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Developing consumer markets within rural WASH systems

Paper for the WASH systems symposium

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Developing and expanding consumer markets for WASH products and services is a major focus of development efforts in countries with big gaps in WASH services. Sanitation marketing, self-supply, household water treatment and commercial small water supply enterprises all offer potential for huge growth. But the starting point in developing consumer WASH markets is typically a lack of supply and demand. Consumers do not reach out for products they do not know, and private sector businesses find WASH markets challenging and margins low. Frequently it is NGOs who lead the effort to catalyse or create a new supply of products and services. Innovators, accelerators and impact investors can also play important roles. This paper presents reflections on how such consumer WASH markets are being developed and the role of different types of actors in the system. While not exhaustive, this seeks to bring some new insights to the debate, drawing especially on the experiences of private sector entrepreneurs.

Introduction

Systems are about actors and interactions, and the sum adding up to more than the parts. One way of organising the interactions in WASH systems is to rely on market transactions between a buyer and seller. Markets are an integral aspect in some way or other of nearly all human activity in some societies. In other places, they remain poorly developed. Developing markets - and transforming the WASH system along the way - are potentially part of the solution to the challenges facing the WASH sectors. Markets are useful because they can scale up as demand grows, and they offer a way of getting users to contribute financially to WASH by buying products or services. WASH sub-sectors that are heavily invested in market development include small water enterprises (typically privately-owned small piped water supplies in urban areas), Self-supply (privately owned supplies at the household level), sanitation marketing (latrines and toilets for households) and household water treatment and safe storage (HWTSS) such as filters and products for chemical treatment.

This paper explores how markets are being developed in such sub-sectors. It aims to contribute to a wider debate on the development of consumer markets in WASH. We draw upon specific cases, the findings of large-scale reviews, discussions with entrepreneurs and the authors' own experiences (particularly of the lead author in developing a business to manufacture water filters in Ethiopia). Reviews that we draw heavily upon include USAID's Scaling Market Based Sanitation (2018), Australian Aid's WASH Markets Facilitation (2018) with a focus on sanitation and PATH's (2012) report on commercial approaches to delivering HWTSS.

The focus of the paper is markets for distinct WASH products where, 1) the consumer pays for product hardware (and any associated service) and, 2) the business is sustained by such consumer payments. We have focused here on consumer markets for product hardware like installed toilets or latrines, toilet and latrine components, water pumps and household filters. Consumers paying for water or sewerage as a service have not been considered within the scope but are obviously a huge aspect of WASH and market activity as well.

The model of the system

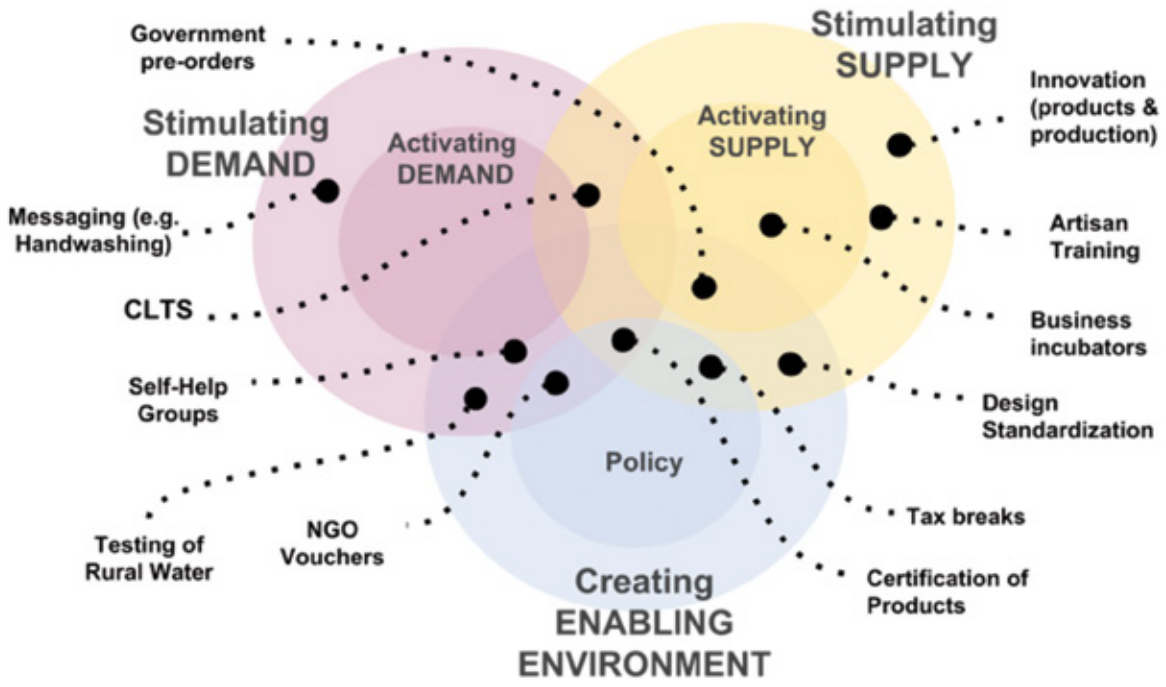
The predominant model that most agencies use in the development of consumer WASH markets involves some combination of the following elements:

