

Can a (safe)water market creation at the “Base of the Pyramid” solve the arsenic contamination problem in a Bangladesh village? The case of the Social Business Project Grameen Veolia Water Ltd

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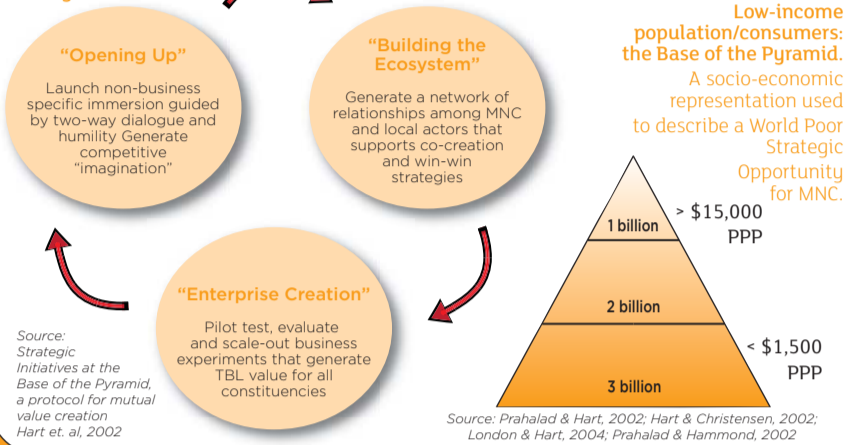
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OBJECTIVES & QUESTIONS

Context: “Social Business” and “BoP”: a way for companies to alleviate vulnerability by combining innovation, markets, public participation, cooperation and entrepreneurship, within an embedded market creation process (Yunus, 2010, Hart, 2009, Prahalad, 2004) through “hybrid value chain” (business partnership with NGOs) (Ashoka, 2007).

The Base of the Pyramid Protocol



Research objective: To contribute to the Research Program “BoP / SB practices and theories as a mean of corporate innovation for transition towards sustainability” through an action research led by the CSR - BoP ESSEC IIES team in partnership with VEOLIA about the Grameen Veolia Water Ltd (GVW) case.

Veolia objective: In response to the United Nations Millennium Development Goals, to implement the Goalmari/Padua pilot project aiming at making poor villagers access to safe water, in an R&D and learning perspective. Besides, to draw up the scaling out of a new Social Business model.

Research questions:

- Can the SB / BoP approach be applied successfully in the drinking water sector, with a water network oriented business model? Under what conditions?
- How can MNC and their local partners (NGOs, local companies, local entrepreneurs, community partners) deal with traditional rules, social norms and the strain between modernity and tradition to generate positive changes?
- Can a BoP / SB market creation be combined with institutional innovation to deal with agonistic vested interests while enabling the necessary changes /social innovation for people to access arsenic free drinking water?

Context: Bangladesh Arsenic Crisis

- Arsenic contamination in Bangladesh**
- Natural groundwater contamination (US National Institutes of Health).
- WHO arsenic standard: 10µg/L; Bangladesh arsenic standard: 50µg/L.
- First arsenic contamination identified in 1993 (Bangladesh DPHE).
- 34 to 77 millions people at risk (HEALS study, 2010).
- 59 districts out of 64 (Safuddin & Masud Karim, 2001).
- Arsenic contamination leads to chronic diseases, skin diseases and several lethal cancer.
- High mortality and morbidity effects: “the attributable proportion based on the arsenic concentration in well water for all-cause and chronic disease mortalities to be 21% and 24%, respectively” (HEALS, 2010).
- Arsenic mitigation actions in Bangladesh**
- 1999-2006: World Bank “BAMWSP” arsenic mitigation project.
- 1998-2004: National Arsenic Mitigation Policy, National Screening Program. Shallow Tube Well (STW) were analysed and contaminated TW were painted in red. Deep Tube Well (DTW) were recommended. A mass information campaign on arsenic was conducted.
- 2000-2001: WHO-Unicef, DPHE-Unicef mitigation programs, Surface water recommended as the sole arsenic safe water.
- Still an under-addressed problem**
- Strong critics from civil society and NGOs, but few changes in (poor) villages.



