Executive Summary

This case study documents how the Government of Shaanxi Province provided sustainable and safe water supply, and improved sanitation and hygiene in poor rural communities. The Shaanxi Provincial Government introduced the Rural Water Supply, Sanitation and Hygiene Promotion Project in 2008 with the goal of addressing the lack of safe drinking water and sanitation facilities in poor rural areas. To overcome this, the project would have to change deep-seated behaviors, as villagers often did not follow sanitary practices, and overcome issues of organizational coordination, as government departments often did not cooperate on complementary issues of water supply and sanitation. The case study focuses on how the project was implemented utilizing a participatory “three-in-one” strategy—in which sanitation and hygiene promotion activities were integrated with water supply interventions—and how the delivery challenges were directly addressed during implementation. Multi-village or single-village water supply schemes were built along with public latrines and household sanitary toilets, while hygiene promotion activities were conducted for the public. The case study examines how coordination problems and misaligned incentives between
Introduction

Jinding, a village in Zhidan County in Yan'an City, was subject to water shortages and water pollution well into the twenty-first century. The experience of Uncle Liu, a villager in Jinding who is almost 70 years old and has deep local roots, showcases this extended history. In a 2015 interview, he recalled that, when he was a child, fetching water was difficult, and that villagers relied on donkeys or men to carry it. Streets were cluttered with garbage, and wastewater was discharged without treatment. The odor from non-flushing dry-pit toilets was pervasive, and overuse required regular feces removal. A local proverb summarized the situation in the old Jinding as: “drinking water dragged by people, garbage cleaned by wind, sewage treated by evaporation.”

After the implementation of Rural Water Supply, Sanitation and Hygiene Promotion Project, Uncle Liu was able to drink fresh, safe tap water and take a bath using a water heater after daily farm work. The new double-urn type toilet is hygienic, water saving, convenient, and odorless even on hot days. With the help of his daughter-in-law and granddaughter, he has gradually developed the behavior of washing hands with soap before eating, and after using a toilet.

“I have never thought I could drink tap water, use flush toilets, and live like city dwellers in my life. Unimaginable! I have changed unhygienic behaviors after reading the promotion materials. Now, my granddaughter always takes me to wash hands before meals. If it hadn’t been for the water supply, sanitation, and hygiene promotion project, we would never have a chance to witness those changes. Many thanks to the government for providing good services to the people.”

Water Resource Departments and Health Departments in project design, and promoting behavioral changes to increase uptake of sanitation and hygiene practices can affect project delivery. This case study demonstrates the importance of coordinating and streamlining management to ensure successful implementation; discusses how the intervention was tailored to local context to more effectively reach beneficiaries; illustrates how working with local organizations can help change behavior; and explains how community participation ultimately was crucial to securing the success of the intervention.

These salutary changes in Uncle Liu’s life are an example of improvements in rural areas within Shaanxi. In 2008 and with the support of the World Bank, the UK Department for International Development, UNICEF, the National Development and Reform Commission, the Ministry of Finance and other departments, the Rural Water Supply, Sanitation, and Hygiene Promotion Project was launched to tackle the embedded challenges of access to water and sanitation in Shaanxi province.

After five years of joint effort, the project was successfully completed in 2013 with a total of 156 water supply schemes completed, including a newly added water supply capacity of 21,466 m³ per day, with 326,716 beneficiaries spread over 282 villages, 126 schools, and 74,600 households. In total, 15,700 household toilets, 225 public toilets, and 705 garbage collection points were built or rebuilt, which directly benefited 250,000 people. All project villages set up WASH (water, sanitation, and hygiene) committees, and created a new management model characterized by direct villager participation. Water supply, sanitation, and hygiene were improved while health awareness among rural residents was enhanced.

This case study focuses on the implementation process of the project and discusses how the project management office of Shaanxi province overcame implementation challenges, including changing behaviors by adapting the “three-in-one” approach, in which sanitation and hygiene promotion activities are integrated with water supply interventions, as well as through extensive coordination among local administrative departments. Ultimately, a large part of the project’s success would rest on its ability to create locally tailored solutions to local problems.

Development Challenge: Lack of Access to Safe Drinking Water and Sanitation Facilities in Rural Areas

Shaanxi, in the northwest of China, is one of the country’s more economically underdeveloped provinces. For example, in 2003 the per capita GDP of Shaanxi was 3258 yuan, or about 64 percent of the national level of GDP per capita. Northern Shaanxi and central Shaanxi Plain, where the project took place, included 30 counties with net incomes below the poverty line, with a population of 4.6 million considered poor. With a small local economy, the local government was unable to adequately invest in rural water and sanitation infrastructure, leaving millions
of residents without access to safe drinking water and proper sanitation.

**Lack of Access to Rural Water Supply**

The project area—25 counties in Shaanxi Sichuan Provinces—was subject to extreme water scarcity. According to *Rural Drinking Water Safety Index Evaluation System* issued by the Ministry of Water Resources and the Ministry of Health in November 2004, by the end of 2004, a total of 13.068 million people in Shaanxi villages lacked access to safe drinking water, accounting for 47 percent of the total rural population. These villages were mainly located in the northern Shaanxi and central Shaanxi Plain areas.

