Sustainable Sanitation
Practice

EcoSan Club

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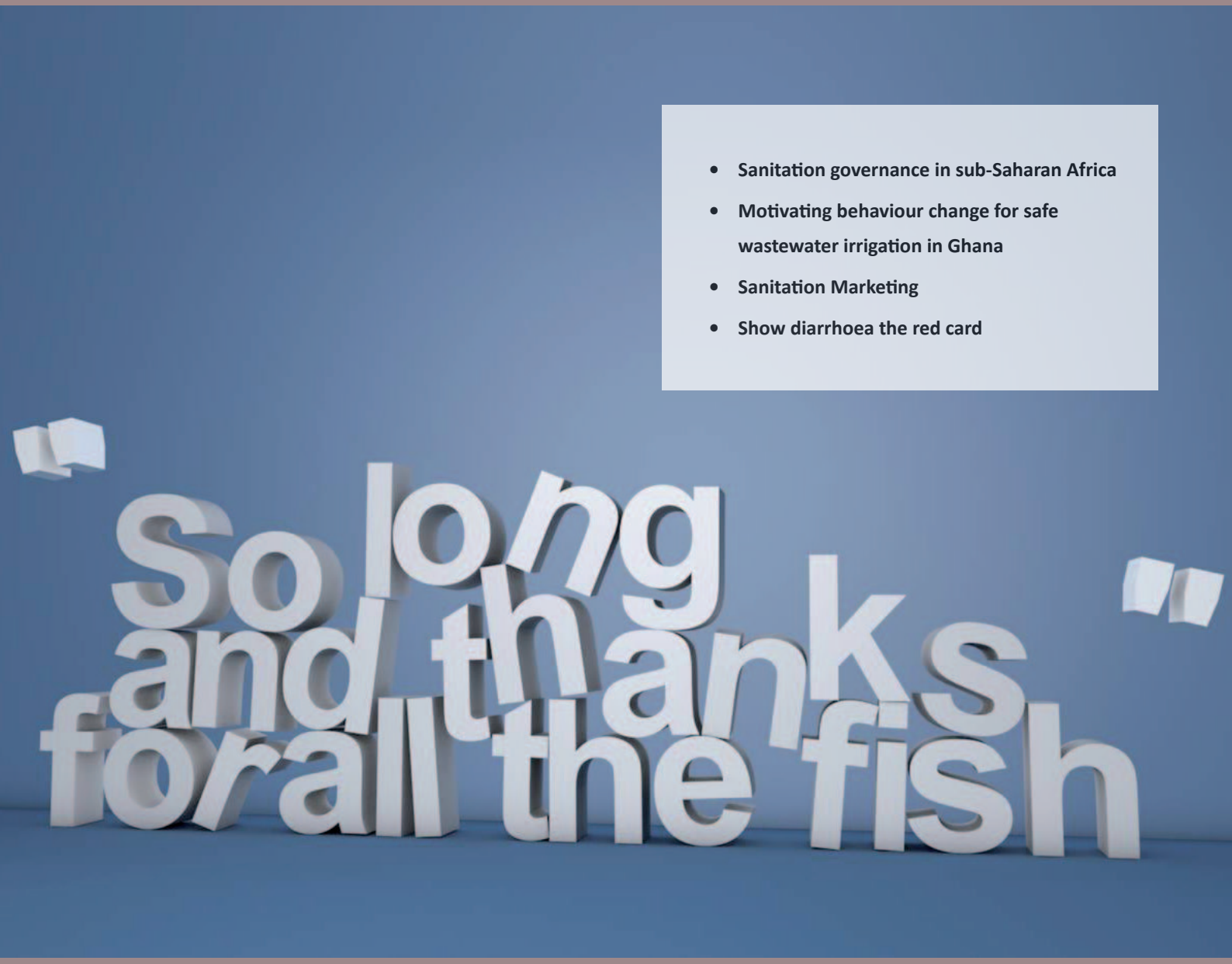
- Sanitation governance in sub-Saharan Africa
- Motivating behaviour change for safe wastewater irrigation in Ghana
- Sanitation Marketing
- Show diarrhoea the red card



Behaviour change

sustainable sanitation alliance

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Editors / *Redaktion*

Elke Müllegger, Günter Langergraber, Markus Lechner • EcoSan Club

Journal Manager / *Journal Management*

Fritz Kleemann

Contact / *Kontakt*

ssp@ecosan.at

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Aim and Scope / *Offenlegung der Blattlinie gemäß § 25, Abs. 4 Mediengesetz*

Sustainable Sanitation Practice (SSP) aims to make available high quality information on practical experiences with sustainable sanitation systems. For SSP a sanitation system is sustainable when it is not only economically viable, socially acceptable and technically and institutionally appropriate, but it should also protect the environment and the natural resources. SSP is therefore fully in line with SuSanA, the Sustainable Sanitation Alliance (www.susana.org). • SSP targets people that are interested in sustainable sanitation systems and the practical approach to it. • Articles are published after blind review only. • Sustainable Sanitation Practice is published quarterly. It is available for free on www.ecosan.at/ssp.

Sustainable Sanitation Practice (SSP) hat zum Ziel praxisrelevante Information in hoher Qualität im Zusammenhang mit „sustainable sanitation" bereit zu stellen. „sustainable" also nachhaltig ist ein Sanitärsystem für SSP wenn es wirtschaftlich machbar, soziokulturell akzeptiert, technisch als auch institutionell angemessen ist und die Umwelt und deren Ressourcen schützt. Diese Ansicht harmoniert mit SuSanA, the Sustainable Sanitation Alliance (www.susana.org). • SSP richtet sich an Personen, die sich für die praktische Umsetzung von „sustainable sanitation" interessieren. • Artikel werden nur nach einer Begutachtung veröffentlicht. • Sustainable Sanitation Practice erschient vierteljährlich, kostenlos unter: www.ecosan.at/ssp.

Information on the publisher / *Offenlegung gemäß § 25 Mediengesetz*

Publisher: EcoSan Club, Schopenhauerstr. 15/8, A-1180 Vienna, Austria • chairperson: Günter Langergraber • website: http://www.ecosan.at/ • scope: EcoSan Club was funded as a non profit association in 2002 by a group of people active in research and development as well as planning and consultancy in the field of sanitation. The underlying aim is the realisation of ecological concepts to close material cycles in settlements.

Medieninhaber: EcoSan Club, Schopenhauerstr. 15/8, A-1180 Vienna, Austria • Obmann: Günter Langergraber • Gegenstand des Vereins: Der EcoSan Club wurde 2002 als gemeinnütziger Verein von einer Gruppe von Personen gegründet, die in Forschung, Entwicklung, Planung und Beratung in der Siedlungshygiene - Sammlung, Behandlung oder Beseitigung flüssiger und fester Abfälle aus Siedlungen - tätig waren und sind. Das Ziel des EcoSan Clubs ist die Umsetzung kreislauforientierter Siedlungshygienekonzepte (EcoSan Konzepte) zu fördern, um einen Beitrag zum Schutz der Umwelt zu leisten.

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Editorial

This issue of SSP deals with one major but often neglected issue of sanitation – the best technology is useless if not applied, a sophisticated operation and maintenance strategy not worth the paper if not implemented and affordable solutions not utilized if not demanded. Behavior change is the key to changing the sanitation situation and all connected problems.

The relatively small number of papers in this issue indicates that there is little experience and knowledge on changing behavior in sanitation on a significant scale. The papers of this issue are:

- Ekane et al. deal with the contradiction between national policies and policies and traditional norms at household level.
- Drechsel and Karg present a social marketing approach to behavior change.
- This is also the core of EcoSan Club's own and recently started project in Uganda which is described in Lechner's paper.
- Last but not least Jurga describes the behavior change campaigns of WASH United

Having understood the importance of initiating a factual behavior change from many years of practical experience, we hope that with this issue we can contribute to and emphasize the discussion on this topic and be in a position to publish another issue of SSP in the coming years with a lot more contributions of experiences and success stories.

Information on further issues planned is available from the journal homepage (www.ecosan.at/ssp). As always we would like to encourage readers and potential contributors for further issues to suggest possible contributions and topics of high interest to the SSP editorial office (ssp@ecosan.at). Also, we would like to invite you to contact the editorial office if you volunteer to act as a reviewer for the journal.

SSP is available online from the journal homepage at the EcoSan Club website (www.ecosan.at/SSP) for free. We also invite you to visit SSP and EcoSan Club on facebook (www.facebook.com/SustainableSanitationPractice and www.facebook.com/EcoSanClubAustria, respectively).

With best regards,
Günter Langergraber, Markus Lechner, Elke Müllegger
EcoSan Club Austria (www.ecosan.at/ssp)

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Sanitation Governance viewed through different lenses

Authors: Nelson Ekane, Marianne Kjellén, Björn Nykvist, Stacey Noel, Madeleine Fogde

Abstract

The provision of sanitation facilities – a basic necessity for human health, well-being, dignity and development remains a mammoth challenge for countries in sub-Saharan Africa (SSA). This paper presents concepts that can be used to explain some of the challenges, and discusses approaches that can contribute towards improving the sanitation situation in a sustainable way. The paper posits that part of the problem in the sanitation sector is the contradictions between formal and informal institutions and the disconnect between the actors at the macro, meso and micro governance levels. In addition, the paper asserts that demand driven strategies and private sector involvement in the sector is paramount for establishing new sanitation paradigms and socio-technical regimes. We conclude that a good understanding of agents at all levels i.e. their various roles as well as interactions, and the way they interpret and respond to policies is key to accelerating progress in the sector.

Introduction

Progress in improved sanitation coverage in sub-Saharan Africa (SSA) has remained extremely slow (only about 4% increase in 20 years) despite enormous international assistance characterized largely by supply-driven subsidies (ECA, 2012; Szántó et al., 2012), and national intervention (Szántó et al., 2012) usually with fewer financial resources. In SSA, about 70% of the population still relies on unimproved or shared sanitation facilities or resort to open defecation (WHO/UNICEF, 2013). The region will inevitably miss the sanitation Millennium Development Goal (MDG) (WHO/UNICEF, 2013; WaterAid, 2013). Attention is now shifting from the MDGs to Sustainable Development Goals (SDGs), an outcome of the Rio+20 conference. Sanitation remains one of the top priority areas within the SDGs for the achievement of sustainable development and poverty alleviation.

Lack of clear policies, poor prioritization, inadequate financial support, low investment, technology-driven interventions, and inadequate capacity are some of the challenges faced in the sanitation sector in SSA. These challenges exist at different levels and the responsibility of addressing them rest on different stakeholders – government, private sector and individuals or households. The multi-level stakeholders, their roles, responsibilities, actions and interactions constitute sanitation governance. Sanitation governance entails on-going dialogue between public and private sanitation stakeholders to discern expectations for what results to achieve; translating these expectations including other information as well as perspectives and values of stakeholders into written criteria i.e. policies; and checking to see that criteria are met i.e. through monitoring.