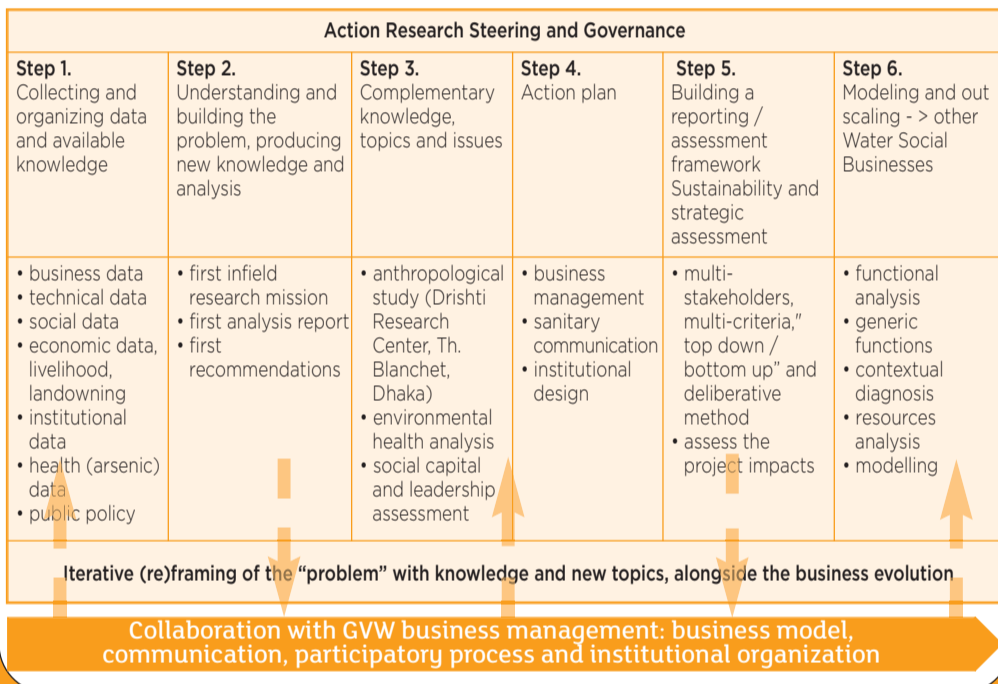
METHODOLOGY

Theoretical background, topics, theories, framework and tools:

- BoP / Social Business
- Ecological Economics
- Transition Management, Innovation for sustainability
- Human Capability Approach
- Actor Network Theory / Translation Sociology
- Social-Ecological System (SES) Framework
- Resilience theory



Organization of the action research project

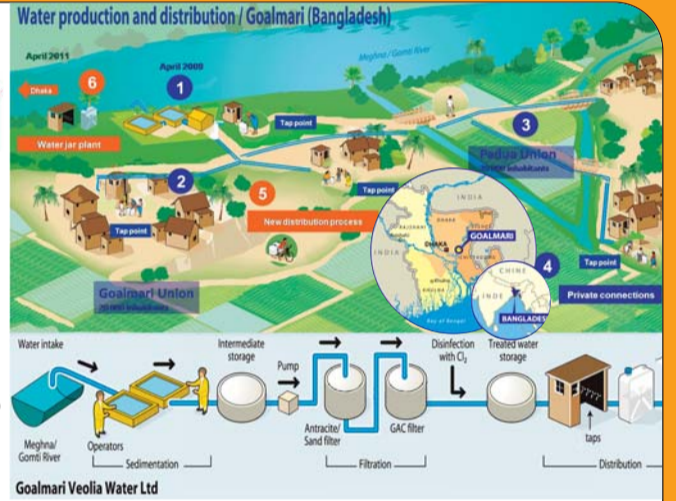


CASE STUDY

GVW Ltd: a Grameen Health Care services & Veolia Water AMI joint venture founded in 2008.

GVW Key figures and results (April 2011)

- Investment (Veolia + Grameen): 500 000 €
- Water plant capacity: 10 m³/hr
- Water Network length: 6 km
- Tap Points: 21
- Private connections and community connections: 4
- Water price at tap point: 2,5 BDT / 10 L (0,25 cts€ / 1 L)
- Water consumption spending / month average income: 1 to 2%
- Targeted population: 100 000 (40 000 at Goalmari & Padua Unions)
- Users / Clients: 6 000 (5 000 Goalmari, 1 000 Padua)
- Users / Clients (market penetration): 15% (10% Goalmari, 40% Padua)
- Households and maximum distance tap points / houses Goalmari: 1 000 / 250 m - Padua: 200 / 50 m



The GVW organization and operational results

The initial business creation:

- A surface water drinking water production plant (Meghna River) with a standard technology.
- Pricing and distribution:
 - Price: between 2 and 3 Tk/ 10 L, depending on distance of the tap point to the water plant
 - Payment: token, pre-paid card, cash payment
- Water network + tap points + private connections
- Grameen ladies / water dealers
- Spontaneous wholesalers (local entrepreneurs) using non safely closed 20 L Jar- Injunctive marketing messages
- Top Down and technical legitimacy approach

R&D process, learning and evolution:

