

2013 Emory Global Health Case Competition

“Can Global Sanitation 2020 Contribute to China’s Prosperity?”

The Emory Global Health Institute Case Writing Team



Emory Global Health Institute

All characters, organizations, and plots described within the case are *fictional* and bear no direct reflection on existing organizations or individuals. Though set in the future, the case topic and descriptions of circumstances are realistic representations based on existing evidence and current projections.

The case scenario is complex and does not necessarily have a correct or perfect solution, and thus encourages a judicious balance of creative yet perceptive approaches.

The authors have provided informative facts, figures, and projections within the case and exhibits to help the teams. The data and projections provided are derived from independent sources, may have been adapted for use in this case, and are clearly cited such that teams can verify or contest the findings within their recommendations, if it is pertinent to do so. Teams are responsible for justifying the accuracy and validity of all data and calculations that are used in their presentations, as well as defending their assertions in front of a panel of knowledgeable judges representing different stakeholders.

Introduction

Wang Xi, a Vice Minister in the Ministry of Commerce of the People's Republic of China, gazed out of his 18th floor Beijing office window watching the people below head home from work. He reflected on the 2017 economic report for China sitting on his desk. They had finally done it. As of December 2017, China had rebounded to economic indicators that signaled immense prosperity, as they had been at their peak in 2010.[Exhibit 1] China now also had the world's largest economy and its economic growth, fiscal surplus, and supply of US Treasury bonds were at an all-time high.

This success had not come easily. Following the global economic recession of 2008-2010, China had implemented its ambitious 12th Five Year Plan (for 2011-2015) that included price stabilization, job creation, balanced urban-rural growth, and poverty reduction. Despite currency revaluation, the plan stabilized China's sputtering economy and provided it with the resilience needed to withstand the rocky recovery years between 2013 and 2017.

Strong leadership also contributed to the country's turnaround. The current leadership of noted scientists, economists, and foreign policy experts had steered China through the tumultuous economic peaks and troughs between 2013 and 2017. Wang chuckled, "Who among my colleagues" he thought aloud, "would have believed back in 2013 that by March 15th, 2018, China would be the world's leading economic superpower, surpassing even the United States?" Truly, it had been an unbelievable journey. Now, Wang and his colleagues were charged with shaping specific aspects of the 14th Five Year Plan (for 2020-2025) with the objective of maintaining China's enviable position in an increasingly competitive globalized world. In particular, overseas investments and their returns were of great interest to Wang.

Many of the world's most powerful countries, including China, have viewed investments in health and development overseas as having important soft power returns for the donor country. These returns could come in the form of access to natural resources, trading partners and markets for example, or simply as a longer-term strategy of engendering stronger international relations. Wang was keen to align the foreign investments in the 14th Five Year Plan with the State Council's top global health investment priority -- sanitation. The State Council recently announced that such a focus would have important direct (economic) and indirect (soft power) returns for China. However, the Council had deferred decisions about where such investments should occur and how they should be implemented to the Ministry of Commerce and more specifically, Wang's team.

In anticipation of the year 2020 and rollout of the 14th Five Year Plan, Wang released a call for proposals to internationally-renowned non-profit agencies that specialize in sanitation. These firms would be at the forefront of innovations and use of *established* and *evidence-based* technologies to address sanitation. Wang recognized that he would need more than just an intervention; he would need a plan that justifies where to invest; details the technologies to be utilized; specifies the implementation and evaluation strategy; and projects costs and returns on investments. Further, he would need economic, cultural, technological, and other scientific perspectives to shape a compelling case that both the State Council and the Ministry of Commerce will approve, given the global sociopolitical environment of 2018. Wang and his team will review the proposals on Saturday, March 23, 2013. With just a 20-month lead-time to roll out this strategy in 2020, he hoped the proposals would be specific, feasible, and demonstrate potential returns and pitfalls. Wang was confident the consulting teams would rise to the challenge.

PART I. Water, Sanitation, and Hygiene

IA. Global Sanitation at a Glance

In 2000, the United Nations established the Millennium Development Goals (MDGs), which included an aim to “Halve, by 2015, the proportion of people without sustainable access to safe drinking-water and basic sanitation.” In 2015¹, the world met its global target for safe drinking water, but unfortunately fell far short of its sanitation targets.[1]

In 2010, 63% of the world’s population used some form of improved sanitation² and 11% used shared sanitation³ facilities; however 2.5 billion people were still without improved sanitation and 1.1 billion people (15% of the global population) continued to practice open defecation.[1][[Exhibit 2](#) and [Exhibit 3](#)] Continued population growth had hampered progress to increase access to improved sanitation services.[2] As of 2015, only 67% of the population had access to improved sanitation facilities and significant disparities in sanitation persisted within and between countries and regions.[3] In 2017, coverage remained much lower among the poor and in rural areas compared to urban locations; however, overcrowding in urban areas may have worsened the health and environmental impacts of poor sanitation. Unfortunately, current monitoring targets do not adequately capture equity of access to sanitation or equity with regard to improvements over time.