This paper discusses some of the challenges hindering progress in the sanitation sector, specifically in some

Key messages:

This paper provides the following key conclusions that can contribute towards improving the sanitation situation in sub-Saharan Africa in a sustainable way:

- Integrate policy and practice on sanitation and hygiene at all governance levels.
- Focus on demand-driven value chain strategies and technology transfer to ensure that innovative sanitation systems and technologies are sustainable.
- Improve understanding on the prevailing governance arrangements as well as the interpretation of national sanitation policies at the household level.

East African countries where Stockholm Environment Institute (SEI) has on-going multi-level sanitation governance research activities, and highlights different theories that may be used to improve understanding of the challenges faced at different governance levels.

Improving Sustainable Sanitation Coverage in sub-Saharan Africa – A tremendous Challenge

Contradictions between sanitation policy and practice

In Eastern Africa, like in many other countries in SSA, it remains an enormous challenge to translate policy on sanitation and hygiene into practice. Based on Stockholm Environment Institute (SEI) and Kigali Health Institute (KHI) research in Burera district, Rwanda, Ekane et al (2012) found contradictions between prevailing practices and government hygiene and sanitation guidelines. Despite the Rwandan government's commitment to sanitation, the health, hygiene, convenience, and safety of toilets in this district remain unsatisfactory. This is because most of the toilet structures are neither adequately constructed nor properly used. The reasons for this are threefold: lack of prioritization for toilets at the household level, lack of information on sanitation guidelines and standards, and irregular and insufficient inspection. As for Uganda, Achiro (2012) concludes that policies and laws pertaining to sanitation and hygiene exist but the implementation and monitoring of these policies and laws remain a challenge. The most common constraints of law enforcement for improved sanitation in Uganda are weak legal and institutional frameworks, characterized by compromise in implementation, political interference and inadequate resources.

The Tanzanian approach to close the sanitation gap is demand-driven and relies greatly on the private sector and civil society (Kjellén, 2009; 2010), a strategy that owes its origin partly to the 1970s Nyerere's campaign. Despite this, the percentage of the Tanzanian population that had access to improved sanitation facilities in 2011 was merely 12%. This backlog in sanitation provision in Tanzania 'has led to the introduction of a commercial approach to the provision of these services on which they must be paid for, rather than a free right' (EWURA, 2007/2008). The greater reliance on private initiative in Tanzania is also mirrored in water sector management, where Kjellén (2009) poses that even the piped water network development has been demand-driven and includes elements of market logic rather than one of central planning. Sanitation provision in Uganda is mainly led by government performing policy and regulatory functions, and households taking sole role of accessing sanitation facilities (Achiro, 2012). In 2011, 35% of the Uganda population used improved sanitation facilities. In Rwanda, political leadership and commitment plays an active role in standards-setting, enforcement and investment support in addressing the sanitation gap. 61% of Rwandans used improved sanitation facilities in 2011. In neighbouring Burundi, the absence of a national hygiene and sanitation policy is explained by lack of political will and prioritization of the sector. The percentage of Burundians that had access to improved sanitation in 2011 was 50%. The municipalities in Burundi play a key role in the operation and maintenance of sanitation facilities. Tanzania is the largest and most populated country of all four countries. This partly explains the country's worst performance. It is worth noting that the above sanitation coverage figures (WHO/UNICEF, 2013) would be significantly lower if both the human and environmental functions of the facilities are considered (Kvarnström et al., 2011) i.e. whether the toilets function as intended (Ekane, 2013).

Technology-driven sanitation interventions

The UNDP Human Development report (2006) summarizes the barriers for why sanitation lags far behind water: Many technologies are inappropriate for their settings, and the higher value placed by women on convenient sanitary solutions often fail to translate into commensurate household spending on sanitation. For the poorest, the household level infrastructure needed is out of reach in the absence of support from beyond the community. However, the perceptions commonly underestimate the social benefits from improved sanitation, making it to be regarded as a private affair. Unfortunately, investments and behaviour change may be dependent on others doing the same, which is also when the social benefits of improved sanitation may materialize. Analogously, effective national-level policies for sanitation are conspicuously absent (UNDP, 2006: p. 118).

Inadequate resources in the sector

The most recent GLAAS report (UN-water, 2012) emphasizes the inadequate commitments and actual spending in the sector, with severe consequences for staffing and capacity of policy implementation. A review of 23 EU funded projects in six SSA countries performed by the EU court of auditors revealed difficulties such as lack of technical skills; failure to build ownership; low priority ascribed to sanitation; absence of relevant data and environmental indicators, and lack of a clear and effective integration of water, sanitation and hygiene issues. Less than half of these projects met the needs of the beneficiaries (ECA, 2012).

About 8% of Ugandans mainly in Kampala are served by the sewerage network. The majority of Ugandans (about 92%) provide their own sanitation services through private means (Achiro, 2012). Only 3% of inhabitants in Dar es Salaam, Tanzania have access to sewerage systems (Szántó et al., 2012). Rwanda and Burundi are still to construct sewerage systems. In short; sanitation solutions are mainly implemented at the household level, where benefits of improved comfort,

cleanliness, convenience and dignity for the household members can be immediate. The full set of benefits, including health and a cleaner environment, will only be achieved when most community members access and use improved and functional sanitation, and adopt hygienic behaviours and prudent environmental management.

With mixed potential gains from increased sanitation investment and behaviour change, the backlog in sanitation coverage is costly for society (Prüss-Üstün et al., 2002; Fewtrell et al., 2005; UNDP, 2006; Prüss-Üstün et al., 2008; Yardley, 2010; Cheng et al., 2012). The health risks associated with poorly functioning sanitation systems are well established (Cairncross and Feachem, 1993). Whereas there is still much uncertainty regarding actual disease transmission routes, the role of safe sanitation for human health is undisputed (Esrey, 1996; Prüss-Üstün et al., 2002; Fewtrell et al., 2005).

Functional sanitation is key to the well-being of society

The common adage 'health is wealth' is often used to mean good health is real wealth. In other words, this implies that the money and time used in treating sanitation related diseases could instead be used in carrying out productive activities (Rosemarin et al., 2008). This makes safe and functional sanitation one of the key pillars in the fight against poverty. However, a decent and functional toilet facility remains an unknown luxury for most SSAs. Poor sanitation and related diseases remain one of the key health issues in the region. Children in the poorest households suffer the greatest sanitation-related health burden. The loss of a young life every 17th second due to sanitation related diseases, and the decrease in productivity of adults as well as significant loss of educational opportunities for young people, girls in particular, due to lack of access to safe and dignified sanitation are taking a toll on poor countries. Due to the interconnectedness between sanitation, water, health and poverty, absence of functional sanitation has much wider impacts than on just health alone. Poor health impairs the productive ability of people and keeps them away from school, farm and other income generating activities.

The wider economic impacts – beyond the effects on human health – of the sanitation backlog have been increasingly acknowledged (Bartram and Cairncross, 2010). The World Bank Water and Sanitation Program (WSP) quantified these burdens and estimate that inadequate sanitation costs a colossal sum of US$5.5 billion/year. In relation to Rwanda, Uganda, Tanzania and Burundi, the WSP studies estimate that poor sanitation costs Rwanda some US$54 million/year, Uganda about US$177 million/year, Tanzania a whopping US$206 million/year and Burundi about US$30 million/year (WSP, 2012). These losses are equivalent to around 1% of the national GDPs of these countries. The greatest proportion of this cost is as a result of premature death due to diarrheal diseases.

Addressing the sanitation challenge at multi-levels

The concept of multi-level sanitation governance

The concept of multi-level governance enables an understanding of policy and decision-making processes involving the simultaneous mobilization of public authorities at different jurisdictional levels as well as that of the private sector, non-governmental organizations, social movements and households. The concept also allows for an understanding of complexity at and between levels (Stubbs, 2005; Pahl-Wostl, 2008). Bache and Flinders (2004) identify four key dimensions of multi-level governance. Firstly, the increased participation of non-state actors; secondly, the need to move away from understanding decision-making in terms of 'discrete territorial levels' and, instead, the need to conceptualize it in terms of 'complex overlapping networks'; thirdly, the transformation in the role of the state towards new strategies of co-ordination, steering and networking; and lastly, the ways in which traditional notions of democratic accountability are being undermined and challenged.

In-between the national policies (macro level) and the individual households (micro level) is the – meso level – web of actors, ranging from government employees, e.g. health inspectors, to private sector formal and informal service providers and civil society organizations. They operate in relation to the – macro level – policies and plans of national governments and donor agencies.

Actions in the sanitation sector are distributed in a way that hygiene behaviours are at the discretion of the individual in a more or less private setting. Similarly, sanitation solutions outside of urban centers are commonly on-site individual household concerns. Sanitation services are, hence, not amenable to be 'rolled out' as many other social or infrastructure services, but instead need to be in support of the individual hygiene behaviours and household solutions, with information, regulation, private sector involvement through financing (subsidies and/or credits) as well as necessary collection services.

Furthermore, at the level of sanitation sector governance and professional work, there is a predominance of males, particularly as regards the engineering aspects of sanitation solutions, but also at the level of urban planning and higher levels of policy making and societal leadership. With individually different but also gender-based cognitive filters, issues related to sanitation needs of women and girl children may be downplayed and receive less understanding and priority, compared to in a situation with a gender-balanced profession.

Formal and informal sanitation institutions

North (1990) defines institutions as a set of formal (devised by human beings) or informal (conventions and codes of behaviour) rules, that actors generally follow, whether for normative, cognitive, or material reasons. All institutional forms result from social compromises that are then embedded in law, jurisprudence, social norms and conventions. Each of these institutional forms induces some specific behaviour (Boyer, 2005). Included in the definitions of institutions are such features of the institutional context as the rules, the structure of the systems, the relation among various branches of government and society, and the structure and organization of actors (Thelen and Steinmo, 1992). Thus, institutions enable interactions, coordination, cooperation, and information exchanges among agents (Amable, 2003). Ostrom (1990) and Hall and Soskice (2001) add that institutions provide capacities for: exchange of information among the agents; the monitoring of behaviour; and the sanctioning of defection. Institutions are said to be coherent if they are designed according to identical principles. Different institutions can be structured in a coherent way, or they might impose different, perhaps conflicting, governance modes and therefore lack coherence (Höpner, 2005).

The formal sanitation institutions such as policies, statements, guidelines, standards and strategies are formulated at the macro level; these formal institutions are interpreted, communicated and executed by meso level agents; the actual implementation of the formal institutions on the ground is done at the micro level mainly by households. Informal sanitation institutions such as norms and customs prevail especially at the micro level and often contradict government standards and guidelines on hygiene and sanitation. As a result, prescribed hygiene standards or sanitary requirements in terms of structure, design, health and safety as well as labour safety are difficult to meet and maintain.