- Several areas of development (see figure)
- Business model improvement (single pricing: 2,5 Tk/10L)
- Cessation of injunctive marketing
- Anthropological study
- Experimentation of some participatory innovation practices: new forms of relationship with households / consumers
- Jar business creation in Dhaka and cross subsidization: Urban market (Dhaka top of the wealth pyramid area) to contribute to finance BoP market

Goalmari arsenic situation: VERI exposure study

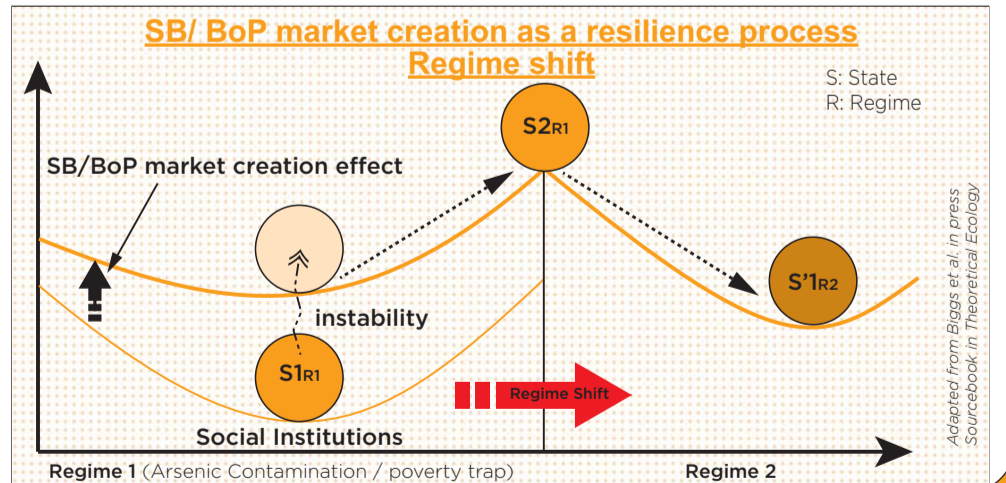
- 219 households / 412 individuals
- Questionnaire + urine testing
- TW water use for drinking: 78%
- River water use for cooking: 81%
- No use of arsenic mitigation system
- Average arsenic concentration in TW water: 42,6µg/L
- Average urine contamination: 105,9 µg/L
- 99,8% of the population show a arsenic level over the 10µg/L WHO standard

RESULTS



GVW Main Issues Categories:

- Business model and management: running efficiently and successfully the Goalmari / Padua Water Business
- Business partnerships and Human Resources: business partners for “hybrid value chain”, “right people at the right place” (skills, qualifications,...)
- Market social construction: Institutional design, market social embedding, social changes (new consumption and associated institution)
- Scientific and sanitary communication and policy: to handle the sanitary communication under uncertainty and complexity (arsenic, arsenic health impact), with caution regarding clients
- Community impacts making: health social, economical and environmental impacts
- Learning process for Veolia and GVW to achieve success and to prepare out scaling



DISCUSSION

A social sustainability problem:

- GVW is not an ecological sustainability issue, but a social sustainability (Capability approach, Sen 1993, Agency, etc.) issue due to arsenic contamination and institutional failures. The problem is not one of deterioration or depletion of natural resource / natural system, but one of a social misuse of a (plentiful) natural resource, water. It is a governance and institutional problem, entailing social norms, social rules, and beliefs.

A market oriented approach:

- The position and role of market in the problem: water market as a central institution in the GVW Project versus markets weaker role in typical SES case studies.

An economics of quality issue: water safety and health prevention

- Uncertainty and complexity of arsenic effects are adding an additional complexity.

Needs of water supply governance combined with water market:

- Collective organization versus individual consumption: water consumption is partly an individual decision, but social norms are at stake. Water network and water are part of a collective infrastructure, to be economically sustainable in a collective management scheme
- GVW shows the difficulties of creating social innovation, social changes, with a technical and market approach
- GVW entails the question of mixing governance and institutional organization / rules making and market creation

Although it is not centered on a natural resource deterioration problem, the GVW case is matching the SES Framework because of the interplay between knowledge, institutional, political and economic dimensions. Moreover, regarding some aspects, it is close to the irrigation institutional system cases (Ostrom 2007).

Base of the Pyramid and Social Business initiatives have to generate effective innovations for transition towards sustainability. To this end, Organizational Changes and social interactions with natural resource systems are to be addressed in a dynamic and complexity perspective. For this purpose, SES framework and Resilience are relevant.

- Veolia and Grameen Veolia Water will benefit from the SES perspective as an efficient grid to put together the pieces of the problem and identify upsides and obstacles.
- Moreover, BoP and SB Projects, and BoP and SB academic community (mainly Business School) will benefit from the SES Framework and the Resilience theory.