Environmental health at the country side: the case of sustainable development projects in rural settlements of the state of São Paulo

Saúde ambiental no campo: o caso dos projetos de desenvolvimento sustentável em assentamentos rurais do Estado de São Paulo

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Abstract

In Brazil, some initiatives focusing on sustainable rural development are being implemented in rural settlements. This study aimed to investigate environmental health issues faced in traditional rural settlements in comparison to sustainable development settlements. Qualitative research approaching four "Sustainable Development Projects" and two traditional projects in rural settlements of central and northeastern São Paulo State based on workshops with participants of the settlement projects, discussing environmental health problems faced by community. Procedures were developed after the Ethics Research Committee approval. Settlers in both types of settlements reported similar environmental health problems, related mainly to lack of basic sanitation, inadequate waste management, difficulties in pest control, and workers' health problems. There is a large gap between the proposed discourse of some polities concerned with sustainable development, as in the case of the sustainable development projects in rural settlements in the State of São Paulo, particularly in the incorporation of issues related with public health. However, this dissociation does not manifest itself in the perception of the settlers involved in such projects. For them the construction of a sustainable lifestyle cannot waive attention from the central role of primary attention on aspects of public health as a fundamental factor for human development.

Keywords: Sustainable Development; Environmental Health; Rural Settlements; Public Policies.

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Resumo

No Brasil, algumas iniciativas voltadas ao desenvolvimento rural sustentável vêm sendo implementadas no âmbito de assentamentos rurais. A pesquisa teve como objetivo levantar os problemas de saúde ambiental em assentamentos tradicionais e em assentamentos de desenvolvimento sustentável, visando compreender como são percebidos os problemas de saúde ambiental enfrentados por parte de populações de assentados rurais que constituem alvo de políticas públicas inspiradas em princípios de desenvolvimento sustentável. Estudo de casos explanatório e descritivo, abordando quatro "projetos de desenvolvimento sustentável" e dois convencionais em assentamentos rurais das regiões Central e Nordeste do Estado de São Paulo e desenvolvido, de modo comparativo, mediante oficinas de trabalho discutindo aspectos de saúde ambiental. O trabalho de coleta de informações foi iniciado após prévia aprovação do Comitê de Ética em Pesquisa. Os assentados nos dois tipos de assentamento indicaram problemas de saúde ambiental similares, relacionados, sobretudo, à falta de saneamento básico, manejo inadequado de resíduos, dificuldades no controle de pragas e problemas de saúde do trabalhador. Há um grande distanciamento entre o discurso propositivo de algumas políticas públicas inspiradas nos princípios da sustentabilidade e a realização objetiva de sua prática, sobretudo na incorporação da dimensão dos aspectos de saúde pública. Todavia, no caso dos projetos de desenvolvimento sustentável em assentamentos rurais no Estado de São Paulo, tal dissociação não se manifesta no âmbito de percepção dos sujeitos, público-alvo dos projetos. Para estes a construção de um modo de vida sustentável não pode prescindir da atenção primária aos aspectos de saúde ambiental como fator de desenvolvimento humano.

Palavras-chave: Desenvolvimento Sustentável; Saúde Ambiental; Populações Rurais; Assentamentos Rurais; Políticas Públicas.

Introduction

Among the many diverse human activities, agriculture is fundamental. It holds such great importance, especially, because of the necessity to produce clean, healthy and sufficient produce that is accessible to the growing markets of the world population; because of agriculture's potential role as a generator of work and income; because of the production of biomass energy; and moreover because of its incorporation with emerging environmental issues.

Advances in agriculture in the last 50 years can be explained in part by the expansion of production and also by the incredible increase in productivity, strongly influenced by technological innovations brought to agriculture, especially industrialization, agricultural chemicals, genetics and information technology.

Alongside these advances one can observe the growing problems in the hygiene model of agriculture which has become known as 'the second agricultural revolution'. Significant changes implemented all over the world in the 20th century led to large modifications in production, technology used and the management of natural resources.

However, such changes began to show their limits, seen by crises in economic, social and environmental areas. Brazilian land reform settlements are not far from this reality. The government is also aware of the need to honor the formalization of correct ecological practices, in the context of agricultural reform, with a view of gaining better use of the potential resources found in the land which require maintenance and preservation of the environment. Therefore the PDS (Sustainable Development Projects) method emerged to guide the search of compatibility of the development of productive activities and the imperatives of conservation, preservation and also recomposition of the natural resources that serve as the basis of existence of the human settlements and their respective communities (Brasil, 2000).

The objective of this study was to get to know the environmental health situation in the sustainable development projects in agricultural reform settlements in Sao Paulo state, starting from the point of view of the families in the settlements.

It was assumed that the perception of environmental issues, beyond the objective impact on the individual's conditions, is a result of how these issues are experienced, and which are measured by social interventions and cultural values (Jacobi, 1991).

The general question which guided the research was to define how environmental issues are understood in traditional rural settlement projects (PA) and in settlements defined as sustainable development projects (PDS) in 6 regions in Sao Paulo state.

Sustainable Agriculture; sustainable development; and sustainable development projects

Since the conception and practice of an agricultural model, based on industrialization, chemicals and genetics, and before its expansion to peripheral countries, named the Green Revolution, some agricultural and environmental researchers had already been alerted by the undesirable consequences of this model.

One example is the warning from Sir Albert Howard, in his study developed in the 1930s, which culminated in the publication of his suggestively named book '*An Agricultural Testament',* he predicted the non viability of any agricultural system that didn't take into consideration, with the necessary importance, the fundamental effect of the biological processes on the fertility of the soil. He advocated a holistic method of agricultural production, he contributed to the establishment of the first foundations of the still weak search to change the paradigm of research and practice in the agricultural methods of his time (Howard, 2007).

Therefore, together with the larger discussions about the direction of socioeconomic development, in the more varied sectors of human activity, also in agriculture the concept of sustainability found fertile ground. For some authors, the idea of sustainability associated with economic growth or development would only be an extension of the concept that was already being developed around the studies of agricultural activity: "Everything indicates that the launch of the expression of sustainable development has taken as its inspiration the notion of sustainable agriculture, therefore it has already been discussed in the debates of agriculturists and agroeconomists" (Ehlers, 1996, p. 125).

The first ideas contributing to the notion of sustainable development had their origins in the 1960s, starting with, among others, the work of Rachel Carson, a North American Biologist and writer who was dedicated to the problems related to the conservation of nature, environmental preservation and quality of life (Carson, 1999).

