

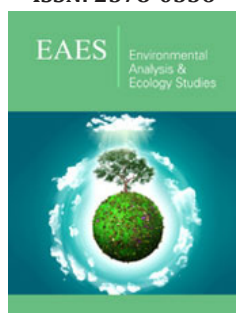
China's Rural Toilet Reforms: Contemporary Status and Future Prospects

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Abstract

The reform of China's toilet system is essential if the country's rural governance is to improve to the required standard. The improvement of sanitation facilities is, to this extent, an essential precondition for the effective promotion of human settlement in rural areas. This reform will optimize rural investment and tourism conditions, transform rural production and lifestyles and promote the sustainable and healthy development of the rural economy. In each of these respects, it will make a significant and lasting contribution to efforts to build a moderately prosperous rural society in China.

Keywords: Mode discussion; Rural revitalization; Rural toilet renovation

Introduction

Traditionally, people in China are often shy of talking about toilets which serve as a private place to address personal physiological matters. "Using the toilet" is the most basic physiological need of human beings, but it has long been neglected by the society. Especially in the vast rural areas, farmers raise little or no objection to the dirty and messy toilets. Instead, they are accustomed to these toilets with silent endurance. This makes the toilets in China's rural areas always show in front of the world with a crude, dirty and smelly appearance. The toilet development deserves as an important caliper to measure the level of social civilization and economic development in China. Alongside with the deepening of reform and opening-up, people's ideology changes greatly and social civilization advances by leaps and bounds. The toilet problem has therefore aroused the increasing attention of the government departments and the people.

In recent years, the CPC's (Communist Party of China's) Central Committee and the State Council have attached great importance to the "toilet revolution". The strategy of "implementing rural revitalization" was put forward in the report of the 19th CPC National Congress, and General Secretary Xi Jinping subsequently issued important instructions on a number of occasions, while putting in place arrangements that had the intention of further progressing the "Toilet revolution" [1]. The CPC Central Committee has repeatedly issued circulars, such as: "Opinions of the Central Committee of the Communist Party of China and the State Council on Implementing the Rural Revitalization Strategy"/"National Toilet Revolution On-Site Meeting and Toilet Revolution Training Course"/"Three-Year Action Plan for Rural Residential Environment Remediation"/"Guiding Opinions on Promoting the Special Action of Rural "Toilet Revolution"" and so on on this subject and the No.1 Central Document (2019) also outlines a more comprehensive and long-term plan for the rural revitalization strategy.

Rural issues are fundamental to the national economy and the upholding of livelihoods. Comprehensive modernization is inseparable from rural modernization, and the comprehensive construction of ecological civilization is inseparable from the construction of rural ecological civilization and rural environments. The "toilet revolution" is an important part of the implementation of the rural revitalization strategy [2]. But the question of "how to use the toilet with dignity" is still open across large parts of rural areas, and this seriously restricts local economic and social development and the promotion of life quality. The "toilet revolution" seeks to address and overcome shortfalls that affect existing life quality. Since 2004, the central government has successively invested RMB 8.38 billion in the construction and renovation of 21.263 million rural toilets.

Remarkable achievements have been made in the rural toilet renovation. Then it has improved the basic sanitary conditions, the health of the public's life, and the quality of production and living environment in rural areas, thereby resulting in the gradually upgraded economic and social benefits. It has been said that "there is no absolute garbage in the world, and garbage is misplaced wealth". At the time of writing, the "toilet revolution" is anything but a narrow concept. This is further reiterated by the fact that the current problem-solving approach combines the following three dimensions. First, the transformation of rural toilets is integrated into other aspects of rural environmental improvement; second, the use and maintenance of toilets is combined with the recycling utilization of feces organically, and this forms the ecological integrity of the health system; third, a good rural life-agricultural production-ecological environment circulation system is built, and material utilization functions at its core [3].

