Waste Management in Western Amazon and Deconstruction of Concepts to Sanitary Landfill

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***Abstract*—**The solid waste management in Brazil is a municipal government task, which can be characterized by the disorder and lack of methods for environmental education of residents. In particular Amazon chaos takes incalculable dimension requiring emergency procedures. As it is recommended by Pedro Filho (2010) when dealing with the production management with a focus on social technologies, and exposed your diagram at the conference in Philadelphia. Become a worrying situation after the implementation of the Inter-Oceanic Highway, which will induce the flow dynamics in the regional economy, coupled with the operation of the Hydroelectric Complex on Rio Madeira. The fact entails valid studies so as to bring contribution in theoretical and empirical framework to support decision makers. This study will seek to answer what are the main creators for solid waste management in the Amazon from the deconstruction of landfill. Will be taken based on the Theory of Economic Development to resolve the Schumpeterian approach that aims to deconstruct the concept of landfill towards modeling of waste management in the Western Amazon; to accomplish this it is proposed to characterize the concept of landfill identify, the potential of waste to turn them into raw materials, and propose a management model based on the deconstruction of landfill. Method of Content Analysis and the required methodological procedures will be adopted. The expectation of this study is to bring priori empirical results for society, while inducing methods and processes with attitudinal actions for an effective resolution.

***Keywords*—**Administration, Amazon, Sustainability Technology, Waste Management.

I. Introduction

THE solution for landfills in Brazil is poorly resolved, while the complexity involving political, economic and environmental issues motivate discredit the decisions required by governments and private groups. Even though there is a law that determines the implementation of the waste treatment system in all municipalities in the country, the construction of alternative spaces remains a stopgap measure adopted by public managers in face of facilitators in the allocation of household, industrial and hospital waste.

From the political point of view it is understandable that the solid waste management cannot be resolved with the construction of landfills in the face of the tentativeness of the measure. Is required consider the surroundings of approaches such as population, consumption resulting in the intensification of social evolution individuals. And the perception that also stratifies the civil society without the information and education with quality required.

When dealing with economic issues, is actually the absence of reasonableness on the criteria, because the shift of technology excludes possibilities in the evaluation of content that could be transformed into wealth, first as raw material derivative, and then as a valid component to generate employment, income and public or private investment.

Regarding environmental issues, the complexity greatly impacts the scene of special areas such as the Amazon, now exposed to the scrutiny of the uncertainty of the progress that the first two issues will result in a near future, and the concern is the externality arising from industrial complexes that follow in the Hydropowers on Madeira River and operational fullness of Inter-Oceanic Highway, will occur all the phenomena against the preservation or conservation of the Amazon Environment. So arises the prospect of deconstructing the original concept of Landfill, bringing out the new concept of solid waste management in the Brazilian Amazon.

This study seeks to deconstruct the concepts Landfill as the first step of the reconfiguration decisions electioneering purpose, so you can achieve long-term solutions in waste management. This task involves an introduction to the theoretical and conceptual review of the methodological descriptive, then enter the results obtained from the proposed objectives, a conclusion with suggestions and the references closes the work.

II. Theoretical Review And Conceptual

Creative destruction is the conceptual means of this study, and is based on the Theory of Economic Development Schumpeter, treated by Opie (1997). This theory incorporates

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the concept of technological innovation, entrepreneurship and sustainability, impacting the environment to generate environmental benefits as projected in this study. Constantly is required to adopt development in its tracks environmental solutions, be them remedial, mitigating or compensating. However, to increase the speed of the implementation of material forms to the development process, it is especially noted that the anticipated projected goals of the hopeful thought, harms the most necessary observation of facts. Designing the monitoring and control effectively perform any deviations from the effects of environmental change leads to immediate questions about the actual merits of any concept or theory that would have led us to think and expect certain results.

Bureaucratic structures as it works in Brazil, the concepts and methods and processes are transformed into law for that practice among those involved. Regardless the predominance of disengagement of city hall services, the National Environmental Council provides a definition for what they term solid waste, detailing your configuration to a valid understanding. Thus, sought to bind their normative concept to the procedure established by the Brazilian Association of Technical Standards, so detailed in NBR10.004/87 solid waste is waste in solid and semisolid states that result from activities of industrial origin, domestic, hospital, commercial, agricultural, service and sweeping. Are included in this definition sludge from water treatment systems, those generated in equipment and plant for pollution control, as well some certain liquid whose characteristics make it impossible to launch the in the public sewage system or water bodies, or to require that technical and economically unviable solutions in the face of best available technology.