Some years later, in the early 1970s, the Founex Report,[1] which was prepared for the United Nations conference on Human Environment in 1972 in Stockholm, attracted international attention for environmental issues and exposed a debate of contrasting arguments. The search was to build an intermediary point of view between those named by Sachs (1993) as "Malthusians" – for whom the world population was already above its limits of its capacity to support and therefore condemned to disaster as environmental exhaustion – and the "Cornucopians", the believers in "Technological adjustment" as a way of dealing with the constraints of population growth.

The initial results of the paradigm changes were extended and potentiated into the 1980's. The publication of the Brundtland Report[2], in 1987, consisted of a strong indication of the propagation of the subject. Its content was deepened and enlarged in the subsequent developments by the international community, an example of the resulting documents were seen in the United Nations conference on Environment and Development, in RIO-92, highlighted in Agenda 21 (United Nations Conference on Environment and Development, 1992).

In the next two decades in the RIO-92 conference there was an increase in debates around the environment and attempts to implement conceptually and practically the environmental agenda, both locally

1 The work developed in the Stockholm conference en 1972 was preceded by an important seminar organized as a preparatory event, which happened in Founex in Switzerland in 1971 (United Nations Environment Programme, 1981).

2 World Commision on Environment and Development, *Our Common Future*; Oxford: Oxford University Press, 1987. Its content was published in Brazil, translated from English, with the title "Nosso future comum" (Comissão Mundial sobre Meio Ambiente e Desenvolvimento, 1991).

and globally, involving the challenge of its insertion into the decisions affecting economic and social development plans.

It was in this context that the concept of sustainable development began to be established, calling for an innovative perspective on economic and social ideas: an urgency for a new vision on human development, given the fact there were insufficient political and socioeconomic strategies based on the premise that economic growth alone could solve the growing natural, social and environmental problems that humanity was facing.

> Development and the Environment are undeniably linked and should be used as a method of growth. Three fundamental criteria should be obeyed simultaneously: social equality, ecological prudence and economic efficiency (Sachs, 1993, p. 7).

The obedience to these simultaneous criteria in sustainable development was observed by Constanza et al. (1991), for whom the idea of sustainability could be defined as a relationship to involve dynamic economic systems and larger ecological systems and also dynamics otherwise slower to change. These relationships involve at least four objectives: the possibility of the continuation of the human race; the possibility of individuals prospering; the development of human cultures; obedience to the limits imposed on activities carried out by man, avoiding the destruction of the diversity, complexity and the function of the ecological system that supports life.

> [...] we need to explore alternative methods for our current command, systems of management and control of the environment, and change the government agencies and institutions in accordance with said changes. The enormous uncertainties about the national and international impact on the environment should be taken into consideration during the decision making process. We also need to better understand the sociological, cultural and political criteria present in the acceptance or rejection of the policies (Contanza et al., 1991, p. 14).

Even after being widely approved, starting with the attention acquired during discussions at RIO-92, the notion of sustainability suffered some setbacks to its necessary implementation. The adjective sustainable was applied to many different situations, at times expressing a vague sense of continuity, always referring to future ambitions. Because of these varied possibilities of use and meaning, many advocated the need for a precise definition for the notion that is "sustainability". Nevertheless, for others, the word – sustainable – represented exactly the value in question and represented the definition exactly, and moreover, could become widely accepted (Veiga, 2010).

A crucial point from which one can pick efficient and effective action of this debate is from the transformative and creative public policies that turned the principle of sustainability into a practical reality, with respect to some basic assumptions to this approach: accept the complexity of sustainable development that transcends the vision of conventional economics: move towards an understanding of the economical phenomenon as a result of a "socio-environmental metabolism" (Cechin and Veiga, 2010); and add social, political and ethical communication as unavoidable ingredients of this process of conceptual framework and its application.

The implementation of this framework in global politics, inspired by the idea of sustainability, is not a challenge easily conquered. This can be observed in the implementation initiatives in the rural settlements in Sao Paulo, designed within the parameters of the sustainable development projects and also in PDS settlements.

The approach of the rural settlements known as – PDS, created by Ordinance/INCRA no 477, 4th November 1999 (Brasil, 1999), and regulated by Ordinance/INCRA no 1032, 25 October 2000 - , emerged as a result of the demands of a social movement organized in the Northern region of the country, which sought to guarantee access to the land of the non-traditional population in areas of environmental interest (Brasil, 2000).

This approach of the settlements was originally targeted at the populations who survive, basically, by methods of extraction or agriculture, and other activities of low environmental impact.

Currently, in the examples of II PNRA – National Plan of Agricultural Reform (Brasil, 2005), implemented in 2003 – the current approaches, primarily implemented by INCRA in areas obtained by expropriation for the social interest in agricultural

reform, are: a) Traditional settlements – the settlement project (PA); and b) Environmentally differentiated settlements – the agroextraction settlement project (PAE), the PDS and the forest settlement project (PAF).

With an innovative attitude in relation to the original implantation of the PDS settlements, Sao Paulo state added a pioneering experiment in 2004, from its creation to the first project in the PDS settlement. The dialogue between the social movements and the environmentalists in Sao Paulo started a trend of putting demands on local politicians, responsible for the implementation of agricultural policies in the Federal government, this resulted in the creation of agroenvironmental settlements (Julio, 2006).

Therefore, in November of that year, the first experiment of the application of the PDS method was implemented in the Serrana region, the Sepe Tiaraju settlement.

During this time other PDS projects were being established in different regions of Sao Paulo state, with different frameworks, in many cases as an alternative to solve ongoing conflicts that other projects had not managed to overcome. For example, the PDS in an area where squatters had been evicted in Vale do Ribeira, in the settlement in the area Fazenda Ipero, in Ipero and in the Nova Conquista settlement in the Rancharia settlement (Cortez, 2004).

A summary of the general characteristics of these settlements is represented in Table 1.