A study examining contradictions between sanitation policy and practice in the Burera district, Rwanda revealed that health, hygiene, convenience, and safety of the toilets remain unsatisfactory. This is because most of the facilities are neither properly constructed nor properly used. A survey of 194 households with pit toilets and UDDTs in the Burera district collected data on hand-washing activities, operation and maintenance of toilets (including the productive sanitation system), and subsidies from UNICEF-Rwanda. 24 respondents stated that they were members of the local productive sanitation cooperative (Dusukure PHAST). The survey found that 31 of the households had received UDDT slabs from UNICEF-Rwanda, of which 28 households had installed their UDDT slabs. However, seven of the 28 households indicated that they use water to flush faeces dropped onto the slab. Only about 3% had a hand-washing facility installed close to the toilet. Furthermore, during the survey it was observed that in 17 households the urine compartment had been detached (Ekane et al., 2012).

Path dependency in the sanitation sector

According to Campbell (2004), when institutionalists (Stinchcombe, 1968; North, 1990; Powell, 1991; Nelson, 1994; Roe, 1996; Pierson, 2000) talk about path dependence they refer to a process whereby contingent events or decisions result in the establishment of institutions that persist over long periods of time and constrain the range of future actions for actors, including those that may be more efficient or effective in the long run.

The concept of path dependency highlights the extent to which existing technologies and practices structure avenues of future development. Patterns of path dependency have consequences for change and stability at various levels: between firms, within technological communities, amongst users and across the plane of social meaning, convention and expectation (Shove, 2003; Rip and Kemp, 1998). Shove (2003) states that the concept of socio-technical regimes consolidates the notion that irreversibilities and path dependencies occur at different levels – macro, meso and micro. The rules, paradigms and dominant technologies framing current actions and informing beliefs about what is and is not possible in the future are referred to as regimes or landscapes.

The 'flush and forget' and 'drop and store' sanitation systems remain the two major dominating sanitation regimes or landscapes in SSA. The take up of other sanitation options such as ecological sanitation ('toilet to farm') has been slow at all levels – amongst decision makers, experts, and individual households. Systems involving urine separation and use of human derived nutrients in agriculture have been piloted in many countries in SSA, and have proven to be good options in improving rural livelihoods. Yet, scaling up these systems in the region faces huge psycho-social, technical and capacity constraints.

Psycho-social aspects related to sanitation

Shove (2003) points out that historically, the institutionalization of hygiene had immediate impact on the bathroom for sanitary reformers were convinced that when safely and properly constructed, bathrooms provided the facilities required to keep disease at bay. This of course applies also to toilets. Notions about purity and pollution (Douglas, 2002), along with hygiene habits and cultural or religious traditions greatly affect the way different sanitation solutions are perceived and taken up – or not. Increasing number of sanitation programs exploit the feeling of disgust to trigger changes in hygiene behaviour e.g. Community-led Total Sanitation (Movik and Mehta, 2010). Barriers for changing hygiene behaviours or those in relation to the

environment might include coping devices, established cultural models, real and/or perceived inconveniences, as well as social pressures, including stigma and ridicule (Thompson, 2004). Massie and Webster (2013) stress that future hygiene promotion should take a participatory form, rigorously identifying and working with existing beliefs.

Conclusion

Whereas clear messages from the highest political levels are important, there are many layers of policy interpretation before policy messages reach the household level where the implementation of sanitation mainly occurs. Moreover, sanitation policy development usually occurs at central ministry level, with implementation responsibilities being that of the district governments that usually have little or no capacity and financial resources for effective implementation and monitoring. In addition, a range of informal policies and norms prevail at the household level and these usually contradict national policies. These norms dictate prioritization, responsibilities and division of labour - who does what and why. The gender and equity-based biases resulting from such norms and arrangement at the household level need to be better understood and addressed in implementation strategies.

According to ECA (2012), sustainable sanitation coverage is achieved through strategies wherein sanitation promotion and marketing are funded rather than supply-driven subsidies for sanitation infrastructure. Thus, a greater involvement of private entrepreneurs and other meso level agents in the sanitation sector, and the creation of a value chain is vital in the institutionalization of new sanitation paradigms and socio-technical regimes or landscapes. Demand-driven strategies and capacity development would support the value chain and promote ownership of sanitation facilities at the micro level.

At the macro level, clear assignment of rights and responsibilities for policy implementation and enforcement is key. Policies should be fully comprehensible, as well as effectively disseminated and practiced: they must be clearly understood by stakeholders, and the implementation must be effectively monitored.

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Name: Nelson Ekane
Organisation: Stockholm Environment Institute, SEI
Town, Country: Stockholm, Sweden
eMail: nelson.ekane@sei-international.org

Name: Björn Nykvist
Organisation: Stockholm Environment Institute, SEI
Town, Country: Stockholm, Sweden
eMail: bjorn.nykvist@sei-international.org

Name: Stacey Noel
Organisation: Stockholm Environment Institute, SEI
Town, Country: Stockholm, Sweden
eMail: stacey.noel@sei-international.org

Name: Madeleine Fogde
Organisation: Stockholm Environment Institute, SEI
Town, Country: Stockholm, Sweden
eMail: madeleine.fogde@sei-international.org

Name: Marianne Kjellén
Organisation: Stockholm International Water Institute, SIWI
Town, Country: Stockholm, Sweden
eMail: marianne.kjellen@siwi.org

Motivating behaviour change for safe wastewater irrigation in urban and peri-urban Ghana

Authors: Pay Drechsel and Hanna Karg

Abstract

Where wastewater is used without appropriate treatment, additional safety measures such as safer irrigation practices or careful vegetable washing are required to protect farmers and consumers. Implementing such food safety interventions in the informal farming sector is not easy, as they require behaviour change. Even where appropriate and low-cost interventions have been identified, low health risk awareness is a likely adoption barrier. Where this also concerns consumers, market demand for safer crops will be low and social marketing options have to be explored to support the desired behaviour change. Based on experiences from Ghana, where wastewater irrigation is an unplanned reality in and around all cities, the necessary steps and considerations for increasing the adoption probability are outlined under a generic framework which is based on social marketing, incentive systems, awareness creation/education and supporting regulations. Any of these approaches require accompanying research of the target groups and could gain in cost-effectiveness through a more integrated approach linking e.g. handwash and vegetable washing campaigns.

Introduction

To reduce the risk from food irrigated with polluted water, WHO (2006) recommends situation-specific safety interventions which can be combined with conventional wastewater treatment or where treatment is missing still reduce the disease burden. Such post-treatment or non-treatment options include safer irrigation practices, on-farm wastewater treatment, and careful vegetable-washing, which can individually or best in combination (multi-barrier approach) reduce the exposure of consumers to pathogens (Figure 1).

This approach looks at different entry points along the pathogen pathways, from farm to fork, in line with the principles of hazard analysis and critical control points (HACCP) (WHO, 1996, 2002). While the 2006 Guidelines for safe wastewater irrigation offer especially low-income countries more flexibility, their implementation is challenged by low education. In general, three basic requirements for implementation can be distinguished (Favin et al., 2004):

- Provision of access to appropriate infrastructure (such as sanitary facilities in markets or irrigation drip kits for farmers)
- Promotion of hygiene behaviour such safe vegetable washing and irrigation methods
- Strengthening of an enabling environment that facilitates or regulates infrastructure access and/ or behaviour change.

Whereas the provision of treatment plants for safeguarding public health appears straight forward[1], the behavioural change of farmers, traders and consumers still constitutes a pristine research field in the context of 'wastewater irrigation', despite the fact that behaviour change concepts are largely developed and have increasingly been applied in the sanitation and hygiene sector (Bongartz and Chambers, 2009; Martinsen, 2008; Mosler et al., 2012). Drechsel and Seidu (2011) showed that on- and off-farm risk reduction measures can be very cost-effective but also require either on- or off-farm a high adoption rate to avert a sufficiently high percentage of DALY.

We focus in this paper on how behaviour change could be promoted among (i) farmers using highly polluted

[1] Its operation and maintenance can be another story (Murray and Drechsel, 2011)

Key messages:

- Where risk perception is low, behaviour change has to be supported by various strategies.
- Aside education, incentives and social marketing can play a significant role.
- The WHO guidelines on safe wastewater irrigation need to pay attention to behaviour change strategies to support the adoption of alternative risk reduction measures.

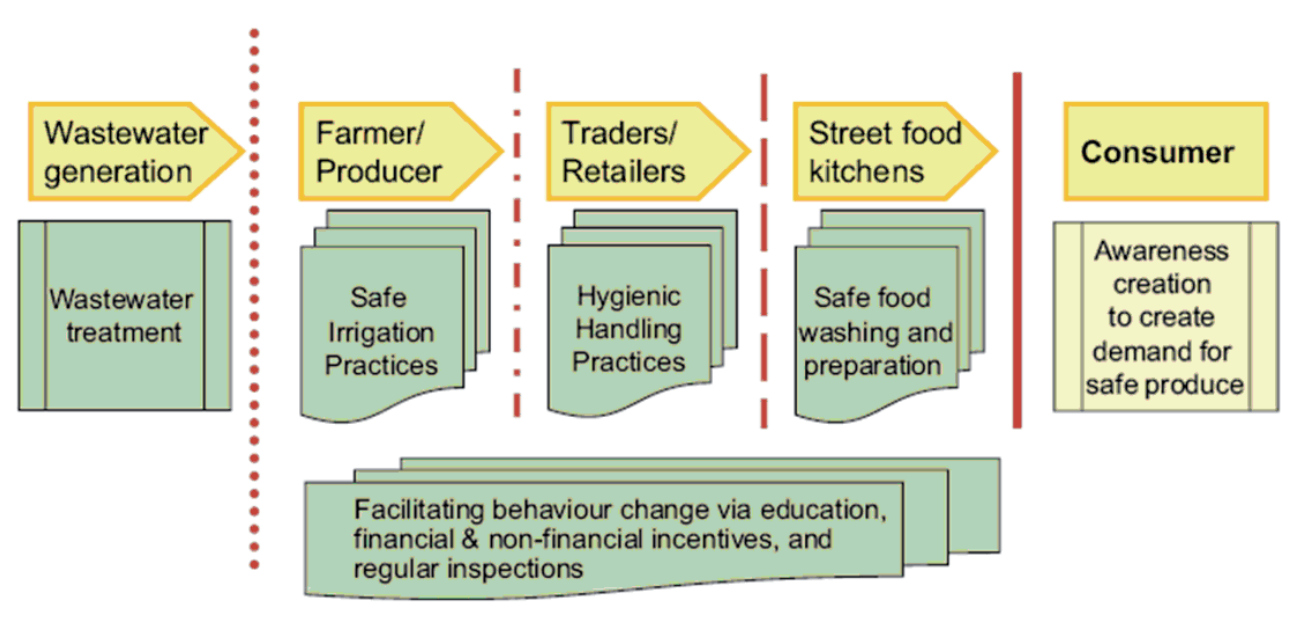

Figure 1: Multi-barrier approach for risk reduction (Source: Amoah et al. 2011)

irrigation water, and (ii) restaurant staff, in particular of street-food restaurants, where more than 90% of the raw-eaten and wastewater-irrigated salad crops are served (Amoah et al., 2007a). The paper draws heavily on Karg and Drechsel (2011) and work by the International Water Management Institute (IWMI) with its partners in Ghana studying on- and off-farm options for health risk reduction (Amoah et al., 2011). Methods used to analyse options for triggering behaviour change include expert interviews, street surveys, focus group discussions, observations, training sessions and a variety of knowledge sharing activities (Amoah et al., 2009; Karg, 2008; Keraita et al., 2008). We describe the lessons learned in their conceptual context to facilitate interpretation beyond the case study.

