% of paper and cardboard; 45% of glass; 29% of steel cans and 20% of other plastics, materials that in other circumstances would be thrown into the trashcan. Cooperatives and other association entities are being structured with the help of public organisms and NGOs. They are meant to organize collectors who make a poor living out the materials they get in the streets. Besides improving their financial level quality of life and social insertion, these organizations have given them additional benefits, and also have helped them to get an average wage of around US\$ 230 in a month. A much greater salary than the minimum obtained by the rest of the Brazilian citizens. The collection of used food oil (for cooking purposes) has also been performed during the last two years. These materials, which in the past were drain disposals, are now been used to make soaps, to heat up boilers or to produce de bio diesel added to car gasoline. The following paper goes through these matters in the context of a poor society that looks for its own sustainable solutions, from a social, environmental and economic point of view. These solutions will be an effective means to reduce the issues of underdevelopment and poverty in Brazil.

Keywords: solid waste, recycling of cooking oil, recycling, poverty, and cooperatives.

1. - Introduction.

The economical and social effects of globalization have polarized the world wide population, (specially in the Third World countries) in two opposite sides: the concentration of wealth and welfare in an every time less segment and more rich, in one side, and in another side the concentration of poverty, in greater segments, with the tendency to boost the conditions of poverty and misery.

In poor countries, such as those from Latin America, the globalization turns even more negative some result that could be considered positive, especially among the more needy population. Among the negatives results, there are two variables with great social bearing: a) the reduction/removal of thousand jobs during the last decade and b) the incapacity of the work force to get adapted to the new requirements of an economy that is being global. Also, among the positive results, that should be included in this *document*, we can list: a) the greater income of the specialized workers and the heads of departments and b) the improvement in the quality and variety of the goods and services offered in the domestic markets.

Bellow, you will find the deep analysis of the negative variables:

a) With the upcoming inclusion of countries from the Asian Far East region into the global economy, many products for domestic consumption made in the Latin American region, became no competitive. They lost local markets, developing a stage of unemployment and also intensifying the job crisis carried out from a

long time ago. All these signs affected wide production sectors, such as, confection and textile industry, electrical and electronic durable goods production, motor vehicle, beauty products, and pharmaceuticals, toys and other product segments that had to be imported from the Asian markets, paying a much lesser price than the one paid for the products made in the local market.

This problem has changed negatively the production economical sector employments rates, as it is shown in the chart 1 for Brazil.

Chart 1: Brazil's employment variation.

Indicator	Variation %	Period
Industrial occupation	-28,7	01/1994 to 12/2004
Civil construction occupation	-1,1	01/1990 to 10/2007
Formal trade occupation	0,9	01/1990 to 12/2002
Public administration occupation	86,7	01/2002 to 10/2007
Self stand workers	70,7	01/1990 to 12/2002
Workers without social papers	59,9	01/1990 to 12/2002
General unemployment rate	-3,6	04/1994 to 12/2004

Source: IPEA Data, 2007

According to the chart above, the industrial occupation was dramatically reduced. A great deal of this work force found jobs through job emergency programs devoted to diminish the unemployment rate for a certain period of time. The Public Administration in a local, state and federal level launched these programs. The self-stand workers, -almost always devoted to illegal and not formal commerce-, received a great deal of the work force expelled from the industry. This sector also received the new workers that constantly joined the labor market. In addition, the growing amount of a labor mass having any relation with the employer or with illegal papers is very significant. Moreover, the informal workers that were not recognized by the authority or without a social security plan grew almost 60% during the selected period, even though during the decade 1994-2004, the general unemployment rate decreased 3,6%, and also despite the new global features of the job.

