



## Research Article

### Formalization of sustainable local development management

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#### Abstract

The relationships between personal and group variables are specified with respect to water availability and supply management. The work contributes to the discussion around the administration of water resources and services based on social variables such as resilience, solidarity and cooperation. In this sense, the parameters that allow management based on local consumption needs are exposed. Within the framework of Human Development, the weighting of needs and water availability is fundamental for the establishment of an agenda in the area of water supply management.

**Keywords:** Environmental participation; Local development; Resource management; Water availability; Water supply

#### Introduction

In the framework of the call for research projects for full professors of the National School of Social Work, a research project was developed that began with an exploration of migration in Xilitla, a town located in San Luis Potosí. The indicators of Human Development such as health, housing, education and employment were significantly related to the migration of family members.

However, the permanence in the locality was positively related to the care of the environment, indicated by water saving and reuse. Based on this finding, it was considered that Human Development would be oriented by coffee growing, the main employment activity in the locality [1].

However, droughts and floods encouraged the production of coffee and its commercialization, since the water culture of Xilitla depended on the rainy season and the regular supply of the public drinking water service. Therefore, by modifying the natural water cycle and exacerbated the water shortage, farmers were affected in their use and customs, entrepreneurship and marketing [2].

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The alternative of collecting rainwater, filtering process, reuse and recycling has been considered viable in relation to local entrepreneurship. In this sense, there are significant differences in the acceptance of technology among young people with respect to older adults, but the minimum investment that is required discourages implementation [3].

In this way, the management that from Social Work can be generated from the ethnography of local needs, the motivation to participate in the care of the environment and the implementation could show the barriers for the acceptance of technology [4].

Therefore, a study of the effects of the promotion of the capture, dosage, reuse and recycling technology on local water uses and customs could stimulate coffee production and thereby reactivate Local Development.

Will establish a diagnosis of the acceptance or rejection of capture technology, metering, reuse and recycling of water around coffee production of small and medium enterprises in order to manage subsidies to the authorities and enhance marketing of the product in three locations with high water availability, but low level of social entrepreneurship.

If the promotion of the acceptance of technology is aimed at young coffee farmers, then the social entrepreneurship indicated by the demand for subsidies, credits, resources and implementation to micro, small and medium enterprises will be activated. Coffee production will increase by encouraging the training of coffee farmers and expanding the local market to other neighboring communities, but there will be a difference between Xilitla, Valles and Real de Catorce, since their levels of availability and entrepreneurship are different. As availability decreases, social entrepreneurship increases because locals seek to diversify their paid activities. In this sense, coffee growing goes beyond the reactivation of Local Development, its effects on social entrepreneurship will generate a local metabolism.

The objectives are:

Establish the formalization of dependency relations between the promotion of water technology and local lifestyles (catchment, dosage, reuse and recycling) with respect to droughts and floods.

Diagnosis of lifestyles with respect to water technology.

Intervention model for the management of public subsidies with respect to the contracting of water technology.

Evaluation of customer satisfaction with respect to water technology, as well as coffee productivity in a one-month observation period.

Didactic material for the subject of Regional Development of the ENTS-UNAM.

#### Methods

A correlational study will be carried out on the effects of the promotion of water technology on lifestyles (catchment, dosage, reuse

and recycling), as well as their levels of demand, subsidy and implementation with respect to the productivity of organic coffee.

An inventory of micro, small and medium-sized companies dedicated to coffee production and marketing will be made in each of the three locations.

An ethnography of the availability of water resources in each of the three locations will be prepared, as well as the level of drought and flood with respect to the loss of productivity and lifestyles linked to the collection, storage, reuse and recycling of water.

We will describe, through focus groups (8 owners, 8 officials and 8 workers), the levels of social entrepreneurship related to the demand for subsidies, microcredit, tax incentives and strategic alliances of local companies dedicated to the cultivation of coffee and local sale, as well as self-management of resources and social responsibility.

The scope and limits of water technology and the potential risks to the public health of droughts and floods with respect to coffee cultivation will be promoted through entrepreneurship workshops and culture of water saving.

The effects of entrepreneurship and water saving culture workshops will be evaluated through customer satisfaction surveys and productivity record inventories through the intensive use of water collection, storage, dosing, reuse and recycling technologies. The statistical parameters that will be used to demonstrate differences will be the Student's "t" test, the chi-square test, and the Fisher's F test. Regarding the establishment of dependency relationships, Pearson's r correlation statistics and "beta" will be used.