The context of vegetable irrigation with polluted water in Ghana is described by Obuobie et al. (2006). Farming takes place on open spaces within or close to cities where streams are accessible. Irrigation is manual or facilitated by small pumps, and while farmers might form associations on certain sites, it is important to note that we do not refer to any irrigation scheme with centralized management, but the informal urban farming sector (Drechsel et al., 2006).

Research outside the technical comfort zone

Many projects testing interventions for health risk reduction stop with the verification of their impact; e.g., on the reduction of coliform counts. However, to actually achieve impact, the equally important task is to identify the conditions that can make an intervention work. In the case of wastewater and food safety, this means analysing

- whether safer practices would directly pay off by either improving production or reducing production costs or perceived risks by those supposed to adopt the measures;
- whether safer practices would eventually pay off due to an increased willingness-to-pay by consumers and traders for 'safer crops'; and
- whether there are other triggers and incentives which could change behaviour and how best to instigate and build on them, while avoiding change barriers.

While the first two studies require in general conventional economic analysis (farm cost–benefit analysis, contingent valuation) – though financial incentives do not automatically result in behaviour change -, the third study stretches most more technically oriented projects even further out of their comfort zone. It requires substantial social analysis of the constraints and opportunities of the target group, their perceptions, wants and attitudes (Andreasen, 1995).

The reasons for a person not to change his/her practice can be numerous and of different weight, linked to tradition, family pressure, community norms, time pressure, inconvenience and so on. The primary reason is not always necessarily a lack of awareness of the social or health benefits of adopting the practice promoted. This analysis requires good listening skills and should be based on participatory research principles as described for the case of safer irrigation practices by Keraita et al. (2010a).

Aside from understanding the reasons that might limit behaviour change, it will require a different effort to analyse what might trigger it. Trigger studies must

consider distinct population subgroups and the social and cultural environments in which the people act to make decisions about how to promote and communicate a desired behaviour (Grier and Bryant, 2005).

The planning process, based on findings delivered by applied research, can be outlined in the following steps:

- Assess current food handling behaviours related to the problem(s) of concern and their underlying risk awareness and perceptions.
- Identify feasible options for change which reduce health risks.
- Identify barriers and enabling factors (external and internal triggers) for a related behaviour change and verify them with the target group(s).
- Study appropriate communication channels and (form of) outreach messages.
- Carefully consider which stakeholders and policy-makers will be crucial in developing, promoting and implementing effective change strategies.

An initial step for any behaviour change campaign is to understand which perceptions are relevant to the current behaviour and which internal or external factors in the local context might trigger or hinder behaviour change. For interventions to be successful, and this also refers to the promotion of safety interventions, it is important to investigate the target groups' knowledge and perceptions beforehand.

This also applies to other stakeholders such as governmental agencies or community based organizations which might become part of any risk reduction strategy as the wider system within which farmers and vendors operate can have a significant positive or negative influence on farmers' decision-making. A partnership approach should therefore be targeted to get all stakeholders working from a mutually agreed upon agenda. Participatory approaches among scientists and the target group proved to be a prerequisite for effective communication. In the Ghana studies, farmers' perceptions, needs and constraints were incorporated into the formulation of recommended practices. This was supported through farm-based participatory approaches where farmers and scientists worked together in developing risk reduction measures. An important step was the identification of mutually accepted problem indicators, like the smell or colour of the irrigation water (Keraita et al., 2010a).

Factors affecting adoption

Factors supporting or blocking behaviour change are often very context-specific, as internal and external behaviour determinants differ from one cultural and social context to another. Internal factors that influence a current, new or changed behaviour come from within a person, such as awareness of the problem or perceived norms. External factors come from a person's environment including environmental constraints such as lack of time, current policies or access to the essential technology (Favin et al., 2004). For example, risk perception does not only depend on objective facts, but rather is largely a social and individual construct (e.g. fear of spiders). Hygiene behaviour, in turn, can also be approached as a social construct based upon culturally determined ideas rather than as a risk mitigation strategy.

For the implementation of non- or post-treatment options, a supporting internal factor would be awareness about health risks. A supporting external factor would be market demand for safer crops and/or enforced regulations and controls. Unfortunately, both factors did not apply in the Ghana case. Risk awareness was very low, not only among farmers, but also consumers (Box 1), which translated to a low willingness-to-pay for safer food.

While farmers had a very limited knowledge of possible personal or food safety concerns arising from contact and use of highly polluted water for irrigation, media attention and projects addressing the wastewater challenge made them aware of the general concerns. Food vendors, on the other hand, demonstrated basic knowledge, and were generally concerned about food quality. In addition, any wrong doing would affect their direct clients.

Criteria to assess food quality used by farmers, vendors and consumers did not emphasize food safety issues or common hygiene practices (hand washing, cooling, cleaning of utensils, washing of raw vegetables, or efficacy of disinfectants). Instead, the main food-selection criteria related to aesthetic appearance of the food or food stand, appearance of the food vendor, and price and accessibility of food. Questions on the origin of the food were not common. Regarding food safety, interpersonal trust in the vendor was mentioned (Probst, 2008; Rheinländer et al., 2008).

A factor strongly affecting behaviour change concerns implementation 'costs' in terms of capital, land, labour or time requirements to adopt a new practice or change an old one. The safety interventions recommended in Ghana for farmers and street food sellers (Amoah et al., 2007b, Amoah et al., 2011, Keraita et al., 2010b) require either a change in how water is fetched or applied (farmers), or how vegetables are washed (fast food stands). While a few safety practices require only marginal changes, some interventions, like drip irrigation could significantly reduce labour input. On the other hand, the currently available drip kits in Ghana are too far spaced thus reduce cropping density and yields. Capital investments remained generally limited, although more effective vegetable-washing in kitchens would require some investments in, for instance, bleach or chlorine tablets.

Box 1: Risk perception

Given the diversity of health hazards which farmers and consumers face, and the complex nature of diarrhoeal infection pathways, underestimating or ignoring the risk might be understandable. Farmers' low risk awareness might also be due to the fact that potentially affected consumers are far down the market chain. There are very few cases where the farm family also consumes the (exotic) vegetables they produce. Exotic vegetables, such as lettuce, which is consumed as raw salad, are not common in the traditional Ghanaian diet. Thus complaints about the food rarely reach the farmers. Also, occupational risk awareness is generally low (Obuobie et al., 2006). Farmers who mentioned enteric diseases did not necessarily relate them to their use of wastewater (Keraita et al., 2010a). Even where some awareness exists, it seldom translates into the adoption of protective measures, such as clothing or rubber boots, because of discomfort, heat and other reasons. In general, exposure to the water is accepted as a professional challenge well balanced by the economic benefit (Gbewonyo, 2007; Obuobie et al., 2006). While farmers projected an 'illusion of risk-control' (cf. Frewer et al., 1996; Knox 2000), an increase in knowledge, awareness and interest in health-risk issues and risk mitigation was noticed where they were exposed to the topic through research projects and media attention (Keraita et al., 2010a). Thus even without personal risk awareness, farmers felt the pressure to respond, to avoid public exposure which could affect their business. In general, however, both farmers and vendors ranked other, mostly business related, challenges and constraints higher than any health challenges (Obuobie et al., 2006; Karg, 2008; Rheinländer et al., 2008).

In short, all recommended practices are distinctively of low cost, which is important but not enough to trigger behaviour change. Most supportive would be a financial benefit in terms of higher revenues.

A common example for financial incentives for food safety can be found in the related sector of organic food production. While in Ghana, risk awareness and a willingness to pay for safe food are largely limited to the upper class (Probst, 2008; Yahaya, 2009), the situation can be different elsewhere. In Vietnam, for example, the emerging middle class is increasingly demanding safe or organic vegetables (Simmons and Scott, 2007, Moustier and Nguyen, 2010). Farmers who are responding could qualify for loans and safety certificates, but often failed to enter specific marketing channels. Those cooperatives which managed to build specific channels, supplying canteens, supermarkets and own stalls reduced or removed intermediate actors in the food supply chain to increase source transparency, consumer contact and profits. Although safer vegetables had higher production costs, and profits were 40-90% higher (Simmons and Scott, 2007; Moustier and Nguyen, 2010). However, the demand for higher quality food is in general limited, and especially the poor who are most at risk of disease transmissions will not be able to benefit from these specialized market chains. To reduce the disease burden from wastewater irrigation beyond minorities, a broad adoption of safety practices covering ideally 75% of the market is required (Drechsel and Seidu, 2011).

Need for social marketing

Even where food safety concerns support an emerging alternative market chain, the majority of farmers will not be able to benefit, thus miss tangible incentives to adopt safety practices. In this situation, social marketing options must be explored to catalyse and support behaviour change at scale.

While commercial marketing ultimately seeks to generate profit for a private interest, social marketing seeks to influence a target audience to voluntarily accept, modify or abandon behaviour for the benefit of individuals, groups or society as a whole. The social marketing approach applies commercial marketing principles and techniques, such as customer orientation, marketing research, etc. and has been tested in the sanitation and public health sectors (Grier and Bryant, 2005; Martinsen, 2008; Siegel and Doner Lotenberg, 2007).

Marketing approaches in general are considered as promising alternatives to traditional (educational) approaches[2] to change behaviours, i.e. instead of being supply driven (providing knowledge and materials), marketing approaches support a demand-driven change, thus are more consumer-oriented. Social marketing focuses on removing barriers and fighting the current alternative to the suggested practice while simultaneously enhancing the activities benefits (McKenzie-Mohr and Smith, 2007).

Whereas the focus of the work in Ghana was on the individual or farming community level of behaviour change, it can only be sustainable if supported by its social and infrastructure environment. In other words, changing habits is always easier at life changing events or when the environment is changing accordingly. This can include informal changes (a new role model or

[2] In the past, many health-promotion campaigns were based on educating people about the threat of disease in order to change their behaviours (Nutbeam and Harris 2004). However, there is little evidence that approaches based on health education have had the anticipated impact, in particular in developing countries (Burgers and Boot 1988, Scott et al. 2007).

image) or formal changes, such as supporting legislation and capacity building. An increasing awareness and knowledge about food safety issues has been observed especially among food vendors (Rheinländer et al., 2008). This shift in knowledge can be attributed to increased food safety education over the last years, especially by local authorities and the private sector (e.g. Nestlé).

