**I Specialized Conference on Ecology, Management and River Restoration: Practices and Experiences. 2015**

*Lisbon University/FLUVIO Programme – Federal University of Bahia/MAASA*

Salvador, Brazil, 27-28 July 2015

# THE USE OF PARTICIPATORY ENVIRONMENTAL DIAGNOSIS IN WATER RESOURCES PRESERVATION

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## Abstract

Based on the application of the experience of Participatory Environmental Diagnosis (PED) in the indigenous community in the municipality of Caldas / MG, this paper presents an analysis of the use of such methodology as awareness-raising tool for environmental preservation. Thus, this analysis seeks to bring the PED use of reflection regarding the preservation of water resources around practices and participatory techniques, collectively building future actions in pursuit of sustainable consumption.

*Keywords: Participatory environmental diagnosis, water resources; participatory evaluation, environmental protection.*

## Introduction

For many years the rapid and uncontrolled growth and the relentless pursuit of global growth, has led to the deterioration of the environment. Among them, it is possible to highlight the pollution of water sources and deforestation for industrial production that caused irreversible damage to wildlife and the country's flora.

There is today the information on the total existing fresh water on our planet is relatively low compared to consumption by the world population. Moreover took up the erroneous idea that it is an inexhaustible well for many years, the concept for which only came to change recently as the progress of environmental studies walked. The value given to water resources by man today is almost negligible and misunderstood. It is known that fresh water is divided and only 0.3 % is the surface portion of the fresh water found in rivers and lakes, 30% is groundwater , 0.9 % makes up the soil moisture and swamps and about 68.9 % is in glaciers , polar ice caps or in mountainous regions (SRH/MMA , 2006).

Based on these there is the utmost importance in the preservation of water resources from its source, so that there is quality assurance and recharge for water sources. Access to water is a fundamental human right and should be distributed evenly from the citizens (SRH/MMA, 2006).

Therefore it is considered that every citizen should have access to clean water , otherwise injure human dignity , given that there is no life without water and there is no way to live with dignity without such access equally (CASTRO, 2013).

According CALHEIROS (2004) means by the spring upwelling of groundwater, which will give rise to a dam or water courses (creeks, streams, rivers and lakes). A well with invaluable, should be treated with special care. He is responsible for recharging the springs, contributing to the preservation and conservation of water resources is fundamental to avoid drought. The devastation of riparian forests has contributed to siltation, increased turbidity of the water, the imbalance of the system of floods, bank erosion, springs losses in addition to the commitment of wildlife (Oliveira – Filho, 1994).

The study highlighted constitutes the analysis of the use of Participatory Environmental Diagnosis (PED) as a data collection tool with a focus on environmental preservation of water resources. Project carried out in the Indian village Xucuru - Kariri in the municipality of Caldas/MG. Whose goal it is directed in an attempt to seek environmental enhancement, enabling the incorporation of preserving environment and encourage sustainable living for the water resources. The application of DAP techniques with the indigenous community, in appreciation of their results, enabled interesting findings, which led to the preparation of this work, a way to discuss the importance of this method that differs from conventional.

## Methodology

The participatory methodology was held at farm Boa Vista in the municipality of Caldas/MG, address to fourteen indigenous village Xucuru - Kariri. The choice of location was given for it is a traditional community that is in the countryside, coming from another state and adjustment difficulties.

Participatory Environmental Diagnosis (DAP) is known for applications in rural areas with great success due to simple language, giving voice and vote the participating community diagnosis (Chambers, 1992; VERDEJO, 2006). Because it is an open methodology, free to local adaptations, was chosen the most simple and effective techniques for an environmental review. Divided the work into three stages in order to better meet the objectives and predetermined roles. Of the many existing techniques, we chose to use fourteen of them.

First step - Analysis of Secondary Sources: Aiming to raise prior information, we used this technique thereby generating a pre -site diagnosis. In this process consulting projects, maps, scientific studies, photos, institutions. Thus allowed to know the history of ethnicity, understand what led replacement, local difficulties and adaptations to the environment.

Second stage - Environmental Survey: In developing the diagnosis this is the phase that takes place the environmental review. In pursuit of achieving, applied five techniques made possible the

approach of the mediators with the community and so know the local reality. Information obtained during this period guided the activities of the following steps and helped in future actions.

Third stage - Diagnosis Village: This stage is characterized as the final part of the diagnosis by conducting a survey of information needed to make up the rest of the research. Nine techniques were used, their applications were divided into two at a time.

## Results

The first step has established with the historical research of Xucuru - Kariri ethnicity and Caldas/MG municipality. This step allowed to know details of Indian life, the story that led him to seek new lands and how was the choice of Farm Boa Vista community housing since 2001. Underpinning the following steps, it was created a bridge between the mediators and members village.

The second stage began with application of five techniques, obtaining the environmental review. During the Cross Walk (it's a walk with a representative of the village member to cover the entire area that enable identification and evaluation of environment problems), walking through the homes, has identified sanitation problems, black pits with improvised covers, liquid percolating on the ground (Figure 1), sewage sinks without plumbing discharged directly to the ground. We also saw solid waste improperly discarded in access roads, in the yards of homes.

Figure 1 - Residue from Fossa percolating in Solo.