Table 1 - General characteristics of the sustainable development projects (PDS) implemented in the state of Sao Paulo - August 2011

Region	Settlement	Area	N° of settled families	Date of implementation
Serrana	Sepé Tiarajú	797.7	80	20/09/2004
Eldorado	Agroambiental Alves, Teixeira e Pereira	3,072.7	65	02/08/2005
Taubaté	Manoel Neto	378.9	43	29/11/2005
Tremembé	Olga Benário	692.1	53	19/12/2005
São Carlos	Santa Helena	98.8	14	27/12/2005
Americana	Comuna da Terra Milton Santos	103.5	68	11/07/2006
Apiaí	Prof. Luiz de David Macedo	7,767.2	68	27/07/2006
Cajamar	São Luiz	123.1	30	27/07/2006
Descalvado	Comunidade Agrária 21 de Dezembro	256.4	18	16/10/2006
Miracatu	Ribeirão do Pio	406.1	13	24/11/2006
Iepe	Bom Jesus	68.3	36	15/12/2006
João Ramalho	Boa Esperança	54.7	29	15/12/2006
Ribeirão Preto	Da Barra	1,548.5	462	20/06/2007
Itanhaém	Agroecológico	153.3	5	04/12/2007
Caconde	Agroecológico Hugo Mazzilli	135.5	20	18/09/2008
Limeira	Elizabeth Teixeira	602.9	104	19/09/2008
Descalvado	Comunidade Agrária Nova Aurora	533.4	81	10/11/2008
	TOTAL	16,793.1	1,189	

Source: drawn up by the author based on Brasil, 2012.

Methods

Case Studies were carried out, described by Yin (2005), taking into view that the experiments of the sustainable development projects (PDS) in the rural settlements of INCRA in Sao Paulo were recent, starting from 2004, In the case studies a holistic approach was adopted, the ecosystemic approach proposed by Forget and Lebel (2001). In this approach, the authors considered it difficult to disassociate the state of health of the determined ecosystem and the state of health of the humans living there. Therefore, they emphasize the role of the research to characterize the links between environmental degradation and its impact on human health, highlighting two main considerations in the application of this approach as: a better understanding of the causes of health problems and a better appreciation of social responses about said causes (Forget and Lebel, 2001).

The development of new knowledge about the relationship between health and environment, from concrete truths, aiming to contribute to the empowerment of local communities, through the promotion of positive health practices, are some of the objectives of this approach. "[...] in this way science and the living world come together to build a better quality of life through an improved management of the ecosystem and give collective and individual responsibility about health" (Minayo, 2002, p. 181).

The North/Northeast region of Sao Paulo state was chosen as the study area, the longest standing PDS project can be found in this region: the PDS Sepe Tiaraju, in the Serrana region.

Diagram 1 shows the location of the municipalities that are the headquarters of the settlements that were selected for the study; and Diagram 2 shows general characteristics of the research.

Diagram 1 - Municipalities in Sao Paulo state with rural settlement projects selected for the study

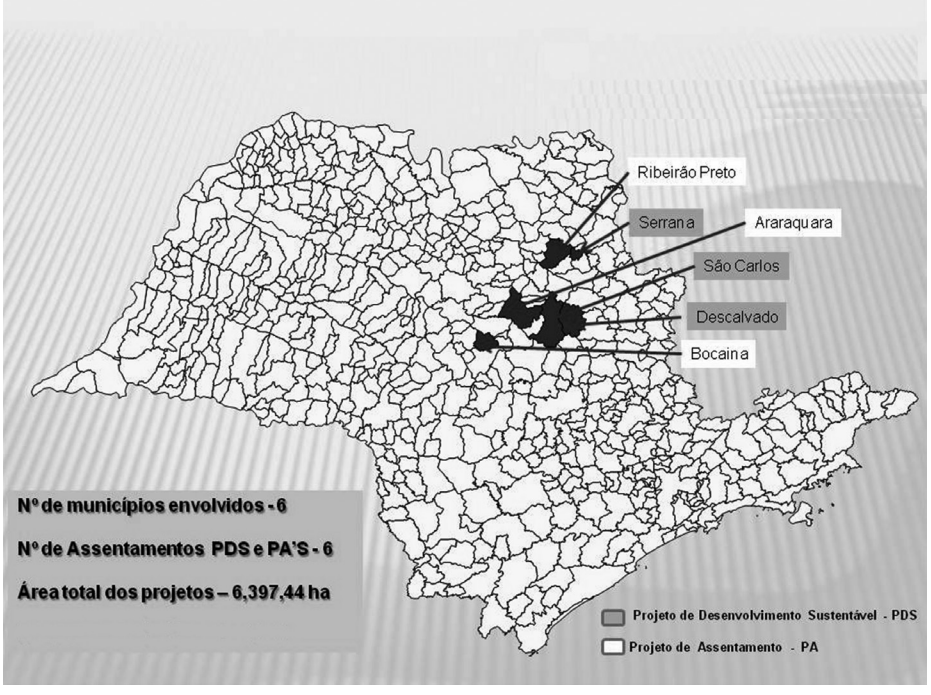


Table 2 - General characteristics of PDS settlements (sustainable development project) and PA (settlement projects) selected for the study

Municipality	Settlement	Date of implementation	Area	N° of settled families
Araraquara	PA Bela Vista do Chibarro	27/07/90	3,427.5	222
Serrana	PDS Sepé Tiarajú	20/09/04	797.7	80
São Carlos	PDS Santa Helena	27/12/05	98.8	14
Bocaina	PA Fortaleza	13/03/06	268.5	29
Descalvado	PDS Comunidade Agrária 21 de Dezembro	16/10/06	256.5	18
Ribeirão Preto	PDS Da Barra	20/06/07	1,548.5	462
Total			6,397.44	825

Source: Brasil, 2012

Participatory workshops with groups of settlers were carried out, based partially on the rural participation diagnostic approch (DRP), initially used by Chambers (1983), later developed by various authors (Verdejo, 2006; Anyaegbunam et al., 2008). Its use is recognized by the United Nations Organisation for Food and Agriculture (FAO, 1999).

The tools and techniques used within the framework of the participating workshops are diverse, especially in the activities of the DRP. Every one of these instrumental resources has a different use, in accordance with the objectives of the participating workshops (FAO, 1999). The current research specifically used the Problem tree, with the intention of building a shared vision of the socio-environmental dimension of the community and its relationship to health. (Verdejo, 2006; Anyaegbunam et al., 2008). The environmental health issues discussed in the participatory workshops were based on the topics that needed the necessary attention - APA (OPAS, 1999), a) basic sanitation; b) waste management c) combatting erosion and deforestation; d) management of pests and agricultural chemicals; e) protection of the springs; f) control of zoonoses; and g) workers health. These were the main topics of the workshops, during the "problem tree"activity.