- Creating demand: activities designed to stimulate demand and ultimately activate that demand to the point of making a purchase.
- Developing supply: activities designed to build the capacity of enterprises to meet the demand created.
- Creating an enabling environment: Working with governments and others to align local policy with the needs of businesses in WASH.

A further element that cuts across these three areas is the innovation to guide and facilitate the development process for innovative products or services that can then be converted into businesses.. Some typical activities in each of these areas are illustrated in Figure 1.

For market-based approaches to contribute significantly to the pursuit of the WASH SDGs they must improve upon the conventional approaches of doing WASH. With this in mind market-based approaches for WASH product markets need to a) demonstrate market scale, b) demonstrate market durability, and c) demonstrate financial sustainability (business viability).

FIGURE 1: EXAMPLES OF ACTIVITIES TO DEVELOP CONSUMER WASH MARKETS



Source: Authors

Examples of building consumer markets in the WASH sectors

Market-based sanitation

Well known cases of selling latrines at scale are Easy Latrine by iDE in Cambodia and the 3Si project in Bihar, India. Successes like these require significant investment in the order of USD 5-10 million and take five to ten years to achieve (USAID, 2018). Even then, the sales reported by these larger-impact sanitation market projects are over a period where project support was still coming in, and the acid test of whether a market has been developed is whether it thrives after this has ended. AusAID (2018) show how markets are sometimes developed by non-profits who typically end up sustaining them while having no exit strategy.

In the case of sanitation markets, we most often talk about donor, agency and NGO development of supply by smaller businesses that construct and market latrines to consumers based on standardised designs or components. Businesses like Sanivation are a rare example of single businesses developing sanitation markets to moderate scale with their own distinct turnkey solution. Sanivation currently emphasises institutional sales rather than direct bottom of the pyramid (BoP) consumers and sanitation as a service rather than a consumer product.

Tetra Tech surveyed over 100 market-based sanitation initiatives for USAID (2018). Key findings were (among others):

- Few true market-based sanitation interventions have scaled. Most are heavily subsidised. Projects by iDE Cambodia and 3Si in India are exceptions rather than the rule.
- Market-based sanitation interventions cost between USD 20-50 per toilet delivered to scale.
- Scale is most commonly achieved when efforts are sustained past the five year mark. Funders who support such interventions should commit long-term.
- Design of a successful sanitation enterprise is an iterative process. This goes for both product design as well as marketing.

Household water treatment and safe storage (HWTSS)

Filters have been the major focus of business development in HWTSS. Some examples include:

- iDE led development of the Tunsai and Super Tunsai filters in Cambodia with sales of over half a million and 40-50,000 further units sold every year. The market, the product and the company (established as Hydrologic by iDE) has taken over a decade to develop into a business and is anticipated to become profitable in 2018 even without the carbon credits that currently assist profitability.
- Basic Water Needs Foundation has since 2002 developed the Tulip water filter, incorporating BWN India as a manufacturing company in 2008. The focus was

a simple and low-cost filter, with initial sales focusing on the wholesale market. Recent efforts include developing door-to-door sales but there is not yet a strong emphasis on sales techniques.

- SMS Ltd made an extremely promising start to develop a clay pot filter market in Ethiopia with the production of 1000 filters in 2010. The approach focused on investment in manufacturing of a mature technology to become the first manufacturer in Ethiopia. But there were no strong partnerships with NGOs or government. Only 50% of the filters were sold and the investors exited the market by 2015 to pursue more profitable interests.
- Aqua for All is currently piloting another approach where the regional water utility act as the agent for water filters in Amhara region of Ethiopia. The scheme comprises a collaboration between a utility (for warehousing), a regional utility (making the sale), health bureau (promoting the use of generic filters), and local civil servants (part-time sales force). Sales are motivated by shared commission of 20%. By the end of 2018, filter sales of 3000 units were recorded.

