

# Non-health Externalities Contribution to Sanitation Improvement: A Review

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## **Abstract**

The health externalities contribution to sanitation improvement is well documented and understood. Other significant contributors are the non-health externalities. Though sanitation interventions are to prevent disease and improve health, non-health reasons are often the motivation for the adoption and use of sanitation facilities. These non-health externalities (or non-technical issues) relate to socio-cultural, economic, and institutional aspects, and include privacy, prestige, social status, convenience, time-saving, modernity, odour and fly control, cleanliness, safety for especially women and children. There is currently little peer-reviewed published literature, particularly in the context of Ghana, on the non-health externalities contribution to sanitation improvement. This paper therefore explores the contribution of the non-health externalities to improved public health through improved sanitation. Peer-reviewed publications and bibliographies from various credible sources on the subject were gathered to inform the review. The review reveals that the non-health externalities are not universal, but community-specific in nature and broadly govern sanitation facilities design, installation and use, and are a function of users' preferences and needs. The author argues, based on the available literature, that the non-health externalities contribution to sanitation promotion and improvement is significant though largely less known and understood. As the non-health

externalities are community-specific in nature, the author recommends that future research focus be directed at sanitation interventions that would unearth the non-health externalities necessary to dismantle barriers to behaviour change, latrine adoption and use, for improved sanitation within communities. The author concludes that there is the need for sensitization and education drive intensification on significance of the non-health externalities to sanitation improvement for accelerated public health outcomes. Multidisciplinary research in sanitation is therefore recommended, as sanitation improvement benefits are more socio-cultural and economic (or non-health related) in nature than technical.

**Keywords:** *sanitation improvement, non-health externalities, users' preferences and needs, sanitation facility.*

## **1. Introduction**

Sanitation is a challenging and complex field which affects many because of its diverse and cross-cutting nature, yet championed by a few [1]; [2]; [3]. Though sanitation interventions are to improve health, most people adopt and use sanitation facilities for non-health reasons [4]. Sanitation inclusion in the Sustainable Development Goals (SDGs) is proof that non-health externalities have positive implications for sanitation improvement [5]. Sanitation improvement generates social and economic benefits well understood by householders and individuals, but only recently experts began to research and appreciate people's motivation for sanitation improvement and the need for behaviour change [1]. Policy reforms in Ghana, for instance, encourage community participation and individual household sanitation facilities use to improve sanitation [6]). A "social contract" of the non-health category is to promote and ensure effective sanitation by keeping sanitation facilities clean, as human contact with excreta is limited, sanitation facility use is promoted, and flies and odour control inside the facility are maximized [7]; [8]. Fundamental to the acceptance and sustainable use of sanitation facilities is an understanding of the non-health externalities (or non-technical issues) [9]. There is therefore little debate that the non-health externalities promote sanitation improvement leading to improved public health outcomes [10].

Sanitation improvement is partly governed by non-health externalities [11]. A shared sanitation facilities review shows that the current limited

improved sanitation definition that restricts one sanitation facility per household without accounting for socio-cultural, religious, household sizes, and other non-health externalities is misplaced [12]. This article focus would therefore be on the non-health externalities, as they are less known and understood, though significant for sanitation promotion and improvement. The socio-cultural and economic aspects of communities are associated with the non-health externalities, namely improved privacy, prestige, social status, convenience, time-saving, modernity, odour and fly control, safety for women and children, and cleanliness [13]; [14]; [15]; [16]; [17]; [18]; [5]. Some of these socio-cultural preferences are grounded in women's preference to defecate under a safe and convenient environment, dictated by the need to hide themselves from men's sight [19] – confirming an earlier research outcome which found that society expects women to defecate and urinate in secrecy [20].

## **2. Socio-cultural dimension of the non-health externalities**

Low-cost sanitation projects design and construction for developing countries often indirectly require information on the non-health externalities, largely because sanitation facilities development depend upon local materials and expertise, community co-operation, and local preferences and needs [21]. An extensive review of 24 studies examined the correlation between structural and design characteristics of sanitation facilities and their use reported improved maintenance, accessibility,

privacy, cleanliness, and sanitation facility type were strongly associated with higher use [22]. The non-health externalities benefits are however currently side-lined at the expense of the health ones in the sanitation debate despite the non-health externalities significant contribution to sanitation improvement, partly because they are difficult to quantify [5]. Health externalities prioritization at the expense of the non-health externalities may be inappropriate since sanitation improvement relies on both for its benefits. There currently exist little knowledge, particularly in the context of Ghana, on the non-health externalities contribution to sustainable sanitation improvement. Aside exploration into identifying the non-health externalities motivators, an imminent gap in the literature is to understand how the non-health externalities influence sanitation improvement.

The non-health externalities literature shows that socio-cultural and economic aspects of community life such as religious and cultural practices and beliefs, and users' needs and preferences play significant role in the proper use, and O & M of sanitation facilities [23]. Sanitation facilities proper use, O & M, and ownership in turn promote sanitation improvement. A study conducted in a predominantly Muslim community in Kumasi (Ghana) and elsewhere found that most users of the only community pour-flush sanitation facility preferred to squat in the North-South direction during defecation to avoid facing Mecca or giving their back to it [24]; [11]. It is however unclear why users

avoided giving their back to, or avoided Mecca during defecation. Such significant findings could be factored into sanitation facilities design and construction to improve public health through improved sanitation facilities usage. A social impact assessment of sanitation also revealed that safe and private sanitation facilities could promote health and security of women and girls, improve the environment, and encourage girls' school attendance beyond puberty [25]. The same assessment showed that higher student enrolment and retention figures were recorded when sanitation facilities and water supply were provided to schools [25]. The non-health externalities are therefore not universal, but are a function of users' preferences and needs, community-specific in nature, and govern sanitation facilities adoption, design, installation, and use.