According to IPT (1995), landfill is the physical space in which to operationalize the release of waste without risk of contamination or damage to public health, minimizing the environmental impact where it operates such activity. Study shows a structure expected to occur with the installation of landfills effects, as it seen in the Figure 1 below, must have as part of its structure a waterproofing layer, an output for treatment of liquid wastes also known as slurry, a saddle of coverage, a drain to surface water, a drain for the gases formed by fermentation of sludge. These parts must be bounded by sectors, namely industry preparation, execution and completion industry sector, completing a proper engineering to ensure the expected effects with this complex equipment.

III. Methodological Description

For Creswell (2010) a component of the literature review is to determine which theories can be used to explore issues in an academic study, it appears at the beginning of the study and provides a lens that defines what is observed and questioned. The scientific methodology studies the investigation procedures of the phenomenon which facilitates their identification. Identified the phenomenon it is necessary to break it down into parts, or by all means, just make an analysis of its content, as proposed on this task.

According to Oliveira (2008), Method of Content Analysis is a tool for scientific research with many applications. In this typology the researcher will work on the philosophy of the research strategy and the research method.

As stated by Denzin (2010) all research has an intention which is to develop skills that enable understanding and transforming reality. The reflexivity and textual representations must be addressed in participatory or collaborative paradigm, mainly in the context of critical theory as processes here. Thus, it was understood the meaning of the expressions operating the conceptual analysis in the field of perception of the actors participating correlated to landfills in the Amazon phenomenon.

This task was carried out by means of the method of content analysis, which aims to obtain inference through objective and systematic identification of specific characteristics of the message, this practice is guided inference in the context of the facts as recommended by Creswell (2010).

The procedures used may vary depending on the objectives of the research, however, whatever its purpose, it needs to undergo, that needs scientific value, to some precise rules that would differentiate it from purely intuitive analysis. Involved in this task as the first literature search provides indicated by Oliveira (2008), then data and information for analysis and criticism, common in qualitative research process in manifest content were extracted. The figure 2 below shows the methodological construction undertaken in this work.

As Zimmermann and Martins (2014) online focus group has been used in qualitative research and contribute to the data collection, since structured properly, allows the entry of consultants somehow involved in the research object. For this task, were randomly assigned to compose the focus group reseached as twenty social actors to be questioned regarding the subject of this investigation. We propose a web communication by e-mail via website https://pt.surveymonkey.com/home/ an usual providence in the academy for immediate testing and benchmarking. The answers were tabulated, analyzed and criticized as the basis for the construction of social ideal modeling technique in participatory planning.

IV. Results and Discussion

In 2010 was launched the National Policy on Solid Waste in Brazil, under the Law 12.305/10, which contains instruments capable of resolving environmental and socioeconomic problems arising from the handling of waste. The act contains guidance of preventive, educational and management nature addressed to those who take interest in a shared manner. Although sustainability is the basic factor, the norm intends to increase the recycling and waste reduction in the country. In spite of this, the control of its applicability can be considered as waste in fact, because does not indicate a policy framework to manage the problem for the root of the problem, the stakeholders own the process remains in doubt their practices.

Meanwhile the population increases, and with it consumption and the whole relationship mangled by the lack of training of those who would come as agent capable and eliminate known dumps. Do not exist a system of selective collection, reuse, recycling and or reverse logistics, the main measure to be considered after the education of social actors.

A. Characterization of the concept of landfill in Brazil and the Amazon

The constant change of the medium coupled with population growth environment has generated the transformation of urban spaces from human interventions with high production of solid waste, which makes relevance and importance to the treatment in the context of better management arise, especially in the Western Amazon.

Survey the literature for this task operated in Figure 3 shows that between 1998 and 2010 occurred public and private spending for science and technology; despite this, management of solid waste continues without a structural definition in technical point of view, as if the question was on placed on the edge of reality.

The analysis of Figure 3 indicates that public and private resources have been applied in accordance with the Gross Domestic Product, yet the issue of landfill, while latent solution, not proportionally follows the logic required by society. The data contained there indicate that regardless of the environmental relevance, the applied values do not meet the situation, while the issue remains on hold. Meanwhile, this waste could generate employment and income with the production of skilled artifacts, as a raw material, through the concept of entrepreneurship and innovation.