To assure the success of the field studies, preliminary visits to the six selected settlements were made, with the aim of getting to know the workers' area and to have an initial contact with the leaders and representatives of each project. The next step was the participatory workshops with the groups of settlers, followed by a basic guide for development. The total time spent in each of the meetings was close to 210 minutes. Table 3 represents the general characteristics of the location of the workshops, the number of participants and the dates activities were carried out.

Table 3 - General characteristics of the selected settlements: location, date of workshops, number of settled families, number of participants of workshops

Settlement	Municipality	Date of workshops	N° of families	N° of participants
PA Bela Vista	Araraquara	20/01/2011	168	6
PA Fortaleza	Bocaina	22/01/2011	29	9
PDS Santa Helena*	São Carlos	18/02/2011	13	12
PDS 21 de Dezembro	Descalvado	19/02/2011	18	10
PDS Mário Lago**	Ribeirão Preto	09/04/2011	260	10
PDS Sepé Tiarajú***	Serrana	27/05/2011	79	7

Source: Brasil, 2012; data from field study.
Notes: In some settlements there were more than one meeting to finalize the work of the workshops, on the following dates: *26/03/2011; **21 e 27/0/2011; e ***28 e 31/05/2011.

Table 4 represents the summary of the guide for the workshops, including objectives and a description of the participatory integration techniques and the collection of data and information.

Table 4 - Guide to workshops with participatory groups

Stage	Objectives	Technique used
Discussion about the combination of developments to rural and environmental health	Identify, define and select the main environmental health problems perceived by the participants from the community. Create a shared vision about the relationships of cause and effect related to the problems, selected by the group as the main issues of environmental health in the community.	**Problem Tree*:** produce a graphic representation based on the tree design (cause and effect tree), addressing thematic points, selected by participants, from the main environmental topics of interest, considered as most important by the group.

Source: developed by author.
Notes: *Verdejo, 2006; Anyaegbunam et al., 2008.

Results and discussion

The sustainable development projects

Between 2003 and 2006, 35 new projects were started of rural settlements in Sao Paulo state. Of these, 13 initiatives sought to follow and implement the principals of sustainability, the sustainable development projects (PDS). This number increased to 17 PDS projects implemented until August 2011.

Table 5 represents the principles differences between the methods of the conventional settlements, named as PA (settlement project) and the PDS.

Table 5 - Some differences between the methods of the agricultural reform projects of INCRA

Consolidation steps	Settlement Project - PA	Agroextraction settlement project - PAE	Sustainable development project - PDS
Creation initiative	INCRA or claim from social movements or government	Claim of authority organized by area, as attached	INCRA, social movements, environmental organizations. Obs: in the three cases there should be an agreement to share management between the tree groups
Registration and selection of families	SIPRA* Selection	SIPRA selection and should be traditional population authorized by the required group	SIPRA selection and commitment to work with ecologically correct techniques
Target group	Traditional farmers	Traditional river population, fishermen, farm workers etc	Traditional farmer who has an interest in ecology and using ecologically correct practices.
Title	Individual, at home	Collective	Collective, preferably

Source: elaborated by the author, from Brasil, 2000, 2006.
Notes: *SIPRA – Information System of Agricultural Reform Projects.

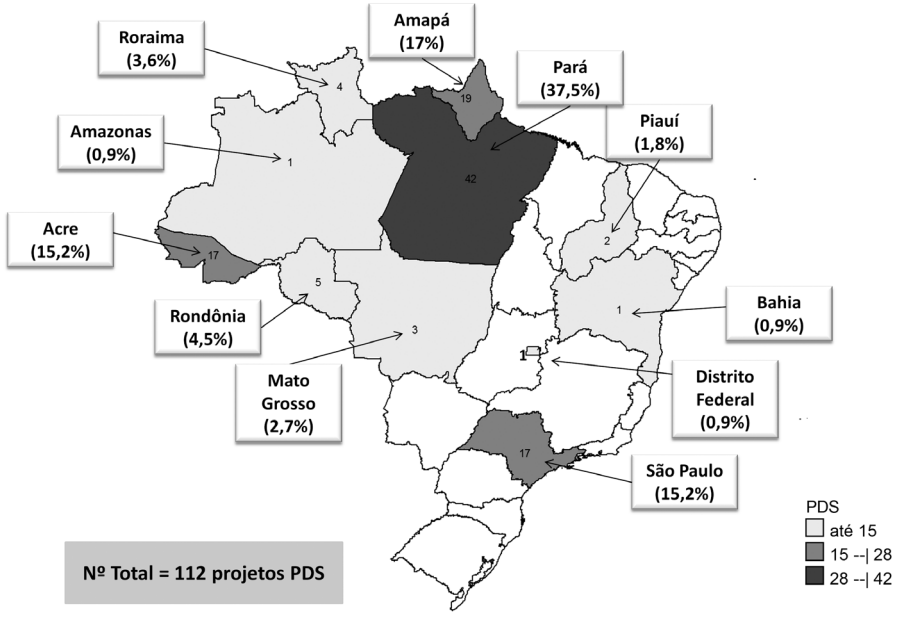
The PDS model has various different structures, the type of land lease used is also varied. In PDS the lease scheme is communal, forming a dialogue between the group of settled families and the government, by means of associative or cooperative bases.

The disclosure and guidance of public policies of implementation of PDS document (Brasil, 2000) contained the intentions of the involvement of settled families and the development of the settlements as a way of bringing attention to the importance of the organization to achieve the following points: a) constant improvement and strengthening of the organisational level of the associations; b) unity of objectives, with the creation of a group culture and identity, considering the different families (cultures, habits, values) that could make up a PDS; c) Creation or development of 'group spirit'; d) Identification of their limits and potential; e) Giving value to their actions and their former role in society; f) Giving value to their regional culture; g) Incite an entrepeneurial vision and develop co-management and decision making methods; h) Perception of success factors of PDS; and i) less dependence on external factors.

In regulating terms, from the implementation of significant changes in agricultural production and in the organization of the settlements, the PDS method aimed to increase the income of the settlers, diversify production, upgrade commercialization and improve food safety standards of the settlers among other objectives. Thereby, various actions brought about the potential to greatly improve the environmental health of the settlements, this would be achieved directly through changes in work processes using cleaner technology and indirectly by incorporating the principles of sustainability in the routines and collective organisation of the settlements.

In relation to Brazil, as a whole, since the creation of these settlement methods in 1999 until October 2011, 112 PDS settlements have been created. The ditribution of these projects, following federal units, is shown in Diagram 2.