These and other external and internal behaviour determinants relevant to the adoption of better food-safety and irrigation practices in the Ghanaian context are summarized in tables 1-3. Following the example from Favin et al. (2004), barriers and enabling factors were sorted according to different categories to help in formulating possible intervention strategies.

Table 1. External and internal behaviour determinants and possible intervention strategies on-farm in Ghana

Category	Barriers (-)	Enabling factors (+)	Possible response strategy
Input supply	Farmers prefer only slight changes in their current practices or those which required low investments.	Some farmers already apply (unconsciously) risk-reductive irrigation methods in order to reduce work load (like pond creation)	Risk-reduction measures should focus on multiple benefits considering indigenous approaches
Socioeconomic conditions	Farmers are very concerned about their business which is ranked higher than health	Farmers do care about the public perception for the sake of business	Promotion of safe produce can have business advantages
Education	Training on health risks from wastewater irrigation has not been incorporated in education curricula	Farmers are increasingly exposed to the issue, mostly through research projects.	Risk-reductive irrigation methods should be incorporated in agricultural extension programmes
Institutional settings	Harassment from media and authorities resulted in negative public perceptions and subsequent defensive strategies	Authorities are in place and maintain pressure	Positive media support in turn can provide incentives to farmers
Social groupings	Farmers work on several sites in isolation	Innovations are more likely to spread from farmer to farmer than through external facilitation	Existing social networks should be part of communication strategies looking at linked possible incentives (e.g. credit)
Farmer/consumer interaction	No direct interaction, as consumers are far down the market chain	Special market channels can be created for particular outlets, super-markets, canteens, etc.	Closing the loop between consumers and producers (less intermediate traders)
Risk awareness	Health risk awareness is very low, both for the farmers themselves and for consumers	Particular health knowledge is not needed to trigger behaviour change	Relationship between contaminated water and health or related fears should be established.
Scientific knowledge	Very little awareness of invisible risks (micro-organisms) and pathogen pathways	Increasing knowledge, awareness and interest in health-risk issues and risk mitigation through research projects	Invisible risks should be made ‘visible’ best to stimulate disgust.
Practical knowledge	The best practice to fit in the Ghanaian context has not yet been identified	Farmers prefer field demonstration and/or learning by doing	Participatory approaches to identify suitable practice
Intention	Some farmers do not see the need to change their practices and deny the responsibility.	Pressure induced by media and policy make farmers feel to respond	Risk reduction methods coupled with positive incentives can enhance the willingness to change

Table 2. External behaviour determinants and possible intervention strategies in Ghana's informal street restaurant sector

Category	Barriers (-)	Enabling factors (+)	Possible response strategy
Input supply	Effective disinfectants are generally not known, although available. Thus vegetable-washing is not effectively reducing pathogens.	Vegetable-washing to remove dirt is done by over 90% of stakeholders; this is an excellent starting point for effective pathogen removal.	Promote available disinfectants (bleach, chlorine tablets, potassium permanganate) suitable for different classes of restaurants.
Socioeconomic conditions	Vendors are concerned about costs of required inputs or training.	Public and private sector offer free training. Some ingredients (bleach) are very cheap.	Make options known. Engage private sector for promotion and subsidies. Training certificates might increase sales.
Education	In catering schools practical food safety does not get much attention.	Teaching materials are being provided/revised based on current project results.	Establish early link with educational sector to facilitate adoption of results in curricula.
Environmental conditions	Unsafe environment of street restaurants; tap water and toilets might be missing.	Interventions have to consider local possibilities and limitations	Step-wise approach of improvements needed.
Institutional settings	Regulating authorities are under-resourced, which might facilitate corruption.	Authorities are in place.	Institutional capacity building required.
Social groupings	Few members in catering associations due to internal problems. Most associations have weak governance and funding.	Social clubs, church groups and professional associations are common and can be used as possible communication channels. In general, vendors like to join associations and networks.	Associations should be strengthened and memberships promoted. Support loan schemes/ credit for safer behaviour.
Vendor/customer interaction	Customers are more concerned about price, neatness and quantity of the food, rather than food safety.	Customers have much influence on vendors who want to satisfy them. Vendors are willing to learn to please customers.	Customers' awareness about food-safety issues has to be increased.
Neatness as part of cultural norms	Neatness is important but does not necessarily include cleanliness and safe food.	Controllers, vendors and customers are very concerned about neatness which is closely associated with trust and respect.	The term neatness has to be extended to visible and invisible cleanliness; or positively linked to disinfectants.
Cultural norms	Customers do not ask about food origin related to safety which is considered disrespectful.	Food origin can be a 'brand'; e.g. carrots from Togo are preferred to Ghanaian ones.	Safer production sites could get a brand name associated with accepted norms, like 'clean', 'neat', 'tasty'.

Table 3. Internal behaviour determinants and possible intervention strategies in Ghana's informal street restaurant sector

Category	Barriers (-)	Enabling factors (+)	Possible response strategy
Risk awareness	Vendors do not perceive any elevated risk and consider current washing practices to be appropriate.	Vendors are to different degrees aware of health risks related to raw vegetables.	Risks should be explained. Invisible risks should be made 'visible'.
Scientific knowledge	Very little awareness of invisible risks (micro-organisms) and pathogen pathways.	High awareness of visible risks like insects and knowledge of the term 'germs'.	Risks should be explained. Invisible risks should be made 'visible'.
Practical knowledge	Few attended formal catering education in schools. Effective vegetable-washing methods are in most cases not known.	Vendors have basic knowledge of food safety through post-school training provided by projects or private sector.	Promotion of effective methods in workshops, through associations and private-sector training.
Emotions and reactions	Promotional materials and campaigns as used in other cultures do not appeal necessarily and might even be misleading if unknown symbols or vocabulary are used.	Perception studies point at positive and negative motivational factors which drive hygiene behaviour.	Strategy should be based on local knowledge and perceptions.
Intention	No barrier	In general, vendors are very willing to learn about clean food preparation and aim unanimously at satisfied customers.	Training workshops can be combined with cooking courses or private-sector product promotions

Key issues of the three tables pointed in the Ghana case at certain possible triggers which should receive particular attention:

- **Making the invisible visible:** An innovative 'germ' indicator, like the Glitterbug™ gel (www.glitterbug.com) can help to visualize invisible hazards (Amoah et al., 2009) and might help to catalyze e.g. disgust (yuck factor), which was a successful trigger in Ghana's hand wash campaign (Curtis, 2002; Scott et al., 2007).
- **Closing the loop between producers and consumers:** Communication channels can be established that provide positive and negative feedback to the farmer. Learning from the Vietnam example, specific marketing channels with limited intermediate traders can support farmer-consumer proximity.
- **Link the new practice to farmers/vendors priorities:** As farmers and street food vendors are very concerned about their business, business incentives or a message built around positive market effects have a much higher potential of triggering behaviour change than messages around health benefits.
- **Build on existing practices:** In many areas, farmers are developing innovations to reduce labour input. For example, farmers have created networks of ponds which reduce transport distances for heavy watering cans and they have blocked wastewater streams for easier water fetching. Both examples can create a cascade of worm egg traps and sedimentation ponds, with an obvious impact on pathogen levels (IWMI, 2008; Cofie et al., 2010). This shows opportunities for building on farmers' own experimentation, while linking health farmers' priorities with public health safeguarding.

From Research to Implementation

The study conducted in Ghana led to the development of a framework for implementing a 3-year national campaign on food safety, with special emphasis on wastewater-irrigated vegetables for which funding is still sought. The framework combines elements or strategies considered as important for changing behaviour in the street-food sector and among farmers (Figure 2). It draws on information in Tables 1, 2 and 3 and the 'Receptivity Model' described by Jeffrey and Seaton (2004), while

emphasizing also the equal importance of different measures to facilitate behaviour change and increase food safety. The framework also considers the benefit of simultaneously using incentives (for behaviour change) and disincentives (for maintaining the old behaviour); e.g., via enforced regulations and fees. The elements of the framework are:

- Awareness creation and education (given the low knowledge level, but being aware that knowledge alone is seldom a trigger);
- Incentives (transforming needs of the target group into opportunities);
- Social marketing (given the low direct commercial incentive for changing behaviour);
- Enforced regulations (to address bad practices and institutionalize good ones).

Depending on location specific opportunities and constraints, the emphasis can change among these four pillars:

- **Awareness creation and education** by themselves might not change behaviour (see above) but remain crucial components of any multi-strategy approach. When considering knowledge as an underlying driver for behavioural change (or lack of knowledge as a barrier to change), it is important to recognize that there are two types of knowledge. The first – practical or logistical knowledge – is essential for adapting new behaviours (e.g. how to prepare the correct chlorine solution for disinfecting vegetables or how to install a drip kit for irrigation). The second type of knowledge, the scientific explanation for the necessity of behaviour change (e.g. how the chlorine works), may not be essential to achieve behaviour change as experienced in the Ghana hand-wash campaign. However, by making the pathogens and their temporally and spatially remote consequences transparent (e.g. pseudo-visible with the Glitterbug™ gel), be it through training or video, the complexity of disease transmission becomes playfully obvious, and awareness might increase as observed in the Ghana case (Amoah et al., 2009).
- **Incentives** are important to move from awareness to application. The most obvious incentive is market demand. But often this is not developed and the benefits of behaviour change are less direct, such as when individual action (safer irrigation practices) serves society (public health) more than the actor. In the Ghana hand-washing case (see above), the benefit was for the person and the family; i.e., a much closer association than for a farmer who is not the consumer of his/her crops. In the case of the farmer, there is a need for extra incentives, such as less labour, increased tenure security, awards, training, credit, subsidized inputs, better market access, and less pressure from authorities and the media. Tenure security was often mentioned in Ghana as urban farms are on public or private land and can easily be closed. An incentive such as better tenure security could facilitate farmers' investments in structures that have positive health impacts, such as wastewater treatment ponds. Similar incentives exist for street food restaurants, which are often more informal than formal.
- **Social marketing** is an important tool where economic arguments do not work. Even if health considerations are not valued highly in the target group, social marketing studies can help identify related benefits that are valued, including indirect business advantages, improved self-esteem, a feeling of comfort or respect for others. Studies must look for 'positive (core) values' that the primary target audience associates or could associate with the innovation (Siegel and Doner Lotenberg, 2007). For example, if using a drip kit for safer irrigation is valued for reasons of feeling 'technologically advanced', then the social marketing messages and communication strategies should reinforce this existing positive association.
- **Regulations** are an important external factor to institutionalize new food-safety recommendations. When enforced, these provide the legal framework for both incentives, such as certificates, and disincentives, such as fees. New rules usually also require capacity building. To integrate improved food-handling practices into institutional structures, inspection forms can be updated, inspectors and extension officers can be trained, and pressure can be applied to farmers and caterers. However, regulations should not be based on imported (theoretical) standards, but rather on locally feasible standards that are viewed as practical and are not prone to corruption. In this way, regulation and institutionalization may contribute to ensuring the long-term sustainability of behaviour change, whereas promotional and educational activities are usually limited to a specific time frame.