b) Even though, illiteracy was slowly reduced between every cense in Brazil (from 11% in 1979 to 9% in 2005), the amount of years (in series or grades) that people have gone to schools has also grown. Behind these positive numbers serious problems faced by the national school system hide: the quality of schools decreases every year. The official efforts made up to raise these indicators are focused on two factors: to diminish the illiteracy and to raise the pupilage years; however, rather fewer efforts have been focused on the improvement of the quality of teaching. So, as an example, 68% of the students that have gone to the school during the four first years, cannot reach the average level of alphabetization and simply, among them, 13% cannot actually read, after they have gone to school for four years. Also, almost the 24% of the students that are between the fifth grade and eight grade (series) can be considered to be alphabetized. The rest of them show serious handicaps in reading and writing and/ or in doing simple mathematical calculus. Similar drawbacks are also found in the professional-technical education and at the university system, in many universities.

Under these poor educational conditions, in the real world, just a few people can have success in defeating the new demands settled by the economical globalization. Clue population groups are set aside from the requirements of the global economy, making even worse their life condition.

The educational context described above is not general for everyone in Brazil; always in the peripheral capitalists countries there is a special upper class every time more reduced that benefits from the educational systems very similar to those present in the First World. Between this sector and the sector of poverty the heterogeneous and variable middle class has a spot always trying not get down to poverty, fighting to get upper life levels.

2.- Poverty versus Environment.

Due to the environmental problems that have existed for four decades, plus the rising of prices in many resources or *commodities* in the international markets, Brazil has undergone the effects of those changes in several ways, and in many social sectors. It is well known that every one in the world has been affected by

the negatives results of the economies or the so called non economies, by the global environmental changes and by the soaring prices of products, the intensity in which the different social sectors are affected by this changes differs, been this intensity always much heavier in the poorest sectors.

In a developing country with strong socioeconomic contradictions the rich have access to good quality basic services, water, urban infrastructure and services very similar to the ones present in industrialized countries. The economical and environmental crisis does not affect them in a dramatically way, so they can keep they high-level life standard pattern. However, these crises make the life condition of the poor people even worse. They are the ones that suffer the worse effects, since they do not have the material or educational means to face the difficult moments that seem to be present forever. They are the ones that have to make a great deal of sacrifices.

Misery and extreme poverty in Brazil affect more than 25% of the population. This group is comprised by illiterates or semi illiterates, and they do not have the chance to be part of the new requirements of the economy, which is very selective, it demands a qualified work force and that it requires specialization and efficiency in order that this segment of population can grow and take part into the more competitive global markets. On the other hand, the physical and environmental conditions in which the poor people survive are the worst. So, the environmental decay (been much greater during the last decades) has turned out to be critical as it can be seen in the *favelas*.

3.- Basic sanitation conditions.

If we analyze the life characteristics of the Brazilian population, we should, for various reasons, either institutional, deliberate or for any cause, be very careful at the moment of looking down the official numbers on basic sanitation, since its interpretation can be mistaken.

The authorities can use such interpretation in order to demonstrate positive results regarding this topic. So if we look carefully, we can see that the number of municipal corporations that have this service is extremely different from the number of houses and it is different from the total amount of people that use this basic service. The chart number 2 includes some indicators in this sense, showing the adverse conditions that a great deal of poor Brazilians should face.

Chart 2: Brazilian basic sanitation conditions (%)

Item	1989	2000
Municipal corporation with: drinking water system	95,6	97,9
Sewerage system	43,3	52,2
Garbage collection	97,2	99,4
Drainage system of rainwater		78,6
Total amount of sewerage water collected:		32,0
Sewerage water treated		20,2
Houses connected to a Sewerage system		63,9
Houses connected to a drinking water system		33,5
Municipal corporations without a sanitary fill		63,6
Garbage placed in sanitary fills		13,8

Source: IBGE, 2007.

In general terms, the rates of basic sanitation indicate some progresses within the last years, but these improvements are relative, since the total number of residents who get benefits is less in absolute number, although the statistics say that in percentage this number has decreased. It is worth to point out that those rates are gross, and they do not show any qualitative aspect such as the quality of the distributed water, the frequency in the collection of waste, type of sewerage water treatment, etc.