Didactic material will be developed for the diagnosis, intervention and evaluation that from Social Work was carried out to encourage social entrepreneurship and water culture in relation to coffee productivity and local marketing.

## Formalization

Accordingly, stage w is extended by the addition of an equation that defines the availability of wastewater ( $FS_{scw}$ ) as it depends on the amount of water consumed by households ( $QCD_{cwat,h}$ ) and activities related to a wastewater system. sewage system ( $QWAT_{cwat,asew}$ ) (one).

Where the *shsew* coefficients define the shares of water consumed that is taken into account as wastewater, *shsews* defines the percentage of wastewater collected and *shsewl* defines the proportion of wastewater collected.

The wastewater supply defines the maximum amount available for recycling, but the actual amount used depends on the demand for reclaimed wastewater conditioned on the supply and demand of all types of water in the system.

Wastewater that is not recycled leaves the system. There may be environmental reasons to ensure a minimum level of discharge, for example, for natural conservation and improvement of river quality: for convenience, in the model, these discharges are part of government consumption (QGD). Public consumption of wastewater has a lower limit (*comgovconst*), the amount consumed in the base period, and there is no upper limit. Formally, it is a mixed complementary problem (2), with a lower level than the base quantity (3). The government can adjust the lower limits for different types of water

individually or multiplicatively (QGD ADJ), for example, in response to environmental concerns about inadequate river flows, etc.,

$$QGD_{cwatrec} = G = QGDWADJ * comgovconst_{cwatrec} \text{ (two)}$$

$$QGD.LO_{cwatrec} = comgovconst_{cwatrec} \text{ (three)}$$

## Discussion

Social work for human, local and sustainable development implies the formalization of variables that, due to their relationship of dependence, establish the scenarios for the management and administration of water resources and metropolitan services.

In this sense, the contribution of the present work to Social Work for Sustainability lies in the formalization of the relationships between the variables.

However, the work of Yuangion warn that formalization is only one phase of public policy [5]. The management of water resources and services is not only focused on the supply, but on education and promotion of public health.

In this way, the effects of climate change on local health suppose formalization competencies for social work that would be complemented with the management of local needs.

This is how, according to Long learning about the care and conservation of the environment requires management focused on social entrepreneurship [6]. In this phase of the local development process, the motivation of water saving and reuse competencies is essential to guarantee the sustainability of the region.

Summer warns that social work competencies are determined by public management models rather than by community needs [7]. The asymmetries between territorial planning and civil demands would be an object of study from which the social worker would delimit a research approach.

Tekeher argues that the formalization of the asymmetries between the availability of resources and actions in favor of water care guide local decision-making [8].

However, the management of social work can start from formalization, but necessarily culminate in the promotion of rights to public health, water supply and the prevention of water crises or conflicts over supply.

Long points out that the promotion of rights involves the administration of resources and needs. In this sense, the differences between territorial planning and the management of needs are resolved in interdisciplinary models in which an agenda is established.

The water agenda for local development, in the conception of Simsek, goes beyond the asymmetries between government administration and civil self-management [9]. Such differences are resolved, in the first instance, in Information and Communication Technologies (ICTs) and eventually in traditional media.

Finally, the formalization of water supply management is also determined by the perceived risks. In the Bakabulindi proposal the uncertainty affects the decision-making both governmental and citizen [10]. In this sense, it is necessary to deepen in those scenarios of shortages and shortages that are forecast after climate change intensified droughts.

Kotaman proposes that the management of sustainability starts from the initial education [11]. From the volitional development, sustainability would be introjected into the habitus of consumption, but it would be consolidated in the stages of cognitive formation.

Shaheen argues that such a process would be insufficient because environmental contingencies involve decisions of utility and risk [12].

Both factors, the cognitive volitional formation and the risk and utility decisions would be incorporated in the mathematical formalization with the purpose of predicting scenarios of ecological crisis and conflicts for the water supply.

## Conclusion

The present work sustains that the formalization of the variables involved in the water management and consumption process is essential for the promotion of health and the right to water.

However, some findings and proposals from other disciplines require a comprehensive review of resources and needs, demands and water consumption at the local level.

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