Different stakeholders in different locations will be at different stages towards behaviour change (see the four stages in Figure 2). Thus every campaign will set a different emphasis on the balance between awareness creation and education, social marketing, incentive provision, and enforced regulations. An analysis assuming different adoption rates showed the high potential of the here suggested campaign framework in terms of its cost-effectiveness (Drechsel and Seidu, 2011). The cost-effectiveness could be even more favourable if we apply a integrated food safety approach (Box 2).

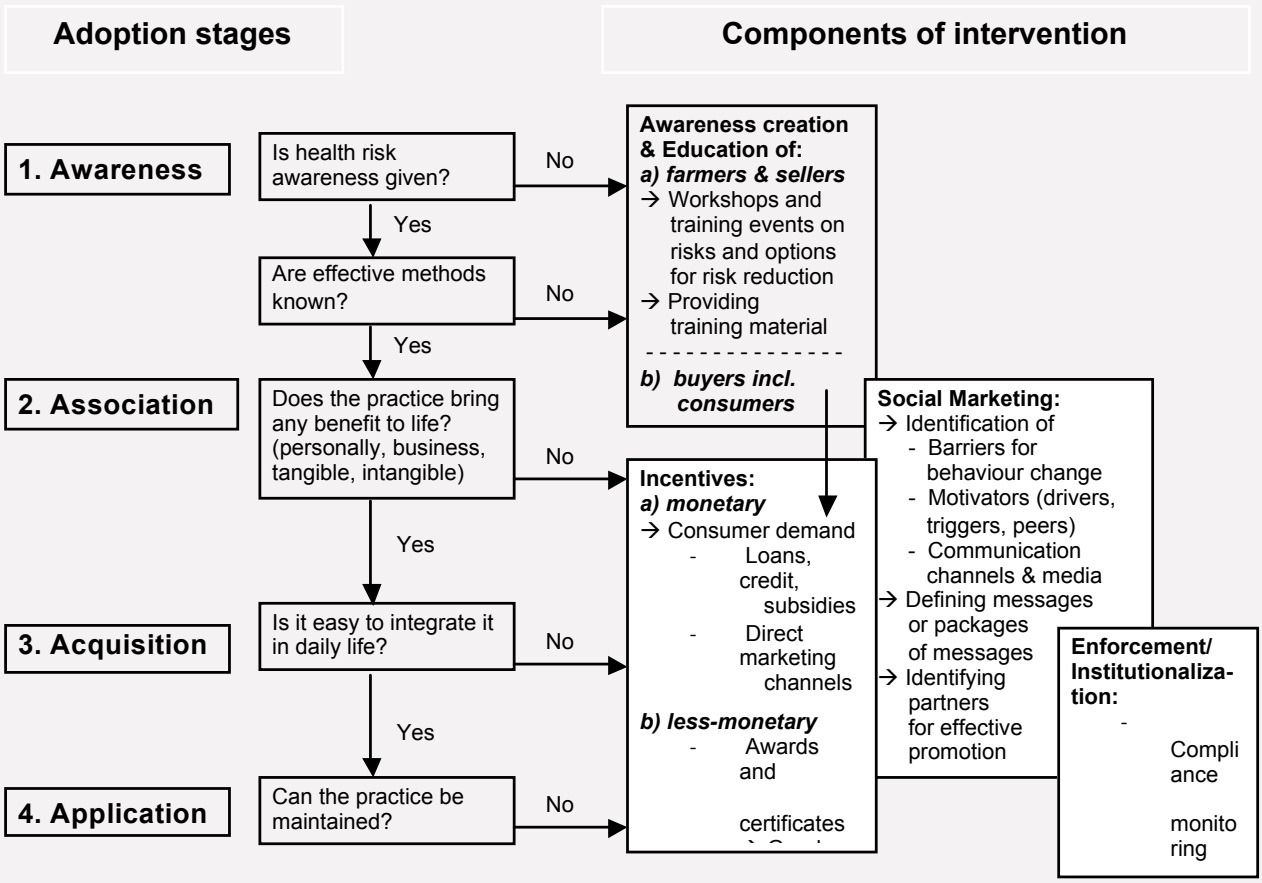

Figure 2: Multi-strategy campaign framework for the adoption of on- and off- farm interventions for the reduction of health risks from wastewater irrigation in urban Ghana (Source: modified from Karg 2008 and Roma and Jeffrey 2008)

Box 2: Looking beyond "WHO 2006"

The introduction of health-based targets in the 2006 edition of the WHO safe wastewater use guidelines moved the attention from the irrigation water to food safety in general. Looking at food-safety, however, authorities might find any wastewater-driven campaign e.g. on safe vegetable washing odd in an environment where food hygiene and food safety are challenged in many more ways than via irrigation. Thus we propose that the WHO adopts in the wastewater sector a more holistic approach beyond their current wastewater use guidelines. Ideally, effective vegetable-washing and other basic (food) safety practices, like hand-washing should be part of an integrated behaviour change approach. Even if not all components of such a 'package' will be adopted, the cost of promoting two to three good practices might be only somewhat higher than the cost of promoting one practice, while multiplying its potential impact and cost-effectiveness.

Conclusions

In areas where public health cannot be safeguarded through adequate wastewater treatment, WHO (2006) recommends additional on- or off-farm based safety measures. While wastewater treatment must rely on institutional capacities and incentives to maintain technical functionality (Murray and Drechsel, 2011), alternative options require individuals and farming communities to change their behaviour. Supporting policies and related education might be milestones in this process, but often do not trigger behaviour change.

This situation calls for a stronger integration of social science research and related strategic partners and stakeholders in the strongholds of engineering and epidemiology to address key adoption barriers, such as:

- In many cases, the recommended practices for increased food safety do not provide direct profit or reduce production costs (they may even be more expensive).
- Educational levels in developing countries are too low to understand public-health risks (especially related to invisible threats) and related responsibility.

- Safety regulations are often too theoretical and do not fit local capacities or context.

In addition to educational and regulatory efforts, social marketing can play a significant role in understanding and facilitating behaviour change, although both approaches are not without challenges (Biran and Hagard, 2003; Cave and Curtis, 1999). To be successful, social marketing requires applied research to understand the needs, aspirations, values, and everyday lives of the target audiences, and their perceptions of factors that might motivate or discourage them from adopting recommended technologies. This research will greatly help in designing a well-targeted food-safety campaign under any policy supporting the WHO (2006) guidelines in the farm and post-harvest sectors. Resulting experiences, like those reported here from Ghana, are needed and should be incorporated in the WHO Guidelines to assist practitioners and authorities in adopting and adapting the WHO Guidelines.

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Names: Pay Drechsel
Organisation:International Water Management Institute (IWMI)
Town, Country: Accra, Ghana and Colombo, Sri Lanka
eMail: p.drechsel@cgiar.org

Names: Hanna Karg
Organisation: Department for Physical Geography, University of Freiburg
Town, Country: Freiburg, Germany

Austrian Development Cooperation

Sanitation Marketing

Social Marketing – a tool for sanitation behaviour change?

Author: Markus Lechner

Abstract

Alternative sanitation solutions can provide sustainable sanitation services for settlements in African countries. With support from Austrian Development Cooperation (through Austrian Development Agency) EcoSan Club currently implements a project in Northern Uganda which addresses sanitation issues (human excreta management) from two complementary sides. On the one hand, the project will create additional demand for sanitation and, on the other hand, establish a sanitation service chain to tend to this newly created demand.

This paper deals with the methodology to create demand for sanitation. Demand shall be created by applying a social marketing approach. The project will identify appropriate "sanitation products", minimise their prices, make them available and promote them.

"Sanitation products" are defined as all required services along a sanitation service chain – from design to construction and operation and maintenance. To make sure that appropriate products are available the project will support private sector actors in technical and entrepreneurial aspects.

Introduction

Recent experiences (Müllegger et al., 2010; Muchiri et al., 2009) have clearly demonstrated that alternative sanitation solutions can become the key to providing sustainable sanitation services for settlements in African countries. However a main pre-condition must be fulfilled – any proposed solution must limit the required involvement of the user to using the toilet.

Common approaches which require the user to assume

- a professional engineer's role during design and construction (e.g. user friendly design) or
- a plumbers role during operation and maintenance (e.g. cleaning of pipelines) or
- a garbage collector's role during operation (e.g. emptying of dry toilets) or
- a farmers role (e.g. reuse of biosolids)

fail because they neglect the simple truth that the user has only one main objective for investing in sanitary infrastructure which is to be able to use a (private) toilet. The user is generally not interested in any of the other required activities.

Western water borne solutions fulfil this condition perfectly and are therefore successful, wherever and as long as they can be afforded.

Assuming this fact as a starting point EcoSan Club has designed a project (implemented in Kitgum, Uganda) which receives funding from Austrian Development Cooperation (through Austrian Development Agency) aiming at establishing a comprehensive system of alternative sanitation solutions for toilet users. The system shall comprise all services necessary to provide toilet users with what they want but relieve them from activities which are required to make the system functional but which the user has no immediate interest in performing.

Key assumptions:

- Social marketing creates demand for sanitation
- Creating demand for sanitation requires all products along the sanitation service chain as a precondition
- All sanitation products must be state of the art and affordable in order to be sustainable

However, still the real impact depends on numbers. Common approaches fail in this respect because they neglect that

- existing laws are hardly ever enforced,
- an abstract problem awareness does not constitute a sufficiently strong driving force for change and
- dealing in resp. with sanitation has a low social status and therefore there is a significant lack of service providers in appropriate quality along the sanitation service chain.

Therefore the project will use a social marketing approach aiming at improving the social status of activities related to sanitation (from design, construction/installation to operation and maintenance) and creating competition on all levels, both on the supply and demand side.

Approach

The entire project is based on a number of major assumptions:

- a behaviour change is necessary to improve household sanitation (human excreta management) on a significant scale,
- awareness creation does not per se initiated the required behaviour change,
- social marketing is a tool that can initiate a factual change in behaviour with regard to household sanitation (USAID, 2007).

At the same time social marketing requires an affordable and attractive product, two criteria which will be addressed in the project.

Social Marketing combines traditional approaches to social change with commercial marketing and advertising techniques, uses methods from the commercial sector (market research, developing products and services corresponding to genuine needs, creating demand, marketing) and ultimately aims to influence people's ideas and behavior. The differences to commercial marketing are that demand has to be created and not steered only, and that social marketing products are so-called non-tangible products like ideas and practices.

Elements of social marketing are similar to commercial marketing:

- Understanding "customer needs" (market research),
- Making the "product" available (media, interpersonal contacts, etc.),
- Product pricing (price serves to position a product, indicator of quality and prestige value),
- Understanding opportunity costs (total cost of adopting an idea goes beyond the monetary price).