Diagram 2 - Number and distribution of PDS rural settlements, according to state, Brazil - August 2011



Source: Adapted by authors from Brasil (2012).

The story of the implementation of these settlements goes way beyond the simple administrative application of regulations of a new sustainable agriculture paradigm.

The Sepe Tiaraju settlement, for example, was the first experiment of this type in Sao Paulo, it underwent a long process of reflection and construction of a social movement that was born and developed in the CONCRAB bases (Confederation of Agricultural Reform Cooperatives in Brazil), which led to the demands made by the Workers with No Land Movement (MST) in the state.

From these discussions the "Communal Land" model emerged, a new form of agricultural reform settlements, conceived in the social movement base. The proposal was put forward as a demand from the community of rural workers and was formed of 5 elements: a) the link of working people; b) the ownership of land; c) agroecological production; d) cooperation in many areas; and e) the development of basic social issues (Cortez, 2004). It was through the discussions and contradictory fights among the social movements and their demands for access to the land, the government (through its many organizations, such as INCRA, The Justice system, Environmental agencies etc.), actors from a public group and media involved in agricultural issues in Sao Paulo that the innovative attempt to implement PDS settlements in Sao Paulo and outside the original territory emerged.

During the implementation of the PDS Sepe Tiaraju, other similar projects were established in different areas of Sao Paulo and with very different motives for construction, often as an alternative method to solve ongoing conflicts that previous management had not been able to solve. As an example, there are the implementation of PDS in an area of evicted squatters in the Vale de Ribeira, in the Fazenda Ipero settlement in Ipero and in the Nova Conquista settlement in the city of Rancharia (Cortez, 2004).

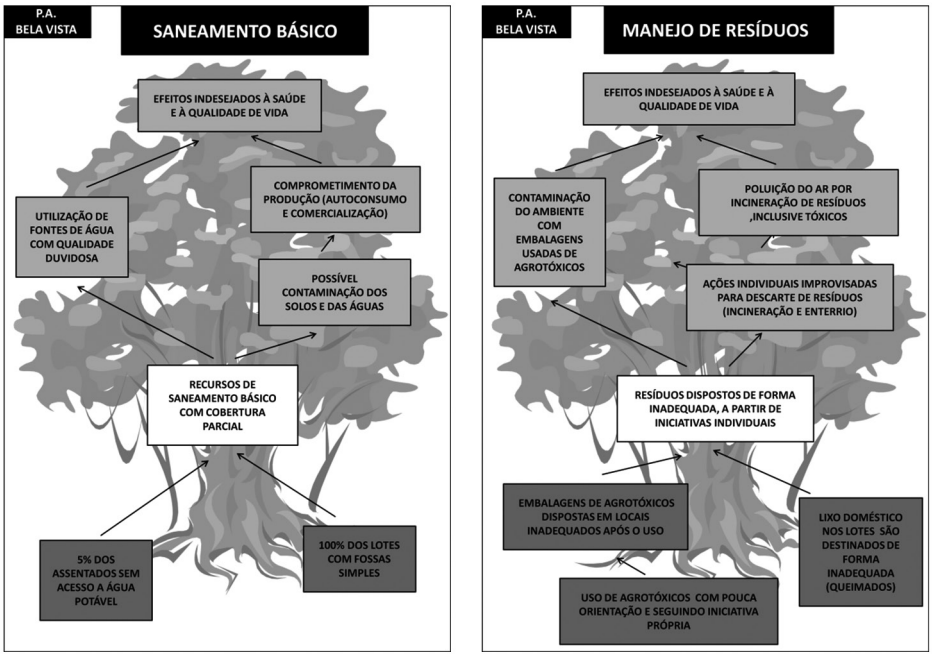
However, the final classification did not always manage to explain the whole accumulation of the thoughts arising from the diverse strands of the communities that took part in the projects.

Environmental Health problems of the settlements shown in 'Problem Trees'

The results of the work done in the participatory groups in the settlements are shown below. Summaries of the so called 'Problem trees', developed from the group exercises relating to the environmental health problems of the settlements, were formed into Diagrams corresponding to each settlement studied and each topic discussed in the participatory groups.

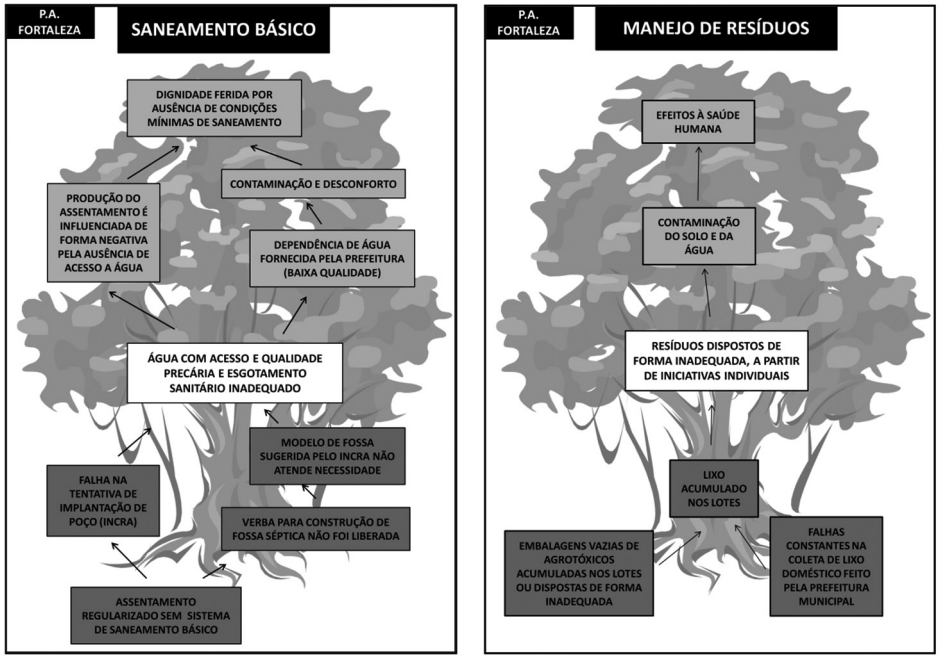
Diagrams 3, 4 and 5 portray the problem trees formed in the two traditional settlements – PA Bela Vista, in Araraquara, and PA Fortaleza, in Bocaina, In these the main concerns related to the possible health effects of inadequate basic sanitation, the use of water from sources of doubtful quality and inadequate waste management, improvised actions by individuals and lack of care taken with agrotoxic packaging. In PA Fortaleza three further trees were produced covering the following themes: neglect of workers health, lack of management and conservation of soils subject to erosion and lack of sufficient pest control, which spread to the land and livestock, even with intense use of agrochemicals.