Though sanitation improvement was once thought to be an exclusive field for engineers, it is now known to require multidisciplinary involvement of various experts – social scientists, health professionals, behaviour change experts, and even households and individuals. Multidisciplinary research is an emerging concept in academia that allows a mix of expert knowledge to solve problems, and improve public health in the case of sanitation research. Some environmental engineers acknowledge that beyond cost and technical feasibility, successful sanitation improvement needs the consideration of social and cultural factors, users' preferences, ownership issues, and O & M [21]; [23]; [9]; [24], particularly as loads of evidence suggests that sanitation benefits are more

socio-cultural in nature than technical. Community engagement is therefore critical to understand and appreciate the priorities and preferences of users [26]; [27] – a prerequisite for effective sanitation facilities use by all community members. Sanitation is therefore a complex discipline which links user-minded non-health externalities to public health through sanitation improvement. Improved sanitation indirectly translates to poverty reduction, and socio-economic and cultural development [28]. Past failures to account for, and acknowledge, these user-minded non-health externalities contributed to most sanitation projects failures [29]. Therefore, this review contends that the non-health externalities partly govern sanitation facilities adoption, design, installation, preferences and needs of users.

Effective sanitation is guaranteed when sanitation facilities are kept clean because facility use is promoted, excreta-human interface virtually eliminated (or at least limited), and efficient fly and odour control inside the facility achieved [7]; [8]. Evidence available also suggests that open-defecation-free (ODF) society effectively promotes public health by breaking the faecal-oral disease transmission route [10]. Sanitation facilities must therefore be used by all members of a community (ODF) to achieve the expected health benefits. If a household chooses to practice safe sanitation, while others continue to open-defecate, then improved health will elude the community. An interesting study however shows that in the presence of significantly deep-seated cultural and behavioural

barriers, sanitation infrastructure provision does not ensure latrine use [19] – a confirmation that sanitation facilities provision alone does not necessarily translate to sanitation improvement. This research therefore argues that household sanitation is a public good with accrued public health benefits provided use is made by all community members, rather than the generally held misconception that household sanitation is a private good with only private benefits. Therefore, for complete public health benefits, focus should be on achieving community-wide improved sanitation coverage through open-defecation-free intervention strategies.

### **3. Sanitation facilities end-users input**

Sanitation infrastructure were formerly built by developing countries' governments without the input of end users [1] – input reflective of the non-health externalities contribution. The past also saw national governments, charities, and agencies subsidizing sanitation facilities construction and sewerage, interventions that were largely unsuccessful [5], likely because factors that influenced the non-health externalities (such as users' preferences and needs) were neglected. However, sanitation sector professionals' current concentration is on individual, family, household, and community support and motivations that would influence these non-health externalities to promote household sanitation facilities construction, use, and behaviour change. A study in Eastern Zambia on reasons for non-use of sanitation facilities found that facilities were not constructed in every household because of the

convenience neighbouring latrines provided [30]. This finding emphasized the significance of convenience as a strong non-health externality to sanitation facility use. Fundamental to the acceptance and sustainable use of sanitation facilities for improved health is therefore an understanding of the non-health externalities (or non-technical issues) [9]. A study on communities' practices, perceptions, and knowledge on sanitation facilities showed that besides health externalities, non-health externalities such as privacy and taboos were key motivators for facility use [30]. The author therefore recommends that future research focus be concentrated around sanitation intervention strategies that will help change behaviour and unearth the non-health externalities motivators necessary to dismantle barriers to behaviour change, sanitation facility use, and improved sanitation.

#### **4. Conclusion and recommendation**

Aside the well-known health externalities, available literature show the significant contribution of the non-health externalities to sanitation promotion and improvement which are not well known and understood. There currently exists little knowledge, particularly in the context of Ghana, on the non-health externalities contribution to sanitation improvement. Though sanitation interventions are aimed at health improvements, non-health reasons are often adopters' and users' motivation for sanitation facilities use. Sanitation improvement is thus partly reliant on, and more associated with, the non-health rather than the health externalities. The

non-health externalities are however not universal, but community-specific and govern sanitation facilities adoption, design, installation, and use, and are a function of users' preferences and needs. The unavailability of sanitation infrastructure is not the only major cause of open defecation, as non-health externalities such as privacy, and convenience (among others), significantly contribute to sanitation improvement through sanitation facility use. This review paper demonstrates that the non-health externalities partly govern sanitation facilities design and installation, and are a function of users' preferences and needs. The author concludes that future research and sensitization programmes be concentrated on unearthing the non-health externalities motivators necessary to dismantle barriers to behaviour change, latrine use, and improve sanitation. The author therefore recommends multidisciplinary research in sanitation, as the benefits of sanitation improvement are more socio-cultural and economic (or non-health related) in nature than technical.

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### Author Profile



**Roland S. Kabange** is born in Navrongo (Ghana) to uneducated parents. Roland holds a PhD in Environmental Engineering (sanitation option) from The University of Leeds, West Yorkshire (The United Kingdom), MSc (Irrigation Engineering) and BSc. (Civil Engineering) both from Russian Peoples’ Friendship University, Moscow (Russia). He also participated in a certificated Ecological Sanitation Course in Sweden, South Africa, and Ghana

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