Study Donato (2011) allowed the concept of entrepreneurship in context analysis. For this author, in his Porter vision, a competitive economy is underpinned by the productive capacity of its population, so that the inferred approach is taken by this scholar, come opportunities of a dynamic between the treatment of solid waste that are currently released landfills and prospecting utilities prepared from leftovers such as rugs, furniture, lamps, decorative and other artifacts, are the result of innovative entrepreneurship methods and processes. Are steps that mark the path of sustainability, through the individual's relationship with the environment, now free of pollution and epidemics brought by poorly managed landfills.

The lack of sustainability in waste management in Brazil and the Amazon

Search in Gonçalves Dias (2009) leads to a concept of sustainability compatible. In his doctoral thesis at the University of São Paulo, the researcher focuses on the garbage collectors in the concept offered by Lorenzetti et al. (2008). She says that sustainability is the consolidation of a tripod to balance the economy, environment and society, in a format to be given the task here. This tripod should have the static character to ensure support to the development, dynamics of evolutionary transformation that reflects the natural, social and environmental continuous modification. Are situations such as the implementation of the Madeira River Hydroelectric Complex and the operation of the Inter-Oceanic Highway. Shall result in the economic boom, increase in income, increased consumption, amplification landfills for demand residents unprepared for treatment arising progress will happen.

For Schumpeter (1961) is necessary to clarify details of the project, to avoid the general conclusions because the projections acquire meaning only in relation to the situation created in the process. Necessary to note the role of the creative destruction. Thus should be understood. There is no denying that reality shows disruption of the triple bottom line with regard to solid waste management in Brazil in general and, in particular, in the Brazilian Amazon.

The relationship between ecological, economic and social points is unbearable, absolutely unworkable and unenforceable under the conditions in which they operate in the management of logical attribute. Figure 4, Table 1 and Figure 5 below expose the reality of cyclical discussed in this subtopic.

The negative impact of the reality of landfills in the dynamics of development.

Caught in the literature indicates that the experience of economic development causes increased consumption in this dynamic and the volume of waste. In the field of conceptualization is necessary to move to a new meaning with respect to landfill and solid waste. In today's society the waste is no longer coated character of uselessness, the concept currently being adapted to more economic sense of Schumpeterian innovation, revealing itself as an environmental cost-effective solution for modern society. Inobstante, it is clear that Brazil has disbursed short of the real need to address models of innovation and technology in relation to the required conceptual demands. It is because innovation is directly linked to investments in technology, stating that such concepts are weighted to a speech outside of reality, as demonstrated in Figure 6 which follows, obtained from a study conducted by the First Preparatory Meeting for the World Forum of Sciences in 2013 by Pedro Wongtschowski, the Foundation for Research Support of the State of São Paulo (FAPESP), Brazil.

Technological services plotted represent the basis for the development, according to the document provided by FAPESP; are constituted by royalties and licenses, and computing, information and equipment rental. As evidenced above graph is hidden technological deficit in the trade balance, while total surpluses arising from the export of non-industrial goods; further demonstrates the weight reduction industry in the national economy. The instability reaches evidenced the management of solid waste in the country, because the neglect weighted grades here for low, medium and high technology, even meet the minimum defendant. Lack of proper management of technological services results in the

deconstruction of landfill in Table 2 right below:

B. Identification of potential waste to turn them into raw materials

Search from the collections online the House of Representatives (2011), provides insight on technological innovation for coping with in Brazil related to solid waste approach. This question has the support of the Ministry of Cities. The emphasis has been on a quality information system to ensure follow a profile for sustainability. This system is useful as a support for various projects, including those pertaining to landfills that will be implanted with financial support subsidized by public funds. Study at the University of Campinas, state of São Paulo leads to identify a gap between theory and practice. In response, here is the Table 3 below, where is the typology of the potential and possible derivatives that could generate multiple benefits.

C. Model proposed for management of solid waste

The concept of landfill requires a social technical modeling supported by innovation and technology that satisfy a socio-environmental relationship. Enters this scenario the importance of harmony between the environment and the integrated local development. This is a measure for sustainability because the phenomenon of progress should not undermine the environmental services expected by generations. As was covered in this document, the deconstruction of the current concept will consider a new attitude of producers, local managers and also consumers that induce the emergence of waste, requiring the re-use as raw material in the preparation of other consumer goods.

This study required intervention by the focus group that enters the respondent as prescribed by rule on basic questions on sustainability. Six multiple choice questions were formulated, whose responses of social actors point to the situation in the group studied. Could rule on their perception on landfill and environmental importance of this; interpreted on waste and on the conditions that a landfill must possess to receive these; commented on the reality of investment in the landfill and the technology applied in this. The answers were analyzed and criticized based on the following.