4.- Social economical environmental crisis and valorization of natural resources

If in one side the perverse effects prompted by globalization have a greater impact on the developing countries, due to the increasing of unemployment, we see on the other side that some problems of the unemployment problems can be solved. We are referring to the inclusion into the labor field of a segment

that constantly lives in the extreme poverty. They have reached a space through a service that might be considered rather new in terms of organization. We are talking about selective collection of recycling waste from domestic garbage and other generating sources.

This new activity, which has gained a great economical significance, was born in Brazil, at the beginning of the '80, since numerous factors –environmental, economical and legal- worked together to make it possible. Among them were: a) oil price increasing, b) raw material price increasing (plastics), c) raising in the price of the electric energy and transportation, d) educational developing and environmental consciousness e) environmental protection laws improvement, among others. Fortunately these factors have been becoming true in a sustained and slowly way, joining together with the unemployment crisis.

The rising in the price of *commodities*, in the Brazilian market, as well in the global market, (variables mentioned in the a), b) y c) entries above) are clue factors. This condition has enabled an evident valorization of the recycling materials, since it is economically more suitable for a great number of industries to buy recycling remainders rather than to acquire virgin material coming for the bauxite and to process it. Besides, it must be taken into account that in many cases, the energy saving procedure is a crucial point, as in the important reduction in the electricity consumption when second hand alumina is used. This alumina can be bought in prices equal to 1,3 euros per kg in the packaging factories. The same is happening with the recent use of plastics in several industrial processes to make objects in the textile sector. In chart number 3, we include the maximum, minimal and middle prices of nine recyclable materials valued during the last twelve months in ten cities of the country.

*Chart 3. Price of the recycling material in markets of ten Brazilian cities
(Tons valued in euros).*

Recycling material	Maximum Price	Minimum Price	Middle Price
Cardboard	113,6	38,8	85,1
White paper	187,7	53,2	129,5
Steel cans	174,6	58,8	102,5
Alumina cans	1.538,0	1.020,7	1.299,9
Colorless glass	62,2	14,7	38,8
Hard plastic	355,3	72,9	214,0
Flexible plastic	303,6	50,9	164,2
PET	384,3	138,4	292,1
Tetra Pack	108,5	23,3	49,7

Source: CEMPRE

Initially a vertical process took place from down to top, from the recycling material collector to the industrial representative. So, the commercializing reminders were valorized, small entrepreneurs selling points were opened by those willing to buy that kind of material; the industry began buying this type of remainder that turns out to be a cheap material, helping to cope the increasing price of *commodities and energy*. This process came out in a rather spontaneous way, with a scarce participation of the public sector, having special meaning the leadership taken by those who already lived from the resources gained in the garbage dump. It is worth to mention that many initiatives were prompted or supported by NGOs. In some other cases, the same authorities from the municipal corporations decided to intervene to find out new initiatives.

As the global economical crisis was punishing the poor countries with more visible effects, those located in the last step of the social scale had no other choice than to survive through the material the rest considered being useful. The number of the reused object collectors dramatically grew during the '80. The most serious aspect of this deprecatory activity was (and still is, in many cities) the presence of kids and old people looking for remainders to sell and also to eat. This activity was not only an action of adults trying to find recyclable objects to sell. It was also the sad scene of kids, elderly people together with birds of prey, pigs, mice, dogs and other animals fighting to get food in a disgusting environment, very hot or under the rain with low or high temperatures, and mugginess, squelching in the mud and in the rotten material puddles. These seemed rather to be a baleful painting of Dante Alighieri Hell ...

On the other hand and since this situation the garbage collectors from the street or (*catadores de rua* in Portuguese), grew proportionally as the economical crisis became more dramatic. These ambulant collectors

were looking for food left overs and residual material to sell. The physical conditions faced by them were better than those who were looking material in the garbage dumps since; at least, the environment in which they developed such activity was less unclean.