Rural households mainly consumed untreated water harvested from rain, wells, and springs, while brackish water and water with a high content of naturally occurring fluoride were also frequently found. Water typically had to be carried long distances, by people or donkeys, to reach peoples’ homes. Many villagers, and even local government offices, needed to source water from several kilometers away. Women and children could not afford such intensive labor work, and it had to be undertaken by strong young men, who in turn could not go out to work and earn more money. Meanwhile, long-term consumption of unsafe water led to higher incidence of diseases and may have negatively affected the development of children.

**Lack of Access to Rural Sanitation Facilities**

The project areas had limited rural sanitation facilities. Households and schools were equipped with dry latrines rather than sanitary latrines (or improved sanitation facilities as laid out in the Millennium Development Goals and the Sustainable Development Goals). Coverage rate of sanitary latrines in Shaanxi as a whole was 33 percent, while reaching only three percent in northern Shaanxi, central Shaanxi Plain, and WeiBei areas. Randomly discarded garbage, discharge of sewage, and lack of sewage treatment facilities undoubtedly worsened the rural water supply. Without proper disposal, sewage and human waste easily becomes a breeding ground for mosquitoes, flies and maggots, and can be a vector for diseases (e.g., diarrhea, typhoid, and skin and eye diseases). Without changes, the health of Shaanxi residents would continue to suffer considerably.

Since 2000, Shaanxi has taken the initiative to build sanitary villages and towns to increase the investment in rural latrines. By the end of 2004, Shaanxi had completed a total of 2.3128 million sanitary latrines, covering 33.33 percent of all rural households. Despite some improvement in rural latrines in Shaanxi, rural toilet sanitation was still a prominent issue. Thus, it was imperative to solve safe drinking water and sanitation problems in Shaanxi.

**Delivery Challenge**

The challenges facing implementers in Shaanxi Province were complex, with behavioral, organizational, and access issues reinforcing problems of water supply, hygiene, and sanitation. To confront these issues they would need to adapt their interventions to complex local realities, tailoring approaches to ensure durable changes in individual and organizational behavior. There was a lack of unified policy guidance and unified agency to coordinate between various departments. Domestic projects in water supply, sanitation, and hygiene promotion were mostly arranged by separate departments, and lack of coordination mechanisms often resulted in ineffective projects. In addition, it was necessary to effect significant behavior change on the part of local populations. Attitudes varied toward toilets and sanitary latrines, and many residents were unfamiliar with proper handwashing.

**Behavior Change in Rural Hygiene Promotion: The Three-in-One Approach**

In the “three-in-one” approach, hygiene promotion is the “software” component aimed at changing people’s attitudes and behaviors compared with “hardware” components like water supply and sanitation. Rural residents in Shaanxi had low awareness of hygiene knowledge and low rates of hygienic behavior such as hand washing after using the toilet and before eating, and using soap to wash hands. Based on a research about hygiene promotion among Chinese rural communities conducted in 2001 (six provinces and 18 counties, including Shaanxi), awareness rate of hygiene knowledge

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1 As required by Technical Guidelines of Sanitary Latrines in China, a sanitary latrine refers to a clean and basically odorless latrine with walls and a roof, free of fly maggots, where pits and holding tanks prevent leakages and human waste should be removed and safely disposed of on a timely basis. Currently in China standard sanitary latrines consist of double-urn latrines, biogas latrines, three-compartment latrines, urine diverting latrines, and flushing latrines.
was 36.65 percent, while the percentage of people practicing sanitary behaviors was 42 percent in Shaanxi.

Many farmers believed that toilet improvement was a role for the government, rather than something that they could accomplish independently. At the same time, many had not developed the behavior of regularly cleaning toilets. Some of the newly-built toilets constructed by local governments were not sanitary latrines, while others were poorly maintained. In addition, farmers drank boiled water at home but would regularly drink unboiled water while working in their fields. Rural schools also lacked safe water supplies. Although a few local residents desired to improve sanitation conditions, they knew nothing about sanitary latrines and how to build them. As a result, sanitation conditions were not improved, with continuing repercussions for the health of the local population.

Coordination of Conflicting Interests among Different Agencies in the Local Government

There was a lack of unified policy guidance and no unified agency to coordinate between various departments. Local water resources department and sanitation departments worked separately to arrange most domestic projects in water supply, sanitation, and hygiene promotion, each of which often selected sites according to their own sectoral needs. Lack of coordination often resulted in ineffective projects. For instance, safe water supply was provided, but dry latrines were still in use in some places. In other places, although residents had sanitary latrines, water supply remained a problem.

The challenges facing implementers in Shaanxi Province were complex, with behavioral, organizational, and access issues reinforcing problems of water supply, hygiene, and sanitation, with negative health results for the population. To confront these issues they would need to adapt their interventions to complex local realities, tailoring approaches to ensure durable changes in individual and organizational behavior.