Other adversities were identified, now away from homes with existing springs on site. This issue regarded even by ethnicity as aggravating. Five springs were found, only a flashing, all illegal under Law No. 651/2012 12. Two of them are the densest vegetation with a relatively good amount of water and with restricted access. However, the other three including intermittent, have little vegetation, free access to the intervention of animals and nearby agricultural crops (Figure 2). The visit took place in September 2014 amid historic drought has occurred in the Southeast.

Even at this stage, it applied the Venn Diagram, allowing check which in most entities do not play their role to the community. The semi-structured interviews and structured There were also developed during this phase, helping to clarify some doubts. Another technique was to Realized Reality and Desire, where it was found that the community has desires close to the urban reality (Table 1).

Figure 2 - One of the springs Unprotected Xucuru - Kariri village.

Table 1 - Reality and Desire Indigenous Community.

| Desire | Reality |
|---|---|
| Flour Mill | there is not |
| dam | Lack dam / Cleaning |
| Air Academy / free | there is not |
| homes | Has quality for all |
| Daycare | there is not |
| Jobs | You have to look outside the village , often fails |
| best Schools | It has only one that does not meet all children |
| subsistence | Not all of the village |
| Sewer | Have , but with many problems |
| Agricultural Projects | there is not |
| Land | It has 101 hectares but has little forest |

The second step enabled the complete diagnosis by applying nine techniques, distributed in four visits. It began with the Seasonal Calendar, which found that the community produces only two types of crops, beans and maize, as reported do not know more cultures that thrive in this region. Later applied the map of Migration, which made it possible to discover the origin of the community, with almost total Palmeira dos Indios/AL. With the In and Out technical (consumption of indigenous population) was discovered that the community does not have much income input, as agricultural cultivation does not guarantee subsistence. The Daily Routine identified that the village does not have routine work according to the will without rules. The Tree Problem outstanding technique, possible work with the community demonstrating that through a problem we can identify its causes and consequences, the theme was worked "loss of springs" (Figure 3). With this activity, we observed the community resourcefulness to identify what was asked of them. The choice of subject was given by all present, indicating it between all the issues raised during the diagnosis, the most aggravating related to environmental impact. The community during the course of diagnosis acquired more knowledge and will to conserve natural resources. The Tree Problem collaborated village to identify its causes and effects, it is positive or negative, according to the practiced activity.

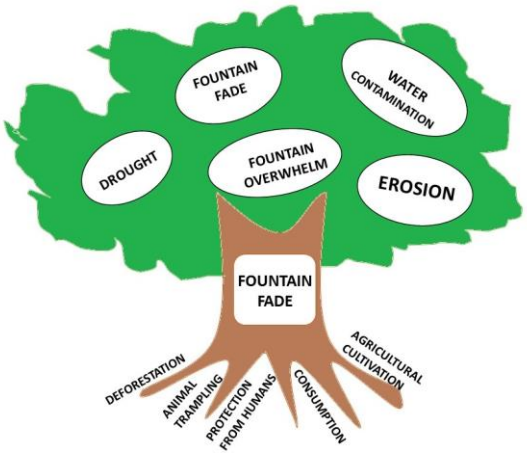


Figure 3 - Problem Tree - developed by the community.

The diagnosis ended up with three arrays guided the community for future action. The Main Problem Prioritization, the scenarios Alternatives and Decision Making, obtained great results thus verifying it is the effectiveness of the execution of the activities previously applied by the diagnosis. Where the community found changes of actions that can be performed and thus pursue sustainable development within the village for the preservation of natural resources.

## Discussion

The use of the methodology for the survey of environmental impacts provided recognize some important precautions that should be taken in the application of techniques. As well as this also showed certain advantages over the more conventional instrument forms of existing methodologies.

The participatory appraisal is a methodology characterized by no specific rules in their applications, but are fully adaptable to the reality of the study area. The same technique used today by a facilitator can be imaged differently in the same and / or elsewhere. This does not mean that the methodology is disorganized and without scientific nature, rather it is from this that the research becomes more cautious, with particular care not to lose focus as the diagnosis happens.

The methodology itself has characteristics that make your job pleasant. The playful aspect facilitates the understanding and consequently the expression of opinions. It also provides the fastest and most effective empathy process between the mediators and the target audience. It brings the way to get a survey, diagnosing a local finished eat faster, truthfulness and makes the focus on community participates and consider local improvements. The DAP cannot even be a concept transformer, but can be a great public opinion former preparing the public studied in the search for environmental preservation.

## Conclusions

The aim is to seek behavioral change through small actions for sustainable living. Where projects can collaborate taking up traditional rural communities or not, the preservation of natural resources especially the springs. Facing the above, it can be concluded as the use of participatory diagnosis:

i) It has been shown effective in an environmental where there was local environmental impacts according to the perception of diagnosed;

ii) It was evident the role of mediator for the successful development of diagnostic, working as a director without influencing the results;

iii) provides the exchange of information between the technical and empirical, and may bring new insights about the use of natural resources;

iv) The community demonstrated a real commitment to changing attitudes to seek environmental preservation. It is considered difficult work that lies ahead and that changes occur in the long term, however participatory methodology becomes effective with the future actions; and

v) The diagnosis is not the solution to problems, but a way of raising local environmental impacts; identify its causes and its effects. From then bring to the community diagnosed the possible actions which can minimize such problems. Assisting in the preservation of water sources through actions based on the diagnosis and some behavioural changes to a rational and proper use.

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