Self-supply

Self-supply involves the development and management of small-scale water facilities by households and small groups. Related products and services that are bought and sold include well digging services, manual drilling, masonry skills and lifting devices of all kinds, from a bucket and rope to a sealed and installed pump such as a rope and washer pump or a submersible pump powered by a generator or a grid connection.

Self-supply is supported in high income countries where it provides for remote households and enables universal coverage to be achieved. The USA and Scotland are examples with specific programmes for private water supplies.- In many low-income countries, self-supply is widely practised by households but not supported by the professional water sectors. It is often not on the radar of ministries focused on rural water supply, although there are exceptions. In Zimbabwe, family wells have been widely scaled with support from national rural water agencies. And in Zambia and Mali, the health sector has engaged in scaling self-supply. One of the biggest reported successes is the case of Nicaragua, where rope and washer pumps were scaled through the development of private enterprise.

Actors in developing consumer WASH markets

Private sector

While often lumped together as the private sector, reviews of market-based approaches by USAID (2018), AusAID (2018) and others illustrate the startling variations of private sector actors.

Individual entrepreneurs or artisans

These include local artisans digging wells or building private latrines in response to Community Led Total Sanitation (CLTS) type activities. Artisans are typically skilled in local building techniques in local materials. They are usually from, and known by the community, live at a similar economic level and therefore have similar financial constraints i.e. having little capital for tools or expansion. They are highly dispersed, already living or close to communities that other actors may have to travel to reach. Practical training and business capacity building of such artisans are seen by NGOs as the ways to scale. Or, scaling is mainly achieved by multiplying the number of artisans. Such scaling will not inherently lead to enterprises becoming more profitable or sustainable with scale. Artisans may live hand-to-mouth from building or plumbing projects because of a limited capacity to perform work without advance payment for materials. Others have large enough operations that they can think longer term. However, WASH projects typically account for only a part of a diversified income in most cases. They easily exit the WASH market if better opportunities come along.

Local businesses relying on foreign design

Some examples are businesses involved in the manufacture of concrete slabs, bio-sand filters, and rope and washer pumps. Typically, the industry is built around a production unit, uses basic tooling that can be fabricated locally, and produces items needing to be delivered or installed. Designs are often not developed locally but rather appropriate technology that has been developed within the global academic or WASH community. Businesses may be started with outside help on standardised designs, tooling, know-how etc. Or they may utilise existing workshops which offer the product as an additional product.

Key challenges faced by such businesses include:

- Diversion from standard designs or procedures leads to quality issues. Therefore, external mechanisms for ensuring standards are needed.
- Demand is often initially underpinned by NGOs or government programmes which buy the product and/or attempt to trigger consumer markets.
- Sustaining the volumes necessary for economies of scale past the point of support while simultaneously weaning the business off any sales that come through the NGO or government programmes.

Such businesses offer more potential to scale than individual artisans as well as some of the benefits of being local. They have greater capacity to absorb enhancements to technical know-how, business skills, or customer facing skills. Being centralised around a production unit they are more likely to be slightly further away from consumers. They may be convinced to invest their own capital if they are persuaded by the business case. While many businesses of this size may be driven by profit, there is likely a greater emphasis on growth rather than income in the short-term. Additionally, potential for such businesses to also want to have social impact should not be under-estimated since businesses have small reach, operate in their locality and therefore have stronger links with the community.

Local businesses relying on foreign product

Some examples of local businesses relying on foreign products are clay pot filter manufacturers (Chujio Kenya, SMS Ethiopia) or analogous products such as cook-stoves. Requiring significant foreign technology (e.g. clay presses and moulds) they are typically started by outside experts, organisations or companies. Investment is significant, but margins and returns are low. Private impact investment is common. Economies of scale hinge on higher volumes which the company will ensure themselves by partnering with entities that can fulfil marketing and distribution capacity that can match the high volumes necessary to be sustainable. Such technologies share the challenges listed above.

While many are successful and demonstrate durability and scale, the example of SMS filters in Ethiopia illustrates a fragility, a need for outside technical and possibly business know-how. The WASH entrepreneurs entering this market had a working product, willingness to invest, conventional business know-how and knew where to get technical support. It also illustrates that while such businesses may have objectives of social impact over profit, losses cannot be sustained. The investors in SMS in Ethiopia ultimately reverted to other more conventional import and wholesale business in Ethiopia having no social impact or health component at all but where returns are better.