Tracing the Implementation Process

Establishment of the Project Concept

In December 2004, the Chinese government and the World Bank proposed a project framework for the Rural Water Supply, Sanitation and Hygiene Promotion Project after consultation. After a comprehensive comparison and selection process, two western provinces that were deemed representative of both water shortages and poor water quality—Shaanxi province in northern China and Sichuan province in southern China—were selected from four originally proposed sites (Sichuan, Yunnan, Shaanxi and Gansu provinces). The overall objective was to design a replicable approach that measurably addressed water, sanitation, and hygiene challenges in these two provinces. This case study primarily records the implementation process of the component in Shaanxi.

The project had three development partners: the World Bank as lender, offering US$12.5 million in loans; the UK Department for International Development (DFID) as a donor, offering US$12.5 million grants; and UNICEF as a technical supporter, offering technical support for sanitation and health promotion. In addition, DFID provides about US$1.7 million to UNICEF for central policy technical assistance around knowledge advocacy of sanitation and hygiene (KASH). DFID/UNICEF KASH projects are aimed at advocacy, policy development, and innovation activities related to water supply and sanitation and assisting the central government in realizing water supply and sanitation objectives of the 11th Five-Year Plan period.

Design of the Project

Shaanxi Initial Project Design

In March 2005, the government of Shaanxi prepared the project concept note containing two core components: water supply and sanitation. However, the prior experience of DFID and UNICEF suggested that the effectiveness of projects adopting a “three-in-one” approach, in which sanitation and hygiene activities are integrated with water supply interventions (World Bank Press Release No: 2007/491/EAP), is greater than that of a standalone water supply or sanitation project. The simultaneous implementation of water supply, sanitation, and hygiene promotion would improve people’s hygienic behaviors and consolidate the overall project effectiveness. Therefore, the World Bank, DFID and UNICEF jointly put forth the idea of adding a hygiene promotion component to reflect the “three-in-one” approach. The Shaanxi provincial government adopted the suggestion and added hygiene promotion content to the original project.
Coordinating among Different Departments and Conducting the “Three-in-One” Strategy

When selecting project locations, opinions were divided between water resource and sanitation sectors within Shaanxi province. Water resource departments generally insisted on project areas in accordance with provincial water resource development plans, and prioritized counties (districts) where water projects were needed. Sanitation departments, on the other hand, insisted on target communities in line with provincial sanitation service development plans, and preferred to intervene in counties (districts) where sanitation needs were greatest. The departments were unable to reach agreement.

In August 2005, after negotiation within the Shaanxi provincial government, the project was transferred to the provincial Development and Reform Commission (DRC) as a leadership decision. The DRC of Shaanxi Province was a powerful government agency with responsibility and power in overseeing the Province’s economic development and relevant projects. The project management office was thus established within the DRC, and took functional advantage of the DRC’s capacity by coordinating project implementation from above. This institutional arrangement was instrumental in ensuring better coordination among different departments. Water resource and sanitation departments were responsible for technical guidance from this point forward. Through the DRC’s consistent coordination after consolidating each department’s opinion, the initially agreed project areas included 13 counties conducting “water supply, latrine improvement, and hygiene promotion” projects and 17 counties conducting latrine improvement alone. All the latrines were to be upgraded to double-urn type latrines. The plan was subsequently submitted to DFID, which reiterated its belief in the potential for a “three-in-one” approach instead, requiring a simultaneous implementation of water supply, latrine improvement, and hygiene promotion in all project areas. After a period of deliberation, the provincial government modified the program in accordance with DFID’s requirements.

Institutional Arrangement for the Project
Simplifying Management Into Provincial and County Levels

In February 2006, the Shaanxi provincial government appointed its executive vice governor as the head of the project’s leading group for the Shaanxi Rural Water Supply, Sanitation, and Hygiene Promotion Project. The group consisted of: the provincial Development and Reform Commission, Department of Finance, Department of Water Resources, Department of Sanitation, Audit Office, Foreign Loans Project Office, and six municipal governments. The project was included in key projects of New Countryside Development Initiative in the 11th Five-Year Plan (Jiabao 2008), with prioritized capital and policy support. According to previous experience in the implementation of foreign investment projects, it was suggested that reduction of project management layers, and simultaneously streamlining design approvals, administrative approvals in bidding, and withdrawals and reimbursement, could enhance work efficiency. After consulting with relevant departments and involved cities, the Provincial DRC changed the three-level (province, municipality and county) project management structure to two-level (province and county) to improve efficiency in procurement, disbursement, reimbursement, and construction management.