The Current State of China's Rural Toilet Technology

Undoubtedly, accelerating the improvement of rural toilets fundamentally changes the rural health appearance and narrows the gap between urban and rural toilet construction, which is of great importance for improving the farmer's life quality and the rural happiness index. Without exaggeration, it is not only a major event related to rural health and farmers' health, but also to the realization of new socialist countryside construction. Presently, it is pivotal to highlighting the fact that three main problems lie in the construction, improvement and upgrading of rural toilets. Firstly, because of the large-work rural toilet renovation projects and the limited subsidies of local governments, it is difficult to achieve the large-scale renovation and promotion of the good-effective but high-cost equipment in rural areas. Secondly, most hard-to-reach villages far removed from towns and cities induce the transportation difficulties of products and equipment as well as the low-efficient installation. Thirdly, the scare detailed planning and arbitrary construction bring about only focuses on the early

construction, ignoring the later operation management and environmental pollution damage.

In developed countries, flushing toilets and well-managed sanitation systems have been widely applied for nearly a century. But each stage of this kind of traditional treatment facility is intensive in terms of cost, energy and resource use. It is necessary to build the infrastructure of centralized wastewater treatment system at an early stage, and then to collect and transport huge amounts of excreta in the operation stage, before then consuming manpower and energy during the final treatment process. It is undeniably the case that these basic requirements have imposed considerable financial and environmental burdens on rural communities. Taking this and current conditions into account, it is clearly not appropriate for China to directly copy the technology, experience and mode of foreign toilet systems. It is now urgent to develop and customize a "Chinese solution" to the "toilet revolution", and to draw on "oriental wisdom" in order to upgrade the villagers' quality of life, and improve the rural ecological environment.

Hygienic Specification for Rural Household Latrine (GB 19379-2012), which was publicly announced by the National Patriotic Health Campaign Committee in 2012, established new technical standards for toilet renovation, and recommended six types of toilets, including double pit alternate type, biogas-linked toilet, urine-faeces division toilet, double-vault funnel type, three-septic-tank type, integrated flushing toilet (Figure 1). By the end of 2016, the coverage of these six harmless sanitary toilets in rural areas reached 80% (7.5% in 1993) [4]. This shows the substantial progress that China has made in the area of rural toilet renovation. Figure 2 shows the types of toilets that are mainly used in China's various provinces and cities. But 57 million households still have no toilets, 40 million are dependent on public toilets, and the remaining 17 million lack any access to toilets (this situation is particularly serious in north-west China) [5].

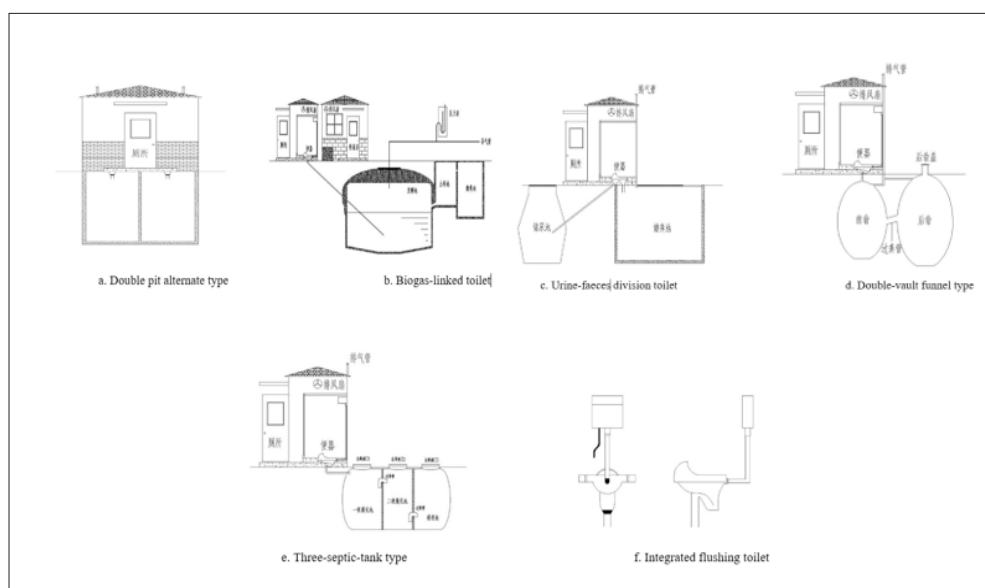


Figure 1: Scenarios of six different harmless sanitary toilets (a-f).



Figure 2: Mainly used toilets types in Chinese provinces.

In responding to China's "Toilet revolution", research institutions and enterprises have invested substantial resources with the intention of driving multiple improvements in the aforementioned (six) types of rural toilets.