In order to prevent this dramatic situation religious and beneficial entities, plus the NGOs began to take part into it the first step was to force the collectors to close down the garbage dump. In such subhuman conditions they could not keep working. But another serious and dramatic problem came along and it needed to be solved: what to do with all those human beings –that in some cities were thousand-, illiterate, without professional qualification, living in the extreme poverty, without self -esteem and other negative features. They are the by-product of the global crisis and the unequal distribution of wealth in the underdeveloped countries. Some of the first actions taken were to give them another source for surviving. The idea was to teach them how to develop community vegetable garden so they would be able to produce vegetables for their own consumption and also for selling; another measure taken was to settle them as general service workers in small and medium companies that produced crafts. Another way of helping them were to make municipal corporations hire them to perform tasks related to non-specialized services such as gardening, painting, and public cleaning. The situation of the street collectors was not taking into account during the first period because it was not considered to be dramatic.

Since the problem turns out to be a social and local issue and because of the demonstrations carried out by the community, the head of the municipal corporations began to get involve in the problem looking feasible solutions to solve this irrational situation. At the same time, the federal government and some states develop some measurements, settling some laws related to the issue. As a result of this, the presence of garbage collectors in the garbage dumps is totally restricted. Also, municipal corporations are forced to develop actions in order to protect those informal workers, settling terms and objectives to be reached.

It is clear that in a big country in terms of population and territory, very heterogeneous regarding to social and politics and social institutions, the legal enforcement of measurements shows relative and partially results.

5.- Solution to the Rio Claro, SP-Brazil's collectors problem.

The following is a real experience that turned out to be successful and in which we were involved. At the beginning of 1997, in Rio Claro, agricultural and industrial city of 180.000 inhabitants, located 175 kilometers to the west of São Paulo, in the state of the same name, in Brazil, a steady invasion of garbage collectors in the municipal garbage dump was developed. Not far from that time, the garbage dump was in compliance with all the environmental protection sanitation standards. The invasion was comprised by dozens of people, from both sexes, of several ages, and characterized by the extreme poverty. These persons found in the garbage dump a subhuman way to survive, facing the impossibility to find a job and to perform a lesser risk activity and with more dignity.

The city major, recently elected, talked with this people and suggested a solution to the problem, according to the federal legislation. The answer to the problem was to take them out of the garbage dump and to offer them the possibility to get organize in a collector recycling material cooperative society. Again, the entrance of the collectors into the garbage dump was restricted, since the law forbids their presence in such places. At the same time, new frameworks of community organizations were develop in order that the project of the selective collection of recycling reminders could be perform from the houses. The period, in which the entrance into the garbage dump was forbidden, was used to developed measures to prompt the social inclusion, since the collectors presented evident behavior lacks. Members of the Municipal Corporation taught all the collectors sanitation, cleanliness and nourishment habits, together with behavior habits. They also gave the collectors that did not have identification and working papers, the necessary documents to work. Uniforms to replace the old clothes, plus, instruction on social and labor rights as citizens were also given. Collectors learned the benefits of belonging to a cooperative society. They acquired knowledge on the advantages and duties of working in a society and in other forms of citizen and social inclusion.

To have success in all the tasks mentioned, the major –who is also a geographer-, asked the help of institution of which we belong: the University Estadual Paulista (UNESP). We had to teach general procedures about the recycling, as well as, and its environmental, economical and social value. We taught the techniques and methods of doing the selective collection of recycling residual material. We showed how to separate the materials, and we point out the handling care, (Berríos, 2002). After a few months the project

was been carried on. The process consists of withdrawing the previously separated garbage from the houses (housewives had already been trained to separate the material). Then, the recycling material is carried out in trucks to the storehouse where the second selection is performed. Afterwards, the material is weighed and packed, being ready to be sold. At the same time we were in charge of telling the members of the cooperative society the commercialization tasks and the market in which the material should be sold.

