



CASE STUDY

Panama: IWRM Planning Experiences at Municipal Level in Indio River Basin

River Indio's watershed is the source of water supply for the growing demand in the metropolitan area of Panama. However, due to extensive human activity and mismanagement, the area has been affected by extensive deterioration. Action has been taken to reinforce natural resources, restoration and water resources conservation, grounded in government strengthening and integrated management. It sets a clear example of active participation of the communities and the local authorities.

Background

River Indio's watershed is the source of water supply for the growing demand in the metropolitan area of Panama. The watershed covers an area of 571 km². The predominant climate in the area is tropical and humid with high precipitation. Due to extensive human activity, namely deforestation, the primary vegetation has been eliminated. Consequently, habitats have been destroyed which affects the mammal diversity in the sub-basin. In general, there is a low concern for natural resources management in the basin. Additionally, livestock breeding has intensified which results in conflicts over land use and deforestation of forests that serve as shelter for water sources. As a result, many rural aqueducts have been depleted. The low level of education in general, and particularly in environmental aspects, conditions a social behaviour towards the basin's natural resources that does not correspond to the demands of the environment in order to guarantee its sustainability. The principal problems in the River Indio's basin are:

Fecal and solid waste contamination in water bodies and natural surroundings.
Limited drinking water quality and quantity and water sources devoid of vegetation.
Organizational weaknesses at communal level and insufficient maintenance of rural aqueducts.

In view of this situation, the Municipality of Chagres was motivated to lead and coordinate, with the financing of the European Union, the necessary actions to elaborate and validate in a participatory process the Integrated Management Plan for the Indio river basin, focused on improving the management of the Indio river basin. and validate in a participatory process the Integrated Management Plan for the Indio River basin, focused on improving the quality of life of the basin's quality of life of the users of the basin, through a sustainable use of water resources, soil, flora and fauna and the reduction of the risks to which they are exposed.

Actions taken

In 2008, Charges municipality decided to coordinate an Integrated Water Management Plan

with an initial three year horizon, aiming to lessen risks triggered by the environmental degradation and to improve user's life quality. The main objectives were:

1. Risk and water resources integrated management.
2. Actions for natural resources conservation.
3. Strengthening of governments and local organizations for the implementation of the Integrated Water Management Plan (2008-2020) and the sustainable development in the basin.
4. Develop infrastructure to improve water systems.
5. Awareness-raising about water to achieve a better attitude of communities towards the natural environment.

One of the most important activities was the management and maintenance of forests in the sub-basin to conserve and protect the hydrological regime. More so, four water protected zones with a total area of 521.7 ha were established. A hydrological corridor was also delineated ensuring the connectivity of water resources while guaranteeing the conservation of ecosystems to support the proliferation of wildlife. This contributed to improving the quality and quantity of water, reverse the fragmentation of ecosystems and protect groundwater recharge areas. In addition, workshops that encouraged participatory processes, analysis and self-reflection were conducted in order to encourage participants' commitment to initiate and implement procedures of community organizations.

At the same time, this activity was accompanied by the improvement of the water systems (aqueducts), from the construction of storage tanks, improvement of the collection boxes, improvements to the conduction lines, installation and improvement of the equipment for the disinfection of water (chlorinators), which guarantees that the population of the communities in the basin consumes good quality water, this allows the percentage of contracting gastrointestinal diseases to be lower, especially in the infantile population.

Outcomes

This initiative has contributed to improving the quality and quantity of water for human consumption, as well as contributing to reversing the fragmentation of ecosystems and guaranteeing the protection and conservation of water reserves, which are also aquifer recharge zones. Another contribution of the project is the sensitisation of the population on the water issue in particular and the environment in general, as well as the empowerment of the population.

As a result of this action, four water reserves were created (La encantada, Santa Rosa, Quebrada Bonita and Icacal) with a total area of 521.7 ha, benefiting approximately 2,320 people; categorised municipally, through resolutions numbers: 06, 07, 08, 08, 09 - 2010 issued by the Municipal Council of the Municipality of Chagres. An important success factor is that we have moved from words to action on integrated water resources management. A municipal decision has been taken to adopt the Integrated River Basin Management Plan (which was elaborated in the framework of the PREVDA project).

Lessons Learned

Improved water quality and quantity benefit over 1350 inhabitants. A user network that strengthens community organizations was formed. It holds both, a Strategic Plan and an

Action Plan.

This initiative's success prompted other communities to organize themselves and develop similar actions to resolve water issues.

Training and awareness are imperative as tools for processes which are intended to create environmental and water culture. These tools encourage communities to have a sense of belonging and commitment to conservation.

Corresponding Author

[Figueroa, Margarita](#)

Corresponding Author Contact

gwpcam@gwpcentroamerica.org

Organisation

[Global Water Partnership Central America - GWP CAM](#)

Year

2014

Country

[Panama](#)

Keywords

[Integrated Water Resources Management \(IWRM\)](#) [Urban Water mismanagement](#)

Thematic Tagging

[Ecosystems/Nature-based solutions](#)

Language English

Supporting Materials

[Panama Water Partnership](#)

[GWP Central America](#)

[Panama: IWRM Planning Experiences at Municipal Level in Indio River Basin](#)

Related IWRM Tools

Local Authorities

Environmental Impact Assessment

Source URL: <https://beta.toolbox.venthic.com/case-study/panama-iwrn-planning-experiences-municipal-level-indio-river-basin>