These include the following:

A. The improved three-septic tank toilet has been achieved by adding a water-saving and high-pressure flushing device to the traditional three-septic tank toilet (which trouble-shoots antifreezing, compression resistance and cleaning difficulties);

B. The technology of recycling water flushing, micro-water flushing, vacuum air flushing and source separation water-free flushing is embedded in the three-septic tank toilet, double-urn-and-single-funnel toilet, and three-way methane tank toilet, which save water and reduce sewage volume;

C. Additional examples include fecal-urine diverting ecological dry toilets, assembled dry toilets with a shower function, septic tank-type simple water flushing toilets and intelligent anti-freezing ecotourism toilets [6].

Exploration and Experience of Rural Toilet Renovation

China has a vast territory and a large latitude and longitude span, and this means that rural areas evidence wide cultural and economic differences, along with climatic and geographical variations. For example, northwest China experiences low precipitation and long frigid periods while southwest China has abundant rainfall and multitudinous hilly areas; meanwhile, northeast China endures extremely cold winters. Southeast China is also distinguished from its regional counterparts by its high level of economic and social development. When the technological mode of rural toilet renovation is chosen, it is required to comprehensively consider many factors, such as regional characteristics, technological effect, cycle cost, etc. To be specific, the deeply-buried toilet equipment and deeply-dug drainage pipe networks in northwest and northeast

China ascribe to the low temperature and weak microbial activity there. All of these await systematic planning in the rural toilet renovation [7]. These substantial differences notwithstanding, there are common problems that include dispersed populations in rural areas, underdeveloped toilet and sewage treatment systems and a lack of professional management. In seeking to overcome these challenges, the various agents involved in toilet renovation across the country seek to develop practical toilet technology and modes that are adapted to the local environment.

One example is provided by Chadian Town, in Henan Province. During the restructuring of toilets, feces are separated from kitchen and bathroom sewage in order to reduce the sewage entering septic tanks, and this is achieved by innovatively raising the squatting toilet by 10 cm. Jianhe County, in Guizhou Province, is affected by poor transportation, a poverty-affected population and poor quality rural toilets. It also has a number of terraced houses. Through the creative application of the anaerobic / composting technology of dry toilet manure in situ, feces are recharged to terraces through the concentrated collection and hazard-free treatment. This means that toilet feces are confined to the village.

In Juxian County, Shandong Province, an "ID card" is tailor-made to ensure that villagers' toilets are harmless. The small blue sign on the toilet's outside wall indicates various service phones, including the maintenance, transportation and supervision of toilets. The mode of 30% construction and 70% management is implemented to ensure that the renovated toilets do not become an apple of Sodom. In Tieling County, Liaoning Province, public bidding is conducted through competitive negotiation and procurement, and special personnel are sent to track and provide feedback on 'real-time' improvements in toilet quality. In Danling County, Sichuan Province, subsidized individual farmers only need to pay RMB 800 to build a small ecological wetland around their houses, and this ensures that manure can be directly irrigated on farmland after purification.

Improvement of Rural Living Environment Focusing on the Toilet Revolution

To promote the “toilet revolution” in rural areas, it is necessary to, according to the living environment of different types of villages, adjust measures to local conditions and give different guidance to different villages dominated by traditional agriculture. Concretely, due to farmers’ low income and backward health concept, the traditional agriculture-dominated villages are the key and difficult point of toilet revolution. For such villages, we need to focus on the renovation of indoor toilets while vigorously publicizing toilet education. Villages located in the outskirts of the city have been greatly improved in public facilities and farmers’ health concepts. For such villages, what really counts in toilet renovation is to improve the quality. Villages taking rural tourism as their main industry attract heaps of tourists due to their good ecological environment and abundant natural resources. Clean and tidy toilets are the infrastructure of tourism industry. For such villages, the top priority is to build star-rated toilets to meet the tourist demand [8].

The CPC and the State Council published a document (entitled Several Opinions of the Central Committee of the Communist Party of China and the State Council on Adhering to the Priority of Agricultural and Rural Development and Improving the Work of “Three Rural Issues”) in January 3, 2019 that made a number of important contributions. It observes that it should be possible to comprehensively promote the improvement of rural human settlements by focusing on the treatment of rubbish and sewage in rural areas, the “toilet revolution” and the improvement of village’s appearance. It further observes that if these measures are implemented it will be possible to observe, by 2020, marked

improvements in rural human settlements (that will take them to a new level), a clean and orderly village environment and an enhanced awareness of environmental and health issues among villagers.