Landfill should be a technical room for waste treatment

The majority of respondents stated that the landfill in their perception is a space for waste disposal. But also significant was the percentage of those who consider a sanitary solution. None of them considered the landfill as a dump or have said he did not know what is a landfill. It can be noted that exists an insignificant percentage who considered the landfill space for waste recycling. Thus reveals an asymmetry between the cyclical reality and perception of social actors; that the landfill in Amazon was never used as a space for waste treatment and much less has been a sanitary solution. In spite of this, the rule of the National Environmental Council consider a sanitary landfill solution on Amazon it lost its concept as it is indeed a pollution incidence, considering the proven in this study. The query performance is shown in Figure 7 below.

Environmental importance of the landfill

The study joins with questions raised by the focus group about the environmental importance of the landfill. Was unanimous in the affirmative that a suited solution is needed. Notwithstanding this perception, the focus group members and society in general have been watching the consequences of the lack of concept that managers have kept on this mean machine. Brazilian legislation established the year 2014 as the deadline for implementation of landfills in all municipalities. According to the National Survey of Basic Sanitation, the Brazilian Institute of Geography and Statistics, in the 5,564 Brazilian municipalities, only 994 have selective collection, with 536 of them rely on the participation of cooperatives calls. This reality becomes more severe in environments such as the Amazon. Figure 8 shows the perception of respondents of the focus group.

Perception about the treatment of waste in the scenario investigated

The perception of the focus group on the treatment and today is being given to waste reflects the cyclical reality. In fact, the waste thrown into the wilderness, with all the consequences disputed this investigation. The selected respondents in understanding the volume is related to the performance of a cooperative that works precariously on the landfill Vila Princesa in Porto Velho. The Figure 9 shows the performance of this perception.

Functional structure perceived

The focus group consulted commented on the perception related to a functional structure for landfill, highlighting elements necessary for its operation. Most shows the importance of the process equipment, which involves machinery and techniques, which would only be possible with an industrial structure. But also indicate the importance of cooperative, which would be a sort of qualified professional association and managed by cooperative members themselves. The asymmetry in this perception is in denial of the existence of collectors, obviously this would be a criterion of understanding based on the training of current collectors, enabling the condition of professional recyclers to service an industrial waste treatment. The Figure 10 shows on the perception of a structure suitable for landfill.

Perception regarding investments in landfill

When asked about their perception of investments in landfill, the focus group favors the improper application; was significant the percentage of those who claim about the lack of investments for this purpose, but also had no information about the situation. It is a fact that social actors do not have adequate information about the required investments, while the city hall managers abandon its commitment to inform the citizens about the investments in general and in particular to landfills. It remains an anachronistic perception about the use

of resources. Furthermore there is a notorious inability of private entrepreneurial uninformed to create structures for private investments and have profitability by industrialization recycling. The Figure 11 shows the position of the focus group respondents.

Perception of technology in landfill

Following the rite of inquiry to participatory planning has been consulted on the perception of the group members focus on technology in landfill. Respondents in almost all have spoken that there is no technology. It highlighted the lack of technology in most sectors of the national economy; This fact has excluded the possibility of strategic importance to the success of initiatives such as the program of accelerated economic growth and simultaneously brought discredit to investors. This outcome has occurred since the universities have become unable to meet the required technological issues, to complex industry operations that find themselves frozen or exposed to the simple condition of primary processing of agricultural derivatives. So much so that research Wongtschowski (2012), this study highlights the technological absence. Thus, the last stage represented by the post-consumer does not reach the required practical purposes. The Figure 11 shows the perception of the interviewed.

Model of management proposed

This proposal is based on the deconstruction of the state of the art, and the perception of the interviewed coming from the focus group. The theoretical design allows creators to build basic fitness required in the solution. Table 4 below shows the expectation of an ideal model for social and technical issues related to landfills.

V. Conclusion

The deconstruction of the landfill in the vision seen in this task will serve to redirect the causal relationship between production, consumption and recycling. When considering waste as feedstock, the concept of landfill shall be another methodological setup and attitude will be oriented towards society and the government. Current practices for the allocation consider waste as trash, devoid of economic value, contrary to the actual facts as proved in this study. Moreover, indiscipline at on the handling leftovers became this environmental damage, because the mischaracterization landfill complements the ecological disaster. In the conceptual framework of this study, the waste will represent raw material with the potential that proves entirely. For setting a new conceptual model is critical ingress of innovation and technology as basic processing of raw materials in a qualified industry. This work will serve as a further contribution to academia interested in the environmental relationship.

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