Cooperation and Coordinated Management among Departments

The Shaanxi project’s leading group had a clear definition of responsibilities and coordinated management in project implementation. The provincial project management office (PPMO) was composed of representatives from the Department of Finance, Department of Water Resources, Department of Sanitation, and Foreign Loans Project Office, and embedded within the Provincial Development and Reform Commission (PDRC). The PDRC approved project plans and arranged counterpart funding, and the PPMO coordinated with the other departments, each of which had specific roles to play. The Department of Finance managed foreign grants and loans and participated in project management; the Department of Water Resources provided sectoral guidance for water supply project construction and management; and the Department of Health supervised sanitation projects and carried out hygiene promotion activities. The Foreign Loans Project Office, a specialized agency set up by the Shaanxi provincial government to manage foreign loans, assumed responsibility for project coordination and organization. In addition, the Shaanxi Provincial Government also established three separate working groups on water supply, sanitation, and hygiene.
promotion, which were formed by department officials and sectoral experts to supervise and guide the project. Project counties established governing bodies with reference to the provincial-level management model in order to ensure coordinated management.

**Project Inception and Implementation**

On February 14 2008, just after the Spring Festival (Chinese New Year), the Shaanxi provincial government held a kick-off meeting for the project, where the vice governor evoked the principle of “doing right things and meeting people’s needs.” After the meeting, relevant parties engaged in two-level cooperation, parallel coordination, and East-West combination. As the public began to participate in the project more, the Rural Water Supply, Sanitation, and Hygiene Promotion Project gained momentum.

**Rural Water Supply Component**

Adapting Implementation for Local Conditions

When working on rural water supply projects, the PPMO evaluated the complex cultural, social, and political landscape, including the many different situations that confronted local populations and their water resources. The PPMO then adapted to local conditions in the selection of types and sizes of schemes, attempting to devise a more locally relevant project.

In densely populated areas with already-accessible water resources, multi-village piped water supply schemes...
were built for joint water use among villages. In areas where villages were more widely dispersed and water resources were scarce, urban networks were extended to rural areas. In some cases, administrative villages built a single-village piped water supply scheme on the basis of their water resources and population distribution.

This adaptation to local conditions enabled a variety of specific solutions. For example, Chenlu town (Yintai district, Tongchuan), an ancient town known for its ceramics, was experiencing a severe water shortage, and residents had neither surface water (i.e., rivers and reservoirs) to draw from, nor underground water to extract. Drinking water from ditches or rainwater harvested in pits was the norm. Through joint efforts, however, the project successfully supplied water from a nearby city with three-phase boostering and delivered it to rural households.

Along the water-pipe network, 18,000 villagers from in 17 administrative villages gained access to safe drinking water thanks to this project.

**Environmental Sanitation Component**

**Various Types of Toilets for Farmers to Choose**

The environmental sanitation component concentrated on the construction of household toilets, public latrines, garbage stations, and other sanitation facilities in order to improve rural sanitation conditions. After consulting with farmers directly, project staff chose three types from the “five standard sanitary toilets” recommended by the national government. These included the double-urn type, biogas type and the three-compartment septic tank type respectively (see Figure 2). The double-urn toilet is the least costly of the three options, and features easy maintenance and output of liquid manure. Biogas toilets cost more, but they supply quality fuel at low cost, and generate digestate which can be used as pesticide additives, compost, and feedstock for livestock (e.g., pigs). Three-compartment septic tanks are widely applicable with strong decontamination and flexible sizes. Based on the competing features, the provincial project management office recommended the double-urn type for households, biogas toilets for farmers with livestock, and toilets with three-compartment septic tanks for clinics, public toilets, and schools. The PPMO conducted outreach at grassroots levels and households chose their own toilets according to their circumstances.

In Xinxing Village of Qianyang County, where dairy production is high and most households have cows, most villagers chose biogas toilets—together with a package of improvements including washrooms, kitchens and cow pens—and it cost about 2,000 yuan (CNY). If a family of three to five had a biogas digester covering 6 to 10 cubic meters, the digester would yield annual fuel for cooking and lighting lasting 9 to 11 months. Stoves fueled by biogas were convenient for cooking, hygienic, and energy-efficient. Digestate could be used as compost for fruit trees.

Small households favored simple and hygienic double-urn toilets. Aunt Zhao lived in Nanke village, Wugong County, and she had a family of three. She earned a living by farming and weaving and had no livestock. Zhao chose a double-urn toilet with a total cost of 1,000 yuan. Since the project subsidy was 900 yuan, she spent just 100 yuan. “It is clean and convenient. After toilet use, a gourdful of water can rinse off feces. No odor and fewer flies. Removed septage once per half year is superior fertilizer after decontaminination,” said Zhao after using her new toilet.

Public toilets were mostly converted into the three-compartment septic tank type. In Yaoda village, Wugong County, the primary school toilet and the public toilet were combined, divided by a wall and sharing a septic tank. Within the school, teachers and students had access to a sanitary toilet, while on the other side of the wall, a public toilet connected to the same septic tank. This two-in-one flushing toilet shared a 12 m³ three-compartment septic tank with safe disposal. It was convenient, hygienic, and odorless even on hot days. Local users were glad to witness significant changes including less flies and mosquitoes.

In terms of garbage disposal, garbage was collected at the village level, transferred at township level and disposed at county level. Seven hundred twenty-five garbage collection points were established and equipped with 132 garbage trucks. Before the start of project, there were no garbage collection and storage facilities in Nanke Village, Wugong County. Garbage such as packaging bags, wastepaper, rotten fruits, leaves, roots and pieces of cloth were stored at home or thrown away at will, polluting the local environment. After the project, garbage collection points were installed on five main streets, and a part-time collector drove a garbage collection truck (diesel oil tricycle) every Tuesday and Friday to transport garbage.