Businesses operating across borders (foreign business, technology and product)

Companies like Sawyer (Sawyer filter), Vestergaard Frandsen (LifeStraw filter), Basic Water Needs (Tulip filter) and LIXIL (SATO pan) are typically originating in countries with a developed manufacturing industry. Manufacturing may then be extended to countries with adequate infrastructure and local demand (e.g SATO in Bangladesh, Basic Water Needs in India, developing partnerships in Kenya). These businesses span countries. Some companies have inhouse capability in product design, sales and marketing, and distribution. Others may focus on production but not on distribution or installation. Partnerships with large companies, social enterprises or organisations in target countries may facilitate the sales, marketing and distribution. Features of this sector are:

- Innovation and development may be far removed from the local context of use. This is the flipside of having a worldwide product that may have been designed with one market in mind and now attempting to access other markets where the culture is totally different. Examples are accessing certain African markets with a filter developed for the US recreational market, or a pour-flush sanitation device developed in Asia where flushing with water is common.
- Businesses are typically larger and naturally focus on institutional sales (initially). Last mile sales and distribution is a challenge to develop in rural areas, takes time, money and requires developing long-term alignment with local partners with presence, capacity and capability.

Social enterprises

There are few specific business categories in sub-Saharan Africa for social enterprises in the commercial legal frameworks. Therefore, little distinction is made between a private sector player that puts social impact first and a company that puts profit first. But social enterprises are a dominant private sector WASH player. Their social impact agenda, frequently communicated on their website, clearly sets them apart.

Consumer markets in WASH likely offer limited financial attraction compared to other business options. For individual artisans, building, upgrading and repairing houses is likely to be a more reliable and profitable income stream than latrines. For large manufacturers like LIXIL, high-end products are more profitable than SATO pan. Many of the private enterprises who venture into the WASH sector are not actually seeking profit in the sense that NGOs or governments may understand. For a social enterprise, profit is a sign of health rather than their purpose and social impact is put before financial return.

Social enterprises are commonly started by both non-profits, for-profits or individual entrepreneurs. Examples are SSI (Social Sanitation Initiatives) started by the for-profit SATO-LIXIL, Hydrologic started by the non-profit iDE, Basic Water Needs BV started by the Basic Water Needs Foundation and Sanivation started by an individual entrepreneur.

Co-operatives, associations, unions, franchises

Biosand Filter Entrepreneurs Association of Nepal (BiFEAN) (ENPHO, 2015) is an excellent example of an innovative structure for creating and serving a consumer WASH market that linked a group of individual entrepreneurs into a single legally registered entity. While there are a few examples of franchises which supply consumer WASH products, there are some outside of this discussion which supply packaged water itself. Jibu is an example of such a franchise in the WASH business sector.

NGOs

NGOs typically have the local presence and mandate to impact health via WASH. It is them (rather than the private sector themselves) who most want to bring the energies of the private sector to bear on the relevant SDG targets on water, sanitation and health. Reviews of current practice e.g. AusAID (2018) and USAID (2018) observe that while NGOs lead the way on market-based approaches, they rarely have the business skills needed to develop businesses or the risk-taking mentality to innovate products.

Some NGOs are early adopters and pioneers of business approaches and some like iDE and PATH have developed a niche at the overlap of WASH, innovation and business. Others may be late adopters and follow the crowd when donors encourage or demand it. And yet others may not consider such approaches at all. Some NGOs may choose to develop little in terms of internal capacity but use partnerships to leverage external know-how or experience of business or innovation (see Figure 2).

NGOs need to show 'impact' to survive donor funding cycles. This means demonstrating impact within an implementation and M&E window where projects can be executed and measured. A significant challenge for NGOs in choosing to engage in developing innovations for consumer WASH markets is the much longer timescale involved in building businesses than doing a project (Rush et al., 2015).