Expected Results

Social Marketing

One result of the project will therefore be a social marketing campaign, which results in the creation of demand for sanitation services.

The project assumes that the market / private sector responds to demand if it has a sufficiently large magnitude (Van der Wel, et al., 2010). It is postulated that currently demand for services in the sanitation sector is insufficient to create interest from potential service providers. Furthermore it is commonly accepted that awareness creation alone does not necessarily initiate behaviour changes which result in increased demand for sanitation services. Therefore the proposed project will design and implement a social marketing campaign to create demand for sanitation services on a substantial scale.

However at the same time complementary to increasing demand, means and ways to satisfy this demand will have to be established.

Services and Finance

To avoid the creation of frustrated demand by social marketing activities appropriate sanitation service chains, viable business opportunities and potential service providers will be identified in parallel. Interested individuals and entrepreneurs receive training and technical and entrepreneurial support to an extent which enables them to react to an increase in demand for a particular service along the sanitation service chain. The combination of increased demand and improved availability of sanitation services should result in an automatic positive feedback between demand for sanitation services and provision of sanitation services. Furthermore only systems which are affordable for the users are sustainable; therefore under these assumptions the users will not need gift money but only access to affordable financing systems.

In practice this means that there will be access to loans with favourable conditions (no collateral, relatively low interest rates) provided through a local financing institution. The direct benefit of this result will be that one frequently mentioned reason for not investing in sanitation facilities will be eliminated. Indirectly the sanitation facilities' perceived value increases with someone (in an appropriate social position) showing interest - an interest which in this case is demonstrated by investing money in this financing mechanism.

Possible conclusion

The project is in its initial phase, currently defining viable sanitation service chains and developing a social marketing strategy. The following possible conclusions are envisaged:

Success

If even only one viable sanitation service chain can be defined, a well-designed social marketing approach will result in an increasing demand for sanitation services and a sustainable change of the sanitation situation in Kitgum. Viable is defined as affordable for the sanitation service users, profitable for the sanitation service providers and in line with national and local legal requirements.

Failure

No sanitation service chain which fulfils legal requirement, e.g. no illegal dumping of hazardous material but proper treatment or disposal, can be designed in a way to be affordable for the local population. Considering that legal standards in Uganda are high (Government of Uganda, 1998, 1999) – comparable to European Standards – "cheap" solutions do not exist. Not without reason sanitation services receive high levels of subsidies in most "developed" countries.

In this case the obvious conclusion would be that under the current economic conditions sanitation services according to legal requirements are simply not possible and that any investment in sanitation infrastructure by necessity will fail because it is either not economically sustainable or illegal.
Also a social marketing approach cannot work because it lacks the product.

Consequently the social marketing approach would not fail but rather not be implemented at all, as no thinkable sanitation service chain would be economically sustainable. Possible solutions for this dilemma would then be reducing required standards – which might compromise sanitation targets – or subsidising hardware and/or operation and maintenance of sanitation service chains.

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Name: Markus Lechner
Organisation: Ecosan Club, Austria
Town, Country: Muckendorf, Austria
eMail: markus.lechner@ecosan.at

Show diarrhoea the red card

WASH United: using fun, games and sport to create awareness and behaviour change

Author: Ina Jurga

Abstract

WASH United is an award winning international non-profit that pioneers the use of fun, educational games, sport star ambassadors and strictly positive messages to increase the relevance of sanitation & hygiene and to facilitate behaviour change.

The paper introduces WASH United and its the learning and behaviour change theory to create awareness and behaviour change for starting to use the toilet and hand-washing with soap. It describes how WASH United is using games and sport at the Great WASH Yatra in India and via WASH in Schools and the impact of these programmes. In the end the paper will discuss some of the challenges.

WASH United

TWASH United is an award-winning Berlin-based international social impact organization that pioneers the use of fun, sport star ambassadors, interactive educational games, and positive communication to increase the relevance of sanitation & hygiene (hand-washing and menstrual hygiene) and to facilitate behaviour change at scale.

The first WASH United campaign began in 2010 in conjunction with the FIFA World Cup in South Africa to work in Africa. Since 2011, WASH United is registered as non-profit organisation in Germany and has established offices in Delhi, and Nairobi, Kenya. Currently WASH United works via partners in Uganda, Lesotho, Ethiopia, Tanzania, and Ghana.

The main goals of the WASH United

WASH United aims to achieve WASH for all, and works around the following 4 topics:

- Raise awareness for the importance of sanitation: make toilets aspirational and create demand.
- Change attitudes for hand-washing with soap at critical times and facilitate hand-washing behaviour change.
- Break the silence around the most neglected of all WASH issues, menstrual hygiene management, and bring it right into the spotlight of public discussion.
- Promote the realisation of the human rights to water and sanitation (HRTWS) through research, advocacy and mainstreaming of RTWS into WASH activities at all levels.

What is different about WASH United?

The difference in approach is "how" WASH United is tackling these goals. WASH United's organizational DNA lays in the utilization of fun, sport star ambassadors, interactive educational games, and positive communication to make sanitation and hygiene aspirational and ultimately leading to behaviour change. This runs through the various programmes and projects.

In the WASH in Schools / Youth Football Club programme, WASH United is using interactive game and football based tools and storytelling (see chapter 3). Exciting

Key factors of WASH United campaigns:

- Behaviour change
- Positive messages
- Sport, stars as role models
- Games for change
- Demand creation

high-level campaigns using non-traditional formats and touch-points (football tournaments, travelling carnivals, etc.). In addition we work closely with the media (TV, radio, print media, and social media) to extend our reach and impact.

Since 2010, WASH United has reached almost 100,000 children, and more than 1000 teachers via WASH in Schools/ Youth Football Clubs, and 280 Mio people via campaign and media work.

Behaviour change in WASH

A very common approach in the WASH sector is the provision of hardware, be it latrines or safe household water treatment, coupled with trainings and distribution of IEC (Information Education Communication) materials that communicates health messages. Many household don't see the toilet as a priority among different other needs (schooling fees, TV, mobile phone, medicine). Frequently, these toilets are then used as cowsheds, storage or simply left unattended. In the same time soap, which is often available for personal hygiene and clothes cleaning, is not used for hand-washing at all critical times, and is unfortunately often considered rather a dull practice.

The WASH sector agrees today, that sharing and teaching simply health facts is not enough to facilitate behaviour change. So let's think different, what motivates people and what can change behaviour?

Behaviour change models

Behaviour change models are looking at Knowledge, Attitude and Practices (KAP) of the target audience, but also include relevant socio-cultural and environmental influences. There are some various theories and models available, and some have been specifically applied in the WASH sector, such as RANAS and FOAM framework (Coombes and Devine, 2010; Ram, 2010; Mosler, 2012).

In the sector, content or approaches for awareness and behaviour change is mostly based on health and / or negative messaging (fear, shame, disgust). However, a lot of recent brain research shows that humans respond much better to surprising and emotional new messages. Unfortunately the WASH sector does not apply this recent thinking enough. The following 2 chapters describe the effectiveness and power of games & sport in creating aspirations and behaviour change.

Games for change

Game based learning (GBL) is designed to bring across a certain subject through gameplay and is linked to the ability of the player to retain and apply this subject matter to the real world. An effective game is not only fun, entertaining and easy to comprehend, but also one that is able to transfer the core message. In the ideal scenario, the rules and goals of the game inspire motivation and creativity to find problem-solving solutions. Research has shown that fun-based interactive games enable people to generate their own insights that are not only more appealing, but also lead to a much deeper retention of knowledge. A crucial point in game play is the reward, as they keep the player interested to finish the specific game challenge, and create positive emotions when succeeded. This paper will show how WASH United uses this approach in the WASH in Schools curricula (chapter 3) and in the Great WASH Yatra (chapter 4), where games are used for awareness creation and behaviour change around WASH issues.

The power of sport

Sport is an universal passion, and especially the love for football in Africa and cricket in India engages the individual, the community and even the entire country. Football-based messages and games are extremely attractive and create desire to participate or simply create attention. An additional advantage by using sport is, that via sport clubs youth and adults are mobilized besides the rather traditional pathway of schools or health sector, and important WASH topics can be easily integrated into trainings. WASH United is an associate member of Street Football World, and works in Kenya and Lesotho with organizations such as Matahare Youth Sport Association (MYSA) and Kick4 Life respectively.

Secondly, sport stars have a huge role model status. People, and especially young children, identify with them and take on their messages and values to increase their own aspiration and self-efficacy. WASH United pioneered football and cricket for WASH and has recruited global football stars such as Didier Drogba (Figure 1), Sebastian Schweinsteiger, and local heroes such as McDonald Mariga (Kenya), Assamoah Gyan (Ghana), Yussuf and Irfan Pathan and Suresh Raina (India) as members of the WASH United Club.

WASH in Schools activities

WASH United believes that children are key agents of change. As children spend most of their time in school, this is the place where they should learn and be motivated to perform good WASH behaviour: washing their hands with soap at critical times, always using toilets properly and drinking safe water.

In Figure 2 the well-known 'learning pyramid' shows how the retention of knowledge applies in school to identify effective learning methodologies.
Even if the exact percentages became recently under increased criticism, the higher effectiveness of participatory over passive learning methodologies remains. As a conclusion, no matter which topic, an effective WASH training should move away from lecturing students and recalling facts and information, and use activities that stimulates pupils to learn and think more instead.

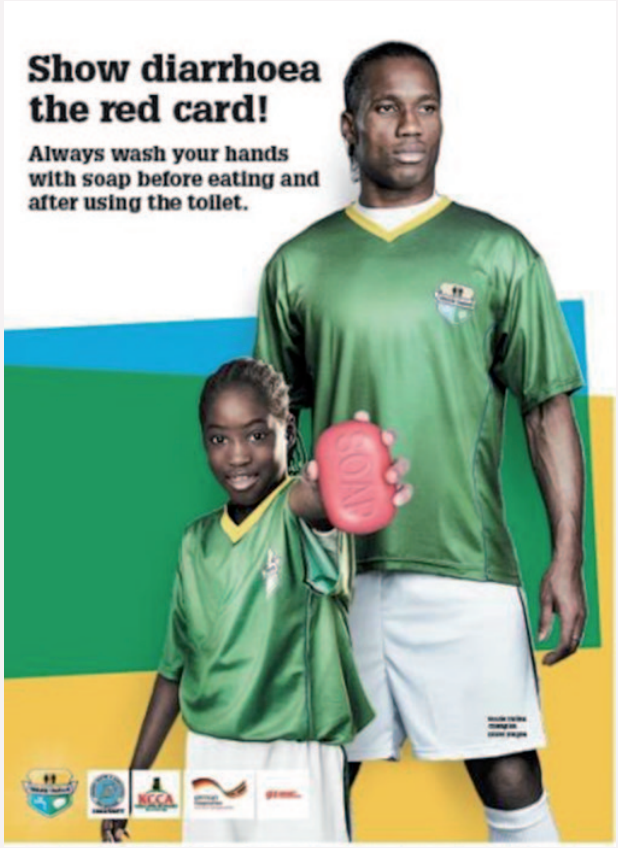

Figure 1: 'Campaign poster featuring Didier Drogba, Uganda

WASH United curricula

WASH United has developed an innovative football and game-based curriculum that engages children in an interactive and participatory way. The trainings enable children to generate their own insights about the problems surrounding poor WASH through fun and play. The trainer is not just teaching facts, but rather facilitates discussions and motivation to practice the behaviour. Through the problem-based and game-based learning approach, children retain the new learning much longer, and start to have positive associations with WASH.