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*Five standard sanitary toilets are: (a) three-compartment septic toilet (similar to septic tanks); (b) double-urn toilet (a simple dual-vat latrine); (c) biogas toilet (digester of human waste and livestock manure yielding gas and fertilizer); (d) eco-toilet (separation of urine and feces); (e) toilet yielding desiccated mixed fertilizer. Toilet selection is generally based on local conditions (temperature, water availability, population density and development, level of animal husbandry, characteristics of infectious diseases, and farmers' need of manure as fertilizer.)*
to a collection point in the town. Afterward, garbage could be transferred to county-level landfill sites. In a further development, villagers dumped garbage into nearby garbage collection points, and families began to plant holly and roses in their front gardens, which are now free of garbage and adjoin clean, dirt-free streets. At the end of 2013, Nanke Village was rated as a municipal "eco-village" because of its sanitary environment.

**Sufficient Project Subsidies and Low Cost to Households**

The underground structure of each of the three types of sanitary latrines accounted for 80 percent to 90 percent of total investment. The provincial management office proposed that builders of the aboveground “visible” part would own the property. It was decided that the underground structure would be funded by project subsidies and that households were responsible for building aboveground part of the toilets. Households therefore owned the entire toilet after completion.

According to estimates by the World Bank, underground construction costs of a double-urn toilet were around 900 yuan, which was totally funded by project subsidies (300 yuan from the World Bank loans, 300 yuan from DFID grants and 300 yuan from domestic counterpart funds). However, underground construction costs of a biogas toilet reached 1,600 yuan, far higher than the 900-yuan subsidies. Any user building a biogas toilet needed to make up the difference of 700 yuan. Accordingly, the project management office negotiated with agriculture departments, and provided one-time subsidies of 700 yuan to each rural household for building a biogas digester by leveraging the resources of small-scale public projects and biogas infrastructure projects funded by the Ministry of Agriculture. This made the cost to households for bio-gas toilets similar to other options.

**Hygiene Promotion Component**

**International Experts Introduced Advanced International Practices**

Staff members of the PPMO and the World Bank were aware that the project was complex and would take some time to see the result. "Changing hygienic behaviors is a long-term process, which requires target-setting, consistent messages, and effective channels of communication. Governments should supplement information dissemination by mass media and more face-to-face communication. Specific ways and means of communication shall be determined through social surveys, which can help to define what goals to achieve, what communication channels are most effective, and what kind of incentives can maximize the change in hygienic behavior” (World Bank 2007). During the early implementation stages of the hygiene promotion component, professors from the London School of Hygiene and Tropical Medicine offered technical assistance and shared international experience on project baseline surveys, normative research, creative communication plans through designing questionnaires, identifying interview protocols, and providing creative concepts. With guidance from the World Bank, DFID, UNICEF, and other international experts, project staff developed implementation plans on three aspects in project areas, including baseline survey and normative research, mass media communication and production, and village-level hygiene promotion activities.
National Experts Provided Tailored and Localized Design

In the initial implementation of the hygiene promotion component, international experts suggested that the Shaanxi PPMO cooperate with the Global Public-Private Partnership for Handwashing with Soap (GPPPHW) led by Procter & Gamble, Unilever, and other international companies. The GPPPHW could provide significant support in market research, awareness-raising campaigns, and hygiene promotion. However, these companies asked that in return free soap provided in the project bear the logo of the companies. The World Bank raised concerns about this arrangement, arguing that it might appear to advertise for private companies in the project. The provincial PMO reacted quickly, and communicated with the World Bank to recommend that the experienced Shaanxi Provincial Institute of Health Education undertake baseline surveys and research.

Under the guidance of British experts, the institute completed the survey and study successfully with the help of the market research firm Ipsos. The study's findings were informative for refining the project—for instance, that rural residents in Shaanxi rarely washed their hands, let alone used soap. It followed that the project should prioritize increasing handwashing frequency, rather than increasing the frequency of soap use in handwashing. Furthermore, it was crucial to introduce proper handwashing technique to residents. In addition, the project encouraged women and children to not only start with themselves to form hygienic practices, but to influence and urge the whole family to change their unhygienic routines. This idea flowed directly from the project slogan, “small hands holding big hands, big hands protecting small hands; holding hands, having health.”

Creative, Flexible Communications and Outreach Strategy

Market research showed that a storytelling approach, based on local peoples’ perspective and daily life, was important to reach the target audience. Simple and easy-to-understand local stories were developed to promote hygiene, and proved highly effective in communicating the benefits of hygiene, sanitation, and handwashing. For example, in consultation with development partners, the PPMO produced a social advertisement titled, Love, targeted to rural women. And PMO staff created a series of cartoons to deliver main ideas and messages, with names like An Odor Battle, Toilet Wars, and Who Is the Criminal? These were about environmental sanitation, water supply and sanitary latrines, and handwashing respectively. By taking advantage of various airing opportunities such as the Program of Broadcasting Movies to the Countryside and broadcasting multimedia programs on disease control and health, the project tried to increase the viewership and effectiveness of these programs. See Figure 3.