Diagram 3 - PA Bela Vista - problem trees: basic sanitation and waste management - Araraquara/SP, January 2011



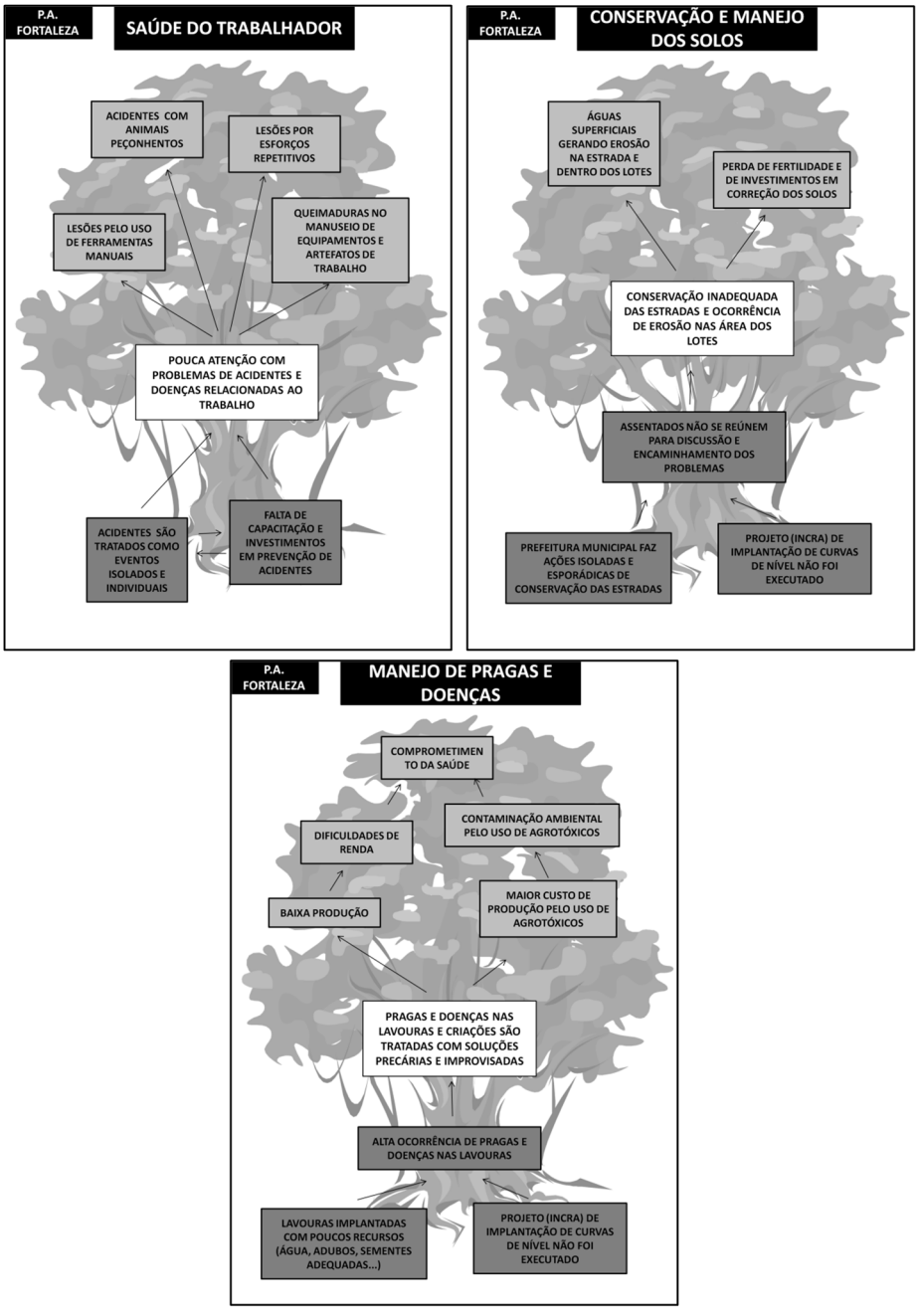
Source: adapted by authors, from field study data.

Diagram 4 - PA Fortaleza - problem trees: basic sanitation and waste management – Bocaina/SP, January 2011



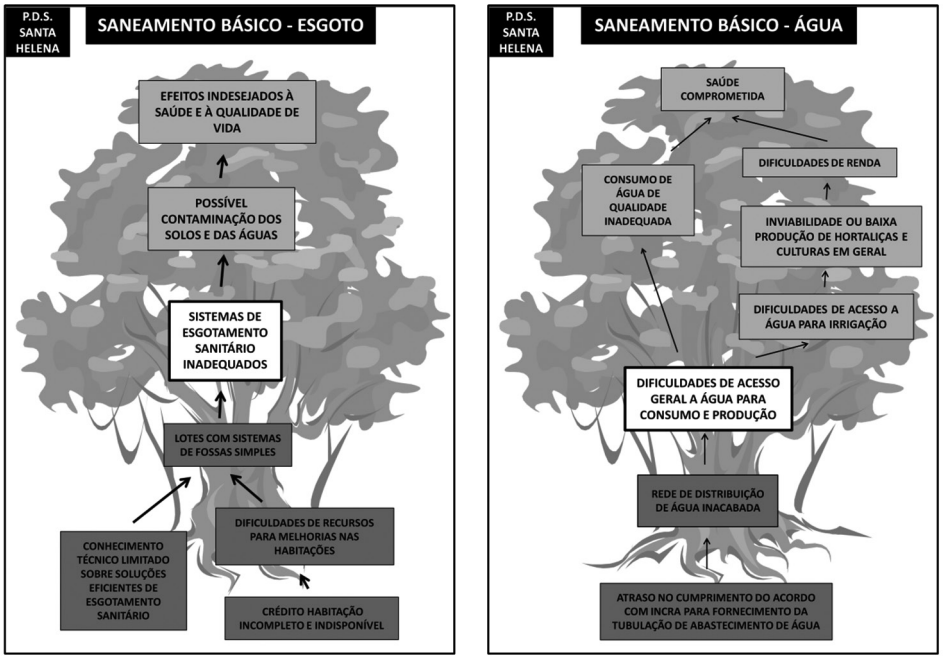
Source: adapted by authors, from field study data.