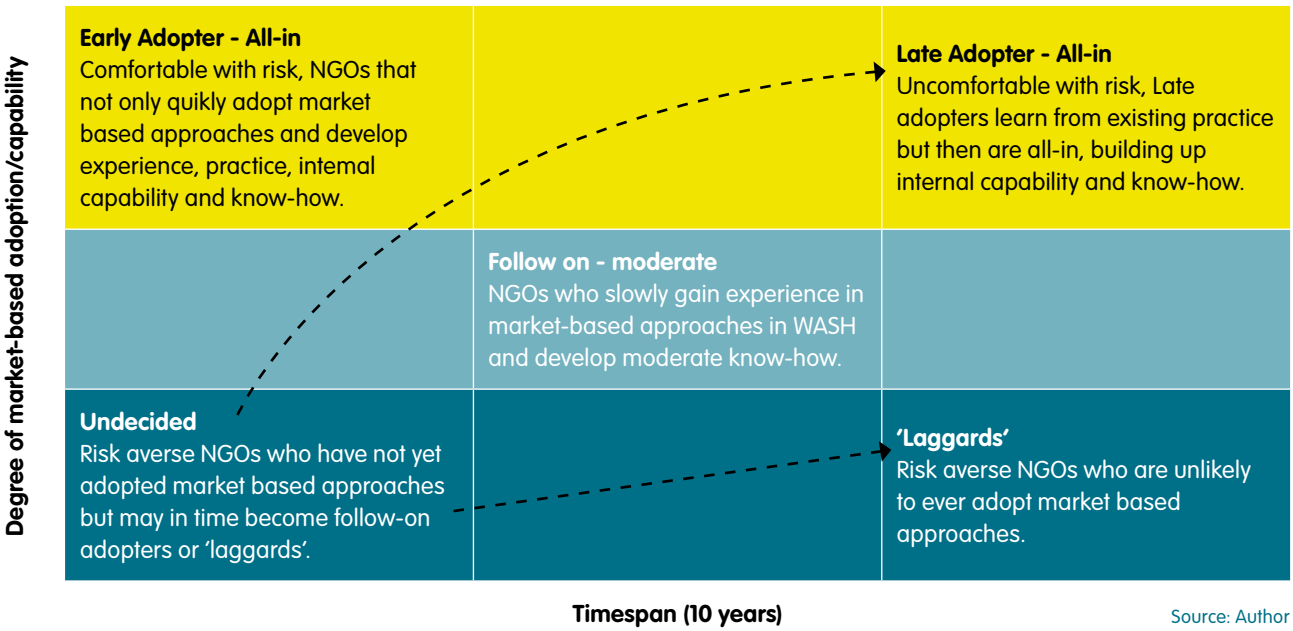
An additional hazard when developing consumer markets in WASH is the potential for the simultaneous presence of NGOs who are pursuing incompatible strategies, such as those who buy filters from a producer and give them free to consumers while others are trying to develop a consumer market.

Innovators

While manufacturing at scale, appropriate marketing and viable distribution models are all important, the customer is usually still purchasing a product - a functional piece of technology that someone has developed. Innovators have the ability and desire to design, prototype and test technology solutions. Technology inventors in the WASH sector are frequently individuals or teams within academic institutions, companies or non-profits. Some are local, some are foreign. Most innovations represent incremental innovations or repackaging of designs that have developed over 20 to 30 years (e.g. SMS clay pot filters, Biosand, Tulip, Tunsai). Some WASH consumer product innovations and innovators include:

- Clay pot filters: invented by Dr. Fernando Mazariegos who was working at the time for Central American

FIGURE 2. NGO APPROACHES IN CONSUMER WASH MARKETS



Source: Author

Industrial Research Institute (ICAITI) in Guatemala (Potters For Peace, undated). The open source design has been utilised by several businesses worldwide (e.g. Ecofiltro - Guatamala, Hydrologic - Cambodia, Chujio - Kenya)

- Tulip water filters: an incremental innovation by Basic Water Needs (BWN) of ceramic candle filters originally invented by Henry Doulton in the 19th century by royal commission. With the Tulip design being a mature evolution of earlier designs (BiD Consult, 2019), BWN's innovation was to make the device suitable for mass production and distribution to low income markets in Africa and Asia.
- Rope and washer pumps: an incremental innovation on an ancient design now commonly used for self-supply in various countries. The recent re-design was pioneered by Reinder van Tijen in the 1980s with the support of the Royal Tropical Institute of Amsterdam (RopePumps.org, 2018).
- SATOpan was developed by Social Sanitation Initiatives, a spin-off of the multibillion dollar company LIXIL, with the help of several grants, including from the Bill and Melinda Gates Foundation (American Standard, 2016).