Some project activities faced challenges during implementation as the project was subject to financial pressure. This occurred for multiple reasons. DFID withdrew from the project in 2010, due to shifts in government priorities for international development aid. Without DFID’s contribution to the project, the three-in-one component became more difficult to implement. At the same time, the Chinese yuan was appreciating considerably (up to 20 percent) against the US dollar.

Figure 3: Three Sit-Coms: An Odor Battle, Toilet Wars and Who Is Criminal.

For example, washing hands with soap; washing hands before meals and after toilet use; after handling garbage or human waste; women before breastfeeding; children after playing.
and British pound sterling, reducing the amount of money effectively available (World Bank 2013). Despite grant cuts and insufficient funds, the provincial PMO organized county PMOs and other local organizations to complete all the designed hygiene promotion activities.

With approval from the World Bank, Shaanxi Women’s Health Promotion Council organized impressive village-level hygiene promotion activities, which became a highlight of the project. The experienced Women’s Hygiene Promotion Council organized medical workers to run mobile clinics in vehicles and offer free physical check-ups, as well as deliver relevant lectures in project villages. Those popular activities were packed with people even on busy harvest days. When villagers heard that the Council offered free check-ups and provided health knowledge, they managed to find time to participate even on hot and rainy days. Participants learned the six-step hand-washing method, as well as when they should wash hands with soap. Many participants took the initiative to perform demonstrations on stage and then interacted with others in the crowd. Some participants were as old as 80.

Director Li of Xiguan Village Committee described the scene enthusiastically: “Great! Such activities are popular among villagers. They spread health knowledge, and enrich recreational activities. We haven’t seen this level of popularity for years. Only dozens of villagers came to the village committee election, but this activity attracts hundreds of people. They love it!” Indeed, villagers were reported to find this practical project so useful that they called for more such activities.

**Operation and Maintenance of Project Facilities-Community Involvement and the WASH Committee**

How to ensure feasibility, quality and maintenance of water supply and sanitation schemes? How to ensure sustainable operation of the project? The answer was to establish a strong WASH committee to ensure successful delivery of the project.

During project implementation, the county PMOs solicited opinions from various stakeholders and encouraged community involvement. Each village elected a “three-in-one” WASH committee (water supply, sanitation, and hygiene promotion). As a self-sustained community group, the goal of the WASH committee is to work together to manage the facilities and provide services for themselves. It is an organization of villagers set up with democratic consultation and with consent from most beneficiaries, which aims at providing services for project implementation and management. WASH committee members come from all population groups, including village officials, water managers, village doctors, health specialists, teachers, and representatives of vulnerable groups. The WASH committee records the opinions of all villagers and actively joins in the process of project implementation, and monitoring and evaluation, by effectively mobilizing and training target people. This has helped to provide rural households with sustainable and equitable water supply, sanitation, and hygiene promotion services by combining the three elements together. The example of Nanke village illustrates this point.

Nanke village had 1986 villagers in 380 households. At the initial stage of the project, according to the prescribed procedure of training, mobilizing, outreach, public announcement and election, managers for each of the three components were elected according to the criteria that they should be competent, impartial, trustworthy, and enthusiastic about public welfare. A total of seven members including a water manager, a village doctor, a health specialist, and representatives of women, teachers, and vulnerable groups were elected to form the WASH committee.

Under the leadership of the village committee and the guidance of the county PMO, the WASH committee solved water supply issues by building a water supply station, a 200-meter deep well, a water tower with storage capacity for 50 cubic meters, and five kilometers of water supply pipelines. It also constructed 294 indoor biogas toilets and delivered practical trainings on hygiene for villagers. As a result, villagers’ health awareness has been greatly improved. This model of community involvement and management not only guarantees project quality and progress, but also fully mobilizes everyone’s enthusiasm and initiative resulting in peoples’ recognition and success. Since many villagers couldn’t pronounce “WASH committee” in English, they referred to it as the “Wa” committee and created a jingle: “Water supply relies on Wa, latrine building calls for Wa; if you have questions, just ask Wa.” Wang Zhihui, director of the WASH committee, said,

“From start to completion, the WASH committee has participated in the whole process. First, it regularly held meetings to study engineering-related matters. Second, it provided input to optimize the
Tackling Institutional and Behavioral Bottlenecks to Improve Sanitation and Hygiene in Shaanxi

GLOBAL DELIVERY INITIATIVE

The completion of the project does not mean the ending of the WASH committee’s mission. Rather, the WASH committee will continue its work on a number of long-term tasks: to establish and improve the management system, to strengthen daily management and operation, to set reasonable water tariffs, to take care of vulnerable groups, and to make safe drinking water available and affordable. In addition, provincial working groups on water supply, sanitation, and hygiene promotion were set up to maintain contact with the county-level working group and provide technical assistance for the implementation of county-level water supply and sanitation schemes, including project operation and management after completion.