Diagram 5 - PA Fortaleza - problem trees: health of the workers, soil conservation and management, and pest and disease control. - Bocaina/SP, January 2011



Source: adapted by authors from field study data.

Diagram 6 - PDS Santa Helena – problem trees: basic sanitation – sewage and water – Sao Carlos/SP, February 2011



Source: adapted by authors from field data.

In Diagrams 6, 7, 8 and 9 the problem trees made in PDS Santa Helena, PDS agricultural community 21 December, PDS Mario Lago and PDS Sepe Tiaraju are shown. They show the same concerns with health problems due to inadequate sewage systems and difficulties in accessing the water supply.

Furthermore, the PDS Mario Lago produced a tree about the management of solid waste, identifying that the waste is disposed of in an improvised way, using some restricted solutions like composting, or inadequate solutions like burning in the open air. Only the PDS Sepe Tiaraju produced a problem tree relating to the high occurrence of pests, which caused loss of income, loss of food production, frustration with the agroecological project, complaints about insufficient technical support and of little agroecological knowledge.

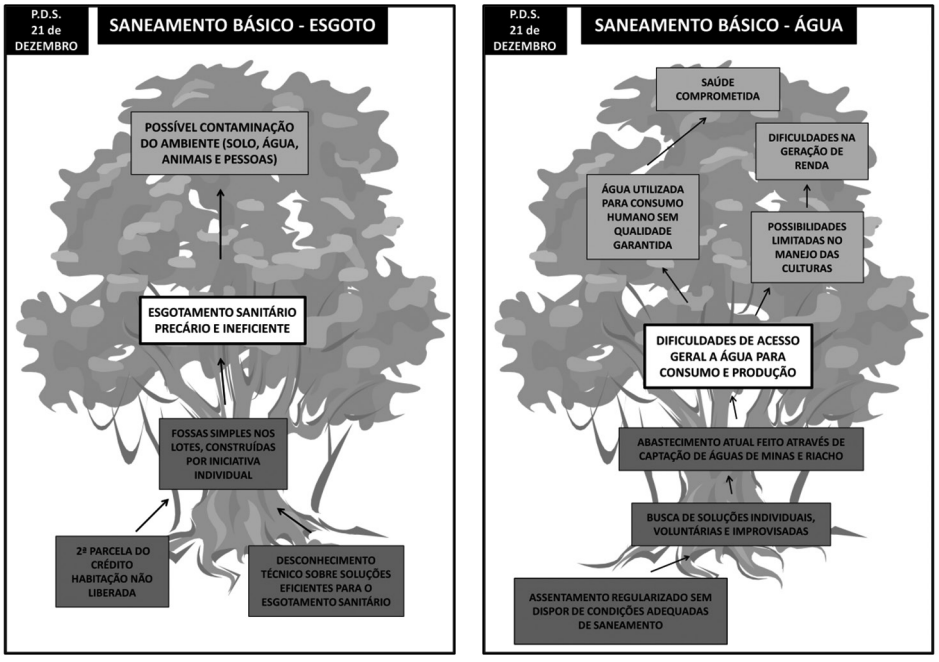
In general, technical and structural support in the studied settlements, seen through observations and collected statements from the workshops, can be identified as almost non-existent, as much in the traditional settlements (PA) as in the sustainable development projects (PDS).

Problems relating to the protection of the springs and control of zoonoses, which could potentially be identified with more detailed investigation, were not reported by any of the groups as a relevant component of the "problem trees". On the other hand, all of the settlements, independent of them being sustainable development settlements, reported problems with basic sanitation, including water supply and sewage sanitation.

The reference to waste management problems in at least one of the PDS settlements could suggest a more adequate solution is needed, from an environmental point of view, at least in this type of settlement.

With the exception of the variable reference to erosion control and deforestation control arising in a discussion with one traditional settlement (PA) all the other "problem trees" made the link between environmental health problems and damaging effects to human health and quality of life in the settlement. There is, therefore, and understanding among the settlers about the realtionship between their way of life and environmental health in the settlements.

Diagram 7 - PDS Agricultural community 21 December - problem trees: basic sanitation - sewage and water - Descalvado/SP, February 2011



Source: adapted by the authors, from field study data.

Conclusions

The vision of integration between the components that influence the use of natural resources (environment, community and economy), giving equal importance to each component, in the definition of the health conditions of the communities, conforms to the ecosystematic approach (Forget and Lebel, 2001), these were present in the responses from the groups (problem trees), in their reflections on the relationship between inadequate environmental conditions experienced and the impact on the quality of life and general health of the communities.