Since this is a communal initiative, the municipal corporation got involved in the developing process of the project. The organism gave the technical and institutional support required to have success, and also managed our involvement. In order to organize this group of 30 people, we had the support of municipal officers and several executive departments of government specially, social workers. A shed with a storage yard and facilities *ad hoc* were provided (kitchen, dining room, dressing rooms, restrooms, containers, hydrostatic press, etc.), to receive, select, press and store the recycled material. A closed truck was arranged, together with office facilities (desk, computer, phone, furniture). After seven years, the initiative called "COOPERVIVA" became a legal entity, working in perfect conditions. It was an economical and management self-sustainable entity. The head of the cooperative is a street collector and another member is in charge of the accounting tasks. They have reached the stage of juristic person and official reconnaissance. They have been also a pattern for other cities that want to do the same thing.

The total recyclable selling is divided among the members of the cooperative. The amount is currently about 215 euros per month. Besides this money, members of the cooperative organization receive a basket of goods and domestic goods. They also have the chance to eat in the same place they work and they have uniforms to wear. Before this, the collectors were positioned in the last step of the social scale. They practically were not treated as citizens. Now they have a regular salary, which is greater than the official wage floor, they have their social insurance rights safeguarded, they are formal workers with access to health insurance, with right to have vacations, retirement and some other privileges. These positive aspects are the most important achievements. These workers are considered to be citizens again and they do not live outside the society anymore. They have been integrated to productive activities that do not harm the environment. They have recovered their self-esteem, and they do not suffer from prejudices.

Unfortunately, as every political position has to end, the mayor that took the initiative and made the cooperative something true left his position on December 31st, 2004. The new head of the municipality belongs to a different political party and has a different vision and attitude towards social issues. The COOPERVIVA was then a little forbidden. A great deal of the social help was cut down. However, even though the first measures took by the new mayor had some bad consequences within the group, the cooperative has managed to solve its problems, developing an independent way of existence. The entity has been able to persist thanks to the common effort, the experience acquired through the years and thanks to their job and the social consciousness of its members. They are getting rid of setbacks through the knowledge acquired during the process and through the self-work and the contribution given by us, members of the University. We have given them organizational and management support in the issue of solid waste recycling. (Berríos, 2007).

6.- Bio diesel and used cooking oils.

Since a couple of months ago, the COOPERVIVA has been developing (thanks to our help) the selective collection of materials and also has been performing the collection of cooking oil already used by the housewives to cook fried meals. Before this, this oil was used to make soaps and some other things in a small scale, (Sampaio, 2003).

Due to the global climate change –hot house effect- and due to the oil price increase (more than US\$ 100 the barrel) Brazil is eager to develop new techniques to produce bio diesel. One technique has already been giving good results. A considerable amount of oil and cooking oil is been mixed to produce a new mixture. Since January first, 2008, 2% of vegetable oil has been added to the oil used by trucks. By the end of this year, the aim is to have 5% of the vegetable oil mixed with regular oil for trucks. The new federal government fuel policy has prompted the studies to find new fuels, and also has improved the efficiency of those been in use. This situation has also generated the concern to reuse the cooking oil already used in kitchens. Technical experiences are showing that this type of oil can be successfully added to the oil used by vehicles, helping in this way to diminish the impact of the atmospheric pollution, since the cooking oil is not too harmful for the environment, and at the same time, by doing this, we can reduce the oil consumption. The

cooking oil is a natural substance obtained from renewable sources and before this process it was been misused.

So, like in some other cities the COOPERVIVA, from Rio Claro, started to collect this residual substance produced in houses and restaurants with the aim of selling it to oil refineries, places in which people are willing to buy cooking oil in order to add to the diesel and produce the bio diesel. In this sense, we are developing new strategies to manage the cooking oil disposal and collection in houses, its transportation and its storage in the cooperative. The idea is to improve the primary refinery techniques and to improve its final transportation to oil refineries. This is an ongoing project, which needs some more research. First, we need to solve some problems that have come out, since we are now working with a liquid residual substance that has specific features that rather differ to the characteristics present in the solid residual material traditionally used before.