Lessons Learned

How did practitioners ensure the synchronous implementation of the “three-in-one” approach (rural water supply, sanitation, and hygiene promotion) while there was a lack of effective communication and coordination among different agencies in the local government?

The Rural Water Supply, Sanitation, and Hygiene Promotion Project was a complex project, involving multiple (sometimes competing) sectors, cities and counties, multiple sub-projects, a large number of rural households, many international organizations, and two project provinces (Shaanxi and Sichuan). In the project design phase, the department of water resources and the department of health favored their own sectoral needs in choosing project sites, and couldn’t reach agreement without a coordinating mechanism. Ultimately, the provincial government coordinated among different agencies and facilitated project implementation.

With strong government leadership and cross-sectoral department coordination (facilitated by the Development and Reform Commission), the design and implementation of the project achieved its expected targets. The experience of project implementation produced multiple lessons for government coordination. First, it is critical to win government support at all levels. Without government attention and support, it would have been difficult to promote the project. Second, joint efforts of various departments, with clearly defined levels of responsibilities, facilitated effective implementation. For instance, the Development and Reform Commission is responsible for daily management while water and health departments offer technical guidance. Third, specialized agencies can lend valuable experience to project implementation. The Shaanxi Foreign Loan Project Management Office, a permanent office, has rich experience and efficient work capacity in implementing foreign loan projects. Fourth, when conflicting interest occurs among local departments, there must be leadership support and an integrated management agency to coordinate, which is key to smooth delivery of complex projects. Streamlining levels of management may facilitate this.

Provide Tailored and Localized Design Based on Local Situations

After baseline survey and research, and with a detailed understanding of local context, specific communication plans for different target audiences were developed. A social advertisement campaign entitled Love was produced for rural women. Three videos about rural water supply, sanitation, and hygiene promotion were created in local dialects to meet the viewing preferences of rural residents. A series of cartoons “PiPi Play with You” was released for preschoolers. In addition, there were brochures, posters, pictures and other graphic materials provided.

Specific Implementation Should Be Handed to Experienced Grassroots Organizations

In order to tackle hygiene promotion at the village level, the Shaanxi provincial project management office turned to the richly experienced provincial Women’s Health Promotion Council to plan and implement activities. The council divided activities into piloting and scale-up phases. A pilot village and a primary school were selected in a project county. The pilot village organized a variety of hygiene promotion and demonstration activities, including art performances, live sessions, quizzes,
lectures, sitcom shows, posters, distributing posters and health handbooks, giving gift towels and soap, teaching the six-step hand-washing method, and so forth. Afterward, drawing on the examples of the pilot village, other project villages gradually held similar activities, which yielded good results.

For people in remote rural areas to change their health perception, it is not desirable to just copy international experiences. A localized solution must be developed, and local organizations and actors must contribute to supporting implementation. Only tailored and localized designs based on international advanced experience can effectively improve service quality and ensure coverage of a specific population.

**Community Participation Ensures Sustainable Operation.**

As the basis of success and sustainable operation of a “three-in-one” project, participatory approach is featured by active community participation in the process of decision-making, implementation, management and benefit sharing. Community involvement benefits people in project areas, and transfers decision-making to the participants. Ultimately, community residents are the main actors in community work, and community participation is crucial to ensure that project planning and design responds to their needs. Securing the support of relevant groups helps ensure that projects are effective and their operation is sustainable. In the implementation process, the WASH committee elected by villagers, including representatives of women’s and vulnerable people’s groups, was responsible for project implementation and management through full participation in project planning, implementing, and operating. This way, the WASH intervention protected people’s rights to be informed and to participate, enhanced people’s sense of ownership and responsibility, laid a good foundation for project implementation and sustainable operation, and enabled the accumulation of experience for further community involvement in other projects.
# Annex 1: Timeline

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appraisal by the World Bank</td>
<td>December 2006</td>
</tr>
<tr>
<td>Approval of the World Bank</td>
<td>June 26, 2007</td>
</tr>
<tr>
<td>Signing</td>
<td>September 2007</td>
</tr>
<tr>
<td>Project effectiveness</td>
<td>December 20, 2007</td>
</tr>
<tr>
<td>Project kick-off</td>
<td>February 14, 2008</td>
</tr>
<tr>
<td>Medium-term Review Conducted</td>
<td>June 2010</td>
</tr>
<tr>
<td>Restructuring Approved</td>
<td>May 2012</td>
</tr>
<tr>
<td>Scheduled date of completion</td>
<td>September 30, 2012</td>
</tr>
<tr>
<td>Actual date of completion</td>
<td>December 31, 2012</td>
</tr>
<tr>
<td>Scheduled closing date of loans</td>
<td>September 30, 2012</td>
</tr>
<tr>
<td>Actual closing date of loans</td>
<td>March 29, 2013</td>
</tr>
</tbody>
</table>
**Annex 2: Process Mapping**

**Cause:** Shaanxi is a province suffering from water shortage in general, where the northern Shaanxi, central Shaanxi Plain and Weibei areas are in severe water shortage. Rural areas have no access to safe drinking water, sanitary latrines, and waste disposal facilities. A weak rural economic base leads to poor infrastructure. Due to long-standing behaviors, residents have relatively weak health awareness. Unsafe drinking water, poor sanitation, and low health awareness are restricting local socio-economic development.