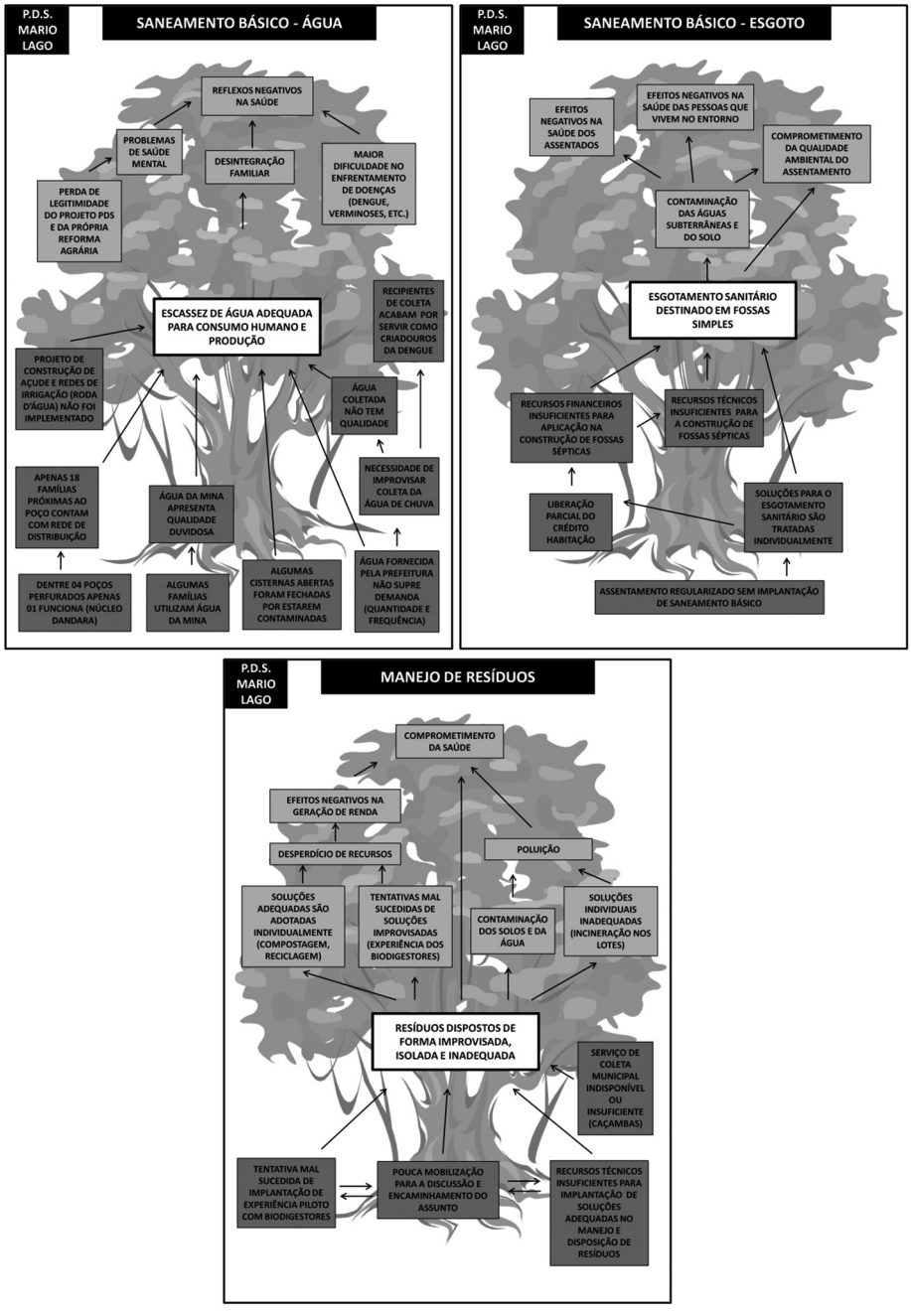
On the other hand, the sustainable development approach in the rural development projects in the Sao Paulo settlements that were investigated, indicates that the main concerns are with the production process, the adoption of agroecological principals and restriction of use of agrochemicals. The lack of basic sanitation and water supply of sufficient quality and volume are evidence that there is a great deal of work to be done to close the gap between the discussions and statements of politicians on the principles of sustainability and the practical realization, above all, in the incorporation of the environmental health aspects, which are permeated by a certain "invisibility".

The notion of sustainable development (Veiga, 2010) as the inspiration for the conception and implementation of public policies in the rural settlements in Sao Paulo state don't hold up to the examination and observation of the real conditions of life and work of the people involved in those projects.

Even taking into account the complex range of relationships and social discussions that are a constant part of the negotiations and construction of agricultural policies of the country, in general the fragmented way that public policies are conceived and implemented in the settlements is evident, especially in the discussions around environmental health and promotion of health.

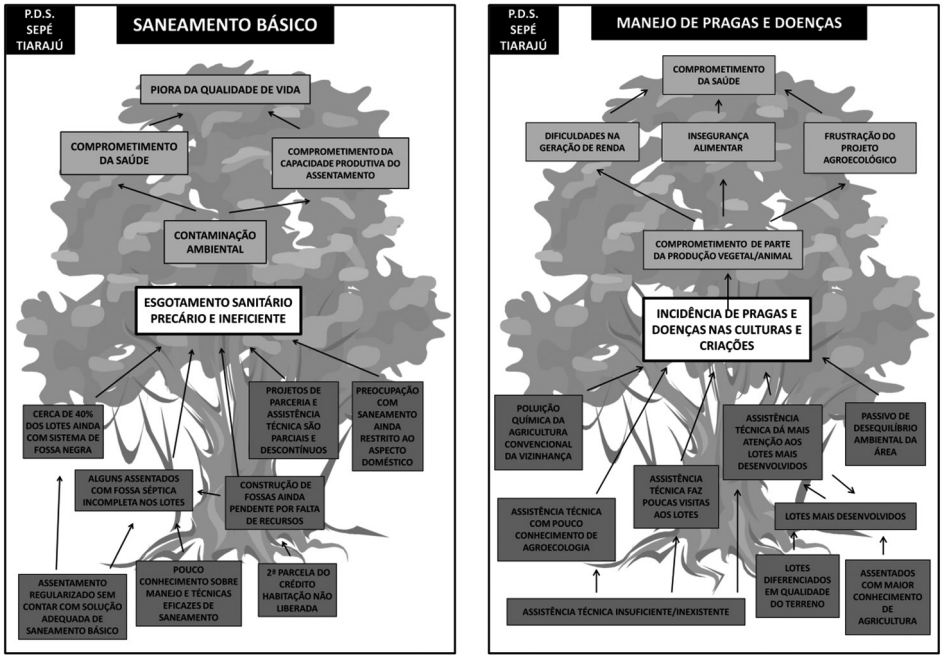
The fragmented actions of these policies, not touching on the variable factors of quality of life and health of the population of the settlements, result

Diagram 8 - PDS Mário Lago - problem trees: basic sanitation - sewage and water - and waste management - Ribeirao Preto/SP, March 2011



Source: adapted by authors, from field study data.

Diagram 9 - PDS Sepé Tiarajú - problem trees: basic sanitation and pest and disease control - Serrana/SP, May 2011



Source: adapted by authors, from field study data.

in showing that there is no fundamental value given to environmental health as a base of any intention and practice of human development. On one hand, it is a strong structural component, built socially and historically, that forms the outline of the agricultural reform policies of the country; on the other hand, there are also symbolic components linked to the proposal and execution of the 'sustainable development' policies of the studied settlements, demonstrating a large reduction in the "environment" concept. The biological and non biological factors in the physical context of the rural settlements, are dissociated from the real situation.

However, as much in the sustainable development projects in rural settlements of Sao Paulo as in the traditional settlements studied the dissociation observed between the official discussion of public policies in the PDS and the concrete reality of the sustainable conditions and the environmental health of the settlements is not perceived by the subjects, the target audience of the projects. For them, the construction of a sustainable way of life cannot waive attention from the primary aspects of environmental health, understood and demanded as essential factors for human development.

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