First, there are a great number of positive aspects that have made this initiative a very successful task. For instance, the government is giving spurs, and the universities together with many research centers are showing great interest on this topic. Now, if we see this project from a local point of view we can easily see that the oil refineries are already settled and located far away from the cities, factor which prevents the growing of pollution in certain places near population. We have developed new vegetable refineries, and we have created little receptor points, like the cooperative we have been talking about. Communities that are taking part of this process are very proud, since their aim is to finally protect the environment.

The advantages of reusing the cooking oil are many. The process allows to keep the environment free of toxins and to reduce the acquisition of raw oil. There also are some other positive aspects not mentioned before. In the first place we can witness: a) the decreasing or I better say the removal of one of the most heavy hydro pollutant substances as the burnt oils are thrown to the urban sewerage system. The habit of throwing away these substances makes urban pipes to be full of greasy materials; therefore, the water gets too polluted, and if it is not treated, hydro systems carry harmful substances to the end, changing in a negative way the quality of the water from rivers, lakes and oceans as well. In the second place is necessary to point out that: b) the selling of cooking oils is giving (and in the near future it is going to be even better) a new income source to the cooperatives or other forms of association, since they sell and collect this type of residual material. The use of this oil will generate an increase in the amount of money the collectors get at the end of a month, Undoubtedly this will improve their social condition and their life standards. This situation is becoming true in the COOPERVIVA, since all their members are beginning to have more incomes.

7.- Conclusions

It is a real fact that the economy globalization and the crisis that have affected the environment have made unexpected, deep and negative scars in third global countries. Both factors have made poor people even poorer and have concentrated the wealth in those sectors that always had better life conditions. Besides, environmental problems have deeply affected people who do not have the opportunity to live in a better way as the members of the upper social class. These statements are true and Brazilians have to bear them even with resignation.

But it is also a true fact that the environmental crisis and the globalization of the economy have offered some solutions in developing countries, preventing the negative effects caused by other global issues: less qualified workers have found new work sources and new jobs, which at the end has also help to diminish the environmental pollution.

The example of recycled residues collectors cooperative from Rio Claro, SP-BR, it is a proof that all the disadvantages can become advantages. Difficult situations can be turn into positive scenarios. The creation of the COOPERVIVA has created new ways to give jobs to unemployment and less qualified people. By doing this they have a better life condition and also have the chance to reuse the residual material that the community did not use in the past. Thanks to all this measures they are able to work in industrial recycling and recently they have learned how to recover cooking oil to add it to oil and to produce bio diesel improving the quality of the environment.

References

- Berríos, M.R. (2002). A construção de um meio ambiente saudável para Rio Claro, SP.. In: Rio Claro no umbral do novo milênio. Prefeitura Municipal de Rio Claro. CD. Rio Claro, pp. 1-119.
- Berríos, M.R. (2007). Transformaciones socio-espaciales derivadas de la recolección selectiva de basura en el Brasil. In: XI Encuentro de Geógrafos de América Latina. Bogotá, Col. Anales, pp. 01 – 20.
- CEMPRE –Compromisso Empresarial para a Reciclagem-(2000-2007). CEMPRE Informa. Boletins 86 a 87, São Paulo.
- IBGE –Instituto Brasileiro de Geografia e Estatística- (2007). Estatísticas básicas por amostra domiciliar. Brasília.
- IPEA-Data –Instituto de Pesquisas Econômicas- (2007). Presidência da República. Núcleo de Assuntos Estratégicos. Indicadores sociais e econômicos. Brasília.
- Sampaio, L.A. (2003). Reaproveitamento de óleos e gorduras residuais de frituras: tratamento da matéria-prima para produção de biodiesel. Universidade Estadual de Santa Cruz, PR de P-Graduação em Desenvolvimento de Meio Ambiente. Ilhéus. pp 1-59