**Rationale for Change:** Funding is needed to build rural water supply schemes, including household component and subsequent operation and maintenance.

**Intervention:** Implementing water supply projects for multiple villages and for a single village

**Implementation Strategies:** building joint water supply scheme for the whole area in areas with water resources and dense villages

**Implementation Strategies:** Extending urban pipelines to rural areas in areas with rare water resources and disperse villages

**Implementation Strategies:** Building schemes for a single administrative village or natural village based on distribution of water sources and population

**Intermediate Output:** 156 multi-village and single-village water supply schemes with water capacity of 21466 m³ per day

**Rationale for Change:** Affordable sanitation facilities shall be provided to rural households.

**Intervention:** Building household toilets, public latrines and garbage stations

**Implementation Strategies:** PMO changes three types of toilets out of five standard sanitary toilets promoted by the state, and introduce them to rural areas for residents’ self selection. Public toilets are mainly toilets with three-compartment septic tanks.

**Implementation Strategies:** Garbage is collected at village level, transferred at town level and treated at county level. Set up garbage collection points with garbage transfer trucks.

**Intermediate Output:** 1579 household toilets, 225 public and school toilets, 705 public and school garbage stations completed

**Rationale for Change:** To render perceptualional and behavioral changes of rural residents, including information communication channels

**Intervention:** Hygiene promotion in project areas

**Implementation Strategies:** Do baseline survey and research to collect information about the status quo

**Implementation Strategies:** Localize mass-media creative design and production

**Implementation Strategies:** Conduct village hygiene promotion activities based on localization of international experience

**Intermediate Output:** The capacity of provincial, county-level and village-level PMOs are improved

**Rationale for Change:** Community involvement and project management capacity of stakeholders shall be improved

**Intervention:** Establishing WASH committee in project villages to implement and operate project through community involvement

**Implementation Strategies:** Establishing three working working groups on water supply, sanitation, and hygiene promotion in charge of regular supervision and training to ensure the effectiveness of components

**Intervention:** Developing MIS and M&E systems to assist project management

**Intermediate Output:** Rural residents in project areas have equitable and sustainable access to safe water supply, sanitation and hygiene promotion
## Annex 3: List of Interviews

<table>
<thead>
<tr>
<th>Time</th>
<th>Place</th>
<th>Interviewee</th>
<th>Title</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews of project managers</td>
<td>Conference Room, Beijing Office of the World Bank</td>
<td>Sing Cho, Joanna Mclean, Masic</td>
<td>TTL (last one) Consultant for project preparation</td>
<td>Video conference</td>
</tr>
<tr>
<td>10:30–12:30</td>
<td>Conference Room on the 4th Floor, Shaanxi Provincial Development and Reform Commission, December 21, 2015</td>
<td>Li Peng, Wu Junwu, Hao Yanhong, Lou Jing, Ma Xiaohong, Huang Dengfeng</td>
<td>Deputy Director of Foreign Loans Project Management Office (Provincial PMO) in Shaanxi Province, Director of Finance of Foreign Loans Project Management Office (Provincial PMO) in Shaanxi Province, Bidding Office of Foreign Loans Project Management Office (Provincial PMO) in Shaanxi Province, Director of Office of Foreign Investment Office of Department of Communications in Shaanxi Province, Deputy Director of Foreign Capital Center of Poverty Alleviation Office in Shaanxi Province</td>
<td>Symposium</td>
</tr>
<tr>
<td>14:00–17:00</td>
<td>Conference Room on the 4th Floor, Shaanxi Provincial Development and Reform Commission, January 15, 2016</td>
<td>Ma Meifang, Zhu Xiaomin</td>
<td>Director of Foreign Capital Division of Xi’an Development and Reform Commission (PMO), Debt and Cooperation Division of Xi’an Finance Bureau</td>
<td>Symposium</td>
</tr>
<tr>
<td>Villagers</td>
<td>Liu Zhilu, Zhao Caoyun, Li Hongcang, Wang Zhihui</td>
<td>Liu Zhilu, Zhao Caoyun, Li Hongcang, Wang Zhihui</td>
<td>Representative of Village Beneficiaries in Zhaoshiwa Village, Zhaoshiwa Village, Head of Village Committee in Xiguan Village, Chengguan Town, Director of WASH Committee in Nanke Village, Zhenyuan Town, Wugong County, Xianyang</td>
<td>Interview</td>
</tr>
</tbody>
</table>
References


World Bank. 2013. Implementation Completion and Results Report (IBRD-48630 TF-58298), Western Provinces Rural Water, Sanitation and Hygiene Promotion Project. China and Mongolia Sustainable Development Unit, Sustainable Development Department, East Asia and Pacific Region.