Hydrogeoethics And Inclusion In Projects With Traditional Communities: The Case Of The Baía Formosa Quilombo, Armação Dos Búzios – Brazil

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SUMMARY

Since 2023, the project “Alternative Water Supply Sources for Family Agriculture: Accessible Technologies and Participatory Management in the Baía Formosa Quilombo (Armação dos Búzios, RJ, Brazil)” has been addressing the chronic water scarcity that affects this traditional community. The initiative is funded by the Special Projects Program of the UFRJ Technology Park and aims to support food security and socio-economic development through family agriculture and afro-tourism. The project combines accessible technologies for water harvesting with a participatory management framework, grounded in hydrogeoethics and community empowerment.

The Baía Formosa Quilombo faces recurrent water scarcity, worsened by its semi-arid conditions and dispersed settlement patterns. Quilombos are traditional Afro-Brazilian communities formed by descendants of enslaved people, historically established in rural areas as spaces of cultural resistance and self-determination.

The project seeks (i) to study and implement low-cost water harvesting technologies suitable for irrigation, and (ii) to establish a sustainable participatory management model in which the community itself autonomously manages water resources essential for subsistence and local development.

The methodological approach integrates technical diagnosis with active community participation. Field surveys identified existing water points and compared them to the spatial distribution of the quilombola population. Participatory planning involved systematic meetings with community leaders to validate decisions and select appropriate water capture technologies (groundwater or surface water). The technical implementation followed these guidelines, integrating renewable energy solutions and capacity-building

processes.

The project demonstrates that combining affordable technologies (e.g., solar-powered pumping) with community-based participatory management can effectively ensure water availability for family agriculture in semi-arid regions. The hydrogeoethical framework reinforces inclusion, autonomy, and sustainability, positioning the initiative as a replicable model for dispersed and low-income traditional communities. Although groundwater in the area is not suitable for direct human consumption, it can be used for irrigation of selected crops or treated for potable use. The initiative highlights the potential of integrating hydrogeoethics into technical solutions, contributing to food security, energy autonomy, and public policies for traditional communities worldwide. The initiative is primarily aligned with the United Nations Sustainable Development Goal (SDG) 11 – Sustainable Cities and Communities, and also contributes to SDGs 6 (Clean Water and Sanitation), 10 (Reduced Inequalities), 16 (Peace, Justice and Strong Institutions), and 17 (Partnerships for the Goals).