The WASH United curriculum includes hugely popular games that follow a specific sequence:

Figure 3: ' World Toilet Cup':Scoring the Poo ball into the Loo in Busia Muslim PS, Uganda

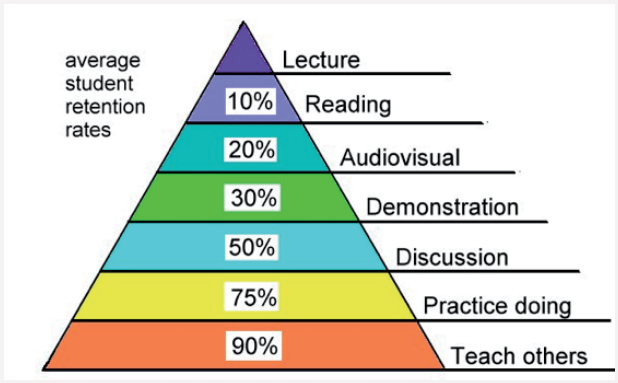

Figure 2: Learning Pyramid (Source: National Training Laboratory, Bethel, Maine)

Playing the "World Toilet Cup" (motto: "every poo needs a loo") children identify the reasons why having a toilet is important along the key words of health, safety, environment and respect. When they give the correct answer they are allowed to shoot the 'poo-ball' into the loo and the best shooter wins a price. In Africa the game is played as football (Figure 3), in India we use a cricket bat.

The next games are around hand-washing with soap. In the "Blue / Germ Hand Game" children learn by passing a chalk-covered ball, representing the germs in poo, how easily germs are spread. This activity is followed by the "Hand-washing Challenge" to discover the effectiveness of soap in removing the germs and practice the right steps for hand-washing at critical times. Finally, the "TippyTap competition" engage children to build their own low-cost hand-washing station. Comic-style posters, featuring stories on why practicing good WASH habits make the children stay healthy and able to play sport, support the learning.

After the completion of the training, children receive a certificate and join the WASH United Club (Figure 4). In the Club they are part of a bigger movement that also includes their favourite football or cricket stars. As WASH United's Club member, they take '3 Finger Pledge' and commit to: 1) always use a toilet when available, 2) always

Figure 4: Happy new members of the WASH United Club in Indore, India

wash hands with soap before eating and after using the toilet and 3) get three friends and family members to take the pledge.

In Uganda, the WASH United Club members in Kampala have established a mentor and peer education system, in which the members reach out to other students and their family to show and discuss with them what they have learned. They even developed their own game: open-defecation-dodge-ball, in which stones represented open defecation and stepping on it would disqualify the player in the pitch.

Results

Teachers and students uniquely reported that using the WASH United curricula is fun and entertaining, and is thus hugely popular. Members of the WASH United club became own champions among their school peers, family and community.

During the intervention in Tanzania from 2012-2013 with more than 6000 students, an average of 50 per cent increase in knowledge among the student was found, with the older students in standard 5 and 6 up to 88 per cent and younger children a bit lower at 35 per cent. In the baseline 75 per cent of the children reported they wash their hands after going to the toilet and 38% before eating and this increased to 92 and 82 per cent respectively in the end-line.

Teacher and students in Uganda have reported independently from each other very positive behaviour change impact in the school: children are using the toilets better and start to demand soap for hand-washing. The children are generally cleaner and also motivate others to keep clean. Leadership skills were promoted: some children taught other children and parents and TippyTaps were built at the children's home.

The Great WASH Yatra

With 1,000 Indian children dying from preventable diarrhoea every day, India is the undisputed world leader in child mortality far ahead of Pakistan, Bangladesh or China. There are two main reasons for this: first, the country's widespread open defecation, and with 626 million Indians having no toilet at all, India is again world record holder. The second reason is poor hand-washing hygiene is not yet widely practiced in India. According to the Public Health Association, only 53 per cent of the Indian population washes hands with soap after defecation, 38 per cent wash hands with soap before eating and only 30 % wash hands with soap before preparing food.

The Great WASH YATRA, or Nirmal Bharat Yatra as it was called in India, was an unprecedented multi-channel mega-awareness campaign led by WASH United and Quicksand that took place from 4 October 2012 to 19 November 2012 in India. The Nirmal Bharat Yatra was designed with the two key goals: 1) promote life-saving hand-washing behaviour among children and adolescents; and 2) raise the importance of sanitation and menstrual hygiene management among different target groups in India. Figure 5 shows the birds view of the Great WASH Yatra.

The Yatra carnival travelled 1,950 km, stopping in rural locations near the following cities/states: Wardha/ Maharashtra, Indore/Madhya Pradesh, Kota/Rajasthan, Gwalior/Madhya Pradesh, Gorakhpur/Uttar Pradesh, and Bettiah/Bihar.

Featuring educational games, thematic laboratories, stage shows, entertainment, the 10,000 sqm carnival area created an exciting, colourful and atmosphere around WASH. The Yatra was a particularly resonant format because it built upon all the things Indians are really passionate and excited about – Bollywood song and dance, popular TV formats, but above all India's favourite sport, cricket, and used these as a vehicle to charge the "dirty issues" of sanitation and hygiene with positive emotions.

Games at the YATRA

WASH United and its partner Quicksand and designer from Studio Miscellanea conceptualized more than 30 games from which we selected the 20 best to be included

Figure 5. Birds view of the Great WASH Yatra

Figure 6. Collecting soap on the 'Poop minefield'

in the Yatra. All adapted to build awareness about the 2 core messages:

1. soap is killing germs. Hand-washing with soap
2. topping open defecation. Using the Toilet

Most of the games are based on traditional carnival games and other Indian games and featured a variety of playing styles: board games, outdoor games, knowledge games, single-player or multiple-player games.

One of the most popular game was 'Poop Minefield', a team game in which one player guided the second player (who was blindfolded) through an open defecation zone using only voice commands. The goal of the game was to reach the other side of the field as quickly as possible without stepping on a poop mine and to pick up as many bars of soap for bonus points on the way. "Poop minefield" is an excellent example of how the difficult issue of open defecation can be addressed in a fun and playful way and how sanitation and hygiene issues can be linked together in a single game. Figure 6 shows a boy collecting soap on the 'Poop minefield'.

Other popular games, included:
'Clean Hands Carrom' (Figure 7, left): Carrom is a very traditional Indian game that has been transformed into a tool for hand-washing education. The goal of this game was to get the hands depicted in the centre of the board clean by shooting the germs in the pockets using the soap striker. A second Carrom was developed called the "clean village carom" in which the village field on the board had to be cleaned from poop.

Bowl out diarrhea (Figure 7, right): this game really demanded good cricket bowler skills to hit (='bowl-out' the fearful diarrhea demon.

More games can be found on the website www.nirmalbharatyatra.org

Results

The Nirmal Bharat Yatra has achieved results beyond expectations:

- 160,000 people visited the Yatra on the ground (= 160% of the agreed goal);
- 230 million people through media, and hundreds of officials in the government (= 250% of the agreed goal);
- Almost 8,500 school children and 179 teachers trained through interventions with 152 schools.

Educational carnival games were one of the main attractions at the Yatra with long lines throughout the day. Participants included both children and adults, though mostly children played the games.

In terms of behaviour change, our research partners from EAWAG created a framework for monitoring and evaluating all implemented measures and their effectiveness in terms of outcomes, particularly on behaviour change on hand-washing with soap, based on the RANAS model. EAWAG has conducted 1544 pre-and post-interviews with visitors of the Yatra in 5 stops (except Wardha), and used 693 matching responses as survey size.

The results showed that several behavioural determinants changed immediately after the Yatra visit: perceived severity of diarrhoea, and on how to prevent the disease. During the post-interview, respondents gave significantly more correct answers as to what the causes of diarrhoea are and how the disease can be prevented. They reported liking hand-washing better and feeling dirtier if they did not wash hands with soap after using the toilet. Respondents also reported it to be less difficult to find the time to wash hands with soap after using the toilet and gave more useful alternatives as to what to do when there is no soap for hand-washing (Seimetz and Mosler, 2013).

Figure 7. Carrom game (left) and long queues at the "bowl out diarrhea demon" game

Challenges

For school children to perform the targeted behaviour the educational intervention in schools and youth football clubs faces the following 3 main challenges:

Lack of infrastructure and budgets for soap in schools

Often schools don't have enough separate toilet facilities and budgets for soap and maintenance are really small compared to the enrolled school children. However, WASH United only focuses on awareness and behaviour change and does not build infrastructure. To overcome this challenge we are doing the following:

- Integration of small doable (low costs) technology option for hand-washing, Such as the TippyTap.
- Facilitate discussion and motivation among teachers, school associations and government to solve the problems.
- Link to "hardware" services: Partnering with hardware programmes and projects, which are looking for cool and attractive tools for the "software".

Motivation of teachers to participate and guide

Teachers have been found to be most important facilitators of change if they are motivated and encourage and guide the children to practice good WASH behaviour. Some teachers really play this role and change is happening at the school. Unfortunately some teaches have conflicting interests and lot of other work, and are less engaged. We have started to build up a mentor system, and included incentives such as certificates and skills-training.

Sustaining change

Beyond the initial activities it is important to use and sustain the momentum for WASH that has been created, especially in schools where new students enrol every year. Therefore, WASH United uses incentives such as annual Football Tournaments, WASH competitions and follow-up to keep schools engaged and motivated to sustain and even further improve WASH.

Conclusion

Using games and sport, WASH United has developed a unique approach to awareness creation and behaviour change in WASH, such as mass campaigns like the Great WASH Yatra and the WASH in Schools curricula. Both have been proven to create impact in terms of knowledge, awareness and behaviour change.

In the future, WASH United is looking for partners interested to use WASH United material and tools, and especially to support "hardware" programmes with cool and fun "software" tools.

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Names: Ina Jurga
Organisation: WASH United
Town, Country: Berlin, Germany
eMail: ina.jurga@wash-united.org

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Next issues:

Issue 17, October 2013: **„Miscellaneous“**

Issue 18, January 2014: **„Outcomes from the UFZ wetland workshop“**

Issue 19, April 2014: **„The CLARA project“**

Further information:
www.ecosan.at/ssp

Contact:
ssp@ecosan.at
www.facebook.com/SustainableSanitationPractice
www.facebook.com/EcoSanClubAustria