Guiding Opinions on Promoting the Special Action of the Rural Toilet Revolution further clarifies that priority should be given to the renovation of the toilets in order to promote agritourism. If projects that promote water renovation and toilet renovation in rural areas blossom everywhere, the beautiful and agreeable environment that emerges will constantly enhance the reception conditions of agritourism and other ‘rural’ industries, thereby enabling agritourism to develop to a new level. Satisfied tourists will be attracted by satisfactory toilets, and their presence will contribute substantially to the development of local tourism while enabling farmers to shake off poverty and achieve economic self-sufficiency [9]. The development of agritourism will also promote the integration of resources, contribute to adjustments in the economic structure and stabilize economic growth.

The Commercial Prospects of the Rural Toilet Revolution

China’s rural “toilet revolution” is currently heavily dependent on government subsidies (Table 1), an arrangement that can be attributed to a desire to reduce the burden on farmers, and the fact that the “revolution” would not be self-sustaining in the absence of government support. But subsidies by no means offer a permanent solution, and policy funds can only play a guiding role. Ultimately, it is only injections of social capital that will make it sustainable over a longer period of time.

Table 1: Rural toilet subsidy standards in various provinces and cities.

Province	Subsidy Standards	Whether to Reconstruct the Sewage System	Province	Subsidy Standards	Whether to Reconstruct the Sewage System
Shandong	800-900	no	Zhejiang	above 4000	yes
Shanxi	600-2000	no	Jiangxi	1200	no
Jilin	4000	no	Guangdong	above 3000	yes
Henan	600-2000	no	Hainan	1600-3200	no

For example, a number of scholars suggest that it will be possible to draw on the experience of rural household garbage treatment in Dingnan County, Jiangxi Province, and introduce the Public-Private Partnership (PPP) model to the construction of rural public toilets [10-12]. This will result in an arrangement in which rural areas are assigned to households with sufficient funds, and public toilets will then be constructed after land is divided into several areas. In these instances, government funds will only function as a guide and subsidy. After the public toilets are constructed, the power of operation and management will be owned by the capital-funded households, and the government will regularly collect maintenance fees from all households that use the toilets within the area. This will result in capital-funded households obtaining a return on their investment. Meizhou City in Guangdong Province exemplifies

this management and operation mode of “building toilets through business, managing toilets through business, and maintaining toilets through business”. Significant innovation is evidenced in its modes of “toilet + shop”, “toilet + restaurant”, “toilet + garbage transfer station”, and “toilet + elderly activity room”. The skillful combination of business with public toilets provides replicable and propagable lessons that can help to “maintain toilets through business”.

“Toilet revolution” Requiring All-Society Extensive Participation

From the current view, farmers lack the basic understanding of the main purpose and far-reaching significance of toilet revolution. Thus, in addition to implementing toilet education widely among

the people and improving farmers' civilized behaviors and consciousness, we should promote toilet revolution through the government's commanding role and effective supervision. Enterprises should participate in the investment, construction, operation, and maintenance of toilets upon the basic principle of "building, managing, and maintaining toilets through business". Farmers should deepen their understanding of toilets, strengthen civilized consciousness, and build an atmosphere of social civilization by participating in related work of toilet revolution. More management departments, enterprises, and farmers are needed to participate in toilet revolution. This ensures that the human, financial, and material resources needed for toilet revolution have more abundant channels in source. Meanwhile, this strengthens farmers' understanding of toilet revolution, speeds up farmers' ideological change towards toilets, and makes toilet revolution serve as a model for social civilization, thus impelling the qualitative leap of society-wide civilization level.

Implications for Behavioral Health

The instructions that he has provided on the rural "toilet revolution" will undoubtedly make a vital contribution by further improving rural human settlement, preventing the occurrence and prevalence of infectious diseases in rural areas, improving the health literacy of rural residents, promoting the harmonious development of the whole society and creating beautiful villages. The "toilet revolution" jointly conducted by the government, enterprises and villagers will become the highlight of rural revitalization.

Acknowledgement

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