Sole innovators or those within non-profit entities like NGOs or academia do not necessarily have the know-how or entrepreneurial skills to take the design on to a profitable business. They might even lack the skills to network and communicate with players who do have those skills. Innovations only have a chance of successfully featuring in consumer WASH markets when innovators, business know-how and investors come together.

Accelerators and incubators

The connection of innovators with investors (and sometimes business know-how) is often facilitated by accelerators. Accelerators are relatively new actors in the system. Some examples include IHUWASH in India; Ennovent, which has its roots in India but now operates in 30 countries; SPRING, which focuses on impacting adolescent girls in East Africa and South Asia; the Inclusive Business Accelerator (IBA) who manage the Innovations Against Poverty award; and the Toilet Board's Toilet Accelerator. Accelerators vary in purpose and emphasis - some engaging in more collaborative partnerships, others in stimulating apprentice-like competition - but in general they seek to transition an innovation in the hands of an innovator or entrepreneur to sustainable scale as a business. There typically needs to be a well-defined product, prototypes and early demonstration of consumer engagement, preferably in the form of sales. There also needs to be a convincing pitch on the challenge, market need, the solution the innovation offers, value proposition and uniqueness of the innovation. Some accelerators start further back in the process by also running boot camps to seek out and enhance the capacity of entrepreneurs from a localised context and providing coaching on how to refine a business concept.

Incubators generally seek to nurture businesses at an even earlier stage in their development prior to them being ready for acceleration. While an accelerator will typically need a concrete business plan, incubators may be much more flexible. While typical inputs at the acceleration stage may be specialist know-how or scale-up funding, typical inputs at the incubation stage may be the development of prototype services or products, guidance on shaping business ideas to the point of a business plan and possibly office space for the fledgling business.

Business consultancy

Well-developed WASH businesses that achieve scale are likely to have benefitted from business consultancy. But business consultancy can be costly for entrepreneurs, small businesses or NGOs so it is not always sought. iDE is unique in this sense for having both internal business capacity and for bringing in professional business know-how from sales and management consultants, Whitten and Roy Partnership (WRP). Facilitating wider NGO access to such advice is a likely growth area with strong benefits.

Impact investors

In the same way that WASH attracts a special type of private sector player, WASH also attracts and needs a special type of investor. Consumer markets in rural WASH are characterised by modest returns and there is a high risk of no return at all. WASH investors are not primarily seeking financial return but rather impact. Oxfam's (2017) discussion paper on impact investment clearly presents typical 10-year timeframes for a social enterprise start-up and highlights some key challenges with the status quo:

- The needs of the enterprise are often secondary to the needs of investors.
- Impact is (in practice) observed to be frequently secondary to financial return.
- Expected return timeframes even by impact investors are too short to facilitate getting a social impact business safely to break even.

Financiers

Limited access to enterprise capital is a key challenge for entrepreneurs entering WASH markets as suppliers (USAID, 2018). Social enterprises in WASH sector have to develop through informal early stage funding (i.e. fools, family

and friends) and can take advantage of grant funding later using traction developed in this early stage. A well-developed model for giving start-ups access to donor finance is through accelerators who identify promising business ideas, seek alignment between donors and entrepreneurs and disburse funding. Hydrologic and BWN have been incubated by non-profits allowing the organisations to develop to become separate business entities. Financing the demand is equally challenging because an NGO's objective is often to reach for the bottom of the pyramid (BoP) where consumers' purchase capital is most restricted for such goods (AusAID, 2018). While micro finance institutions (MFIs) offer a potential solution to enable BoP consumers to access products, it is now known that many MFIs shy away from consumption or non-productive loans (AusAID 2018, USAID 2018).

Conclusions

Sector reviews report that we frequently underestimate the time and costs needed to develop markets, appropriate products and for-profit businesses, while simultaneously the potential for attractive profits is overestimated. Nevertheless, WASH attracts a wide constellation of actors working hard to develop new markets for sanitation, HWTSS or self-supply related products. Innovators are obviously essential. The private sector exhibits huge diversity, from artisans to multi-nationals, who are apparently willing to step into the WASH sector. However, motives are frequently socially driven rather than purely financial. NGOs often play a critical facilitating role. Incubators, accelerators, consultants and impact investors complete the landscape.

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Note/s

For more information on accelerators see http://ihuwashaccl.niua.org/about, www.ennovent.com/expertise/, www.springaccelerator.org/, https://iba.ventures/ventures/ and www.toiletboard.org/the-toilet-accelerator. All links correct as at 19/2/2019.

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