IB. Health and Economic Impacts of Water, Sanitation, and Hygiene

It is estimated that two million people die annually from illnesses related to poor water, sanitation, and hygiene (WASH).[4] A large portion of those are due to diarrheal disease, and it is estimated that one-third of these illnesses could be prevented with improved sanitation alone.[2] Additionally, poor WASH practices contribute to the spread of helminth infections, schistosomiasis, malaria, and trachoma, causing malnutrition and disability in many millions annually. In 2010, the Global Burden of Disease Study estimated that diarrhea was the 4th leading cause of global disability-adjusted life years (DALYs).[5] Despite these health consequences, very few studies have focused on sanitation and the health impacts of improving sanitation.[6]

There are great economic costs that come with this burden of disease, including healthcare costs, time and productivity loss, and environmental deterioration. The total global economic losses attributed to poor WASH are estimated to be over US\$260 billion annually. Cost-benefit analyses performed by Hutton in 2010 estimated that every US\$1 invested in WASH yields a US\$5.5 economic benefit for most developing nations.[[Exhibit 4](#)][3] It was predicted that the world would have benefited by US\$54 billion annually had the global MDG for sanitation been achieved. Hutton estimated that achieving MDGs for sanitation would have required US\$23 billion per year from 2010 to 2015, with Sub-Saharan Africa, alone, requiring approximately US\$43 billion over this period.[[Exhibit 5](#)][3]

IC. Regional Sanitation Estimates

As a region, Latin America met both its water and sanitation MDG targets by 2015. In 2010, only 4% of the population practiced open defecation and 80% had access to improved sanitation.[1]

¹ Throughout the case, statistics and data provided for after January 2013 are conjectures based on current trends and projections outlined in the references cited.

² Improved sanitation is defined as a sanitation facility that “hygienically separates human excreta from human contact.”[1] See [Exhibit 3](#) for additional details.

³ “Shared sanitation facilities are otherwise-acceptable improved sanitation facilities that are shared between two or more households. Shared facilities include public toilets and are not considered improved.”[1] See [Exhibit 3](#) for additional details.

However a few countries in the region stand out as contrasts to this trend, namely Haiti, Bolivia, and Nicaragua where only 17%, 27%, and 52%, respectively, had access to improved sanitation in 2010 [7]; all three countries failed to meet their sanitation targets by 2015.

The Southeast Asia region, as a whole, also met its water and sanitation MDG targets by 2015. However, several countries within the region continue to lag behind, especially for sanitation. [Exhibit 6][8] In 2008, one in five people (102 million people) in the region practiced open defecation [9]. In 2010 for example, coverage with improved sanitation was 54% or lower in Indonesia, East Timor, and Cambodia.[7] Similar trends were reported in 2017 with stark disparities persisting between urban and rural communities.

With the exception of Iran, sanitation indicators in Southern Asia lag considerably behind other regions; the region failed to meet both its water and its sanitation MDG targets by 2015. Indeed, a large minority of the population still practice open defecation.[7] From 1990 to 2010, coverage with improved sanitation in rural areas doubled from 13% to 26%; however, coverage in urban areas increased only 1% (from 56% to 57%). Wealth disparities also persist in sanitation. In India, for example, access to sanitation improved most from 1990 to 2010 among those in the second highest wealth quintile, with little to no improvement among those in the lowest wealth quintiles.[1, 2]

With the second lowest drinking water and lowest sanitation coverage globally,[9] Sub-Saharan Africa (SSA), as a region, failed to meet its 2015 MDG targets for water and sanitation. By 2012, only 17 and 3 countries had achieved moderate to high coverage with improved water or sanitation, respectively. [7] One reason for this lack of progress is rapid urbanization. Between 1990 and 2004, Africa saw an 85% increase in its urban population and a doubling in the number of urban dwellers without access to improved water and sanitation. Urban populations are expected to double again by 2030, further stressing already fragile sanitation systems. In addition, the UN projects that by 2020, an additional 75 to 250 million people will not be able to meet their water needs because of climate change.[10, 11] An estimated \$20 billion per year is needed from 2010-2030 to close the coverage gap for water and sanitation on the continent.[12]

Given the global burden of disease attributed to poor sanitation and the inequities in progress, sanitation is an urgent and relevant global health issue. As a focus for development aid, sanitation also aligns with China's global economic, technical, and manufacturing leadership, making it an ideal priority area for foreign investment.

PART II. Geopolitical Considerations for China

IIA. China at a Glance (data accurate as of midyear 2012)

Population[13]

- 1,347.6 million (2011); projections as of 2017: 1,452.1 million
- Population growth rate = 0.481% per year, with birth rates outpacing death rates (12.31 births/1,000 population versus 7.17 deaths/1,000 population)
- Urban population = 47.8% of total population (2011); projections as of 2017: 52%
- Official language: Mandarin, but several other indigenous languages also spoken.
- Ethnic groups (2000): Han Chinese (91.5%); Zhuang, Manchu, Hui, Miao, Uighur, Tujia, Yi, Mongol, Tibetan, Buyi, Dong, Yao, Korean, and other nationalities 8.5%
- China is officially an atheist nation, although small proportions of the population identify as Taoist, Buddhist, Christian (7-8%) or Muslim (2%)

Government structure and economic indicators

- Government structure: Communist Party-led authoritarian state
- The 11th Five Year Plan (2006 - 2010) focused on growth of domestic consumers to balance resource conservation, energy efficiency, and environmental production with economic growth. [Exhibit 7][14]
- The 12th Five Year Plan (2011-2015) focused on maintaining economic trajectory through price stabilization and job creation as well as balanced urban-rural growth, poverty reduction, and expanding access to basic public services.[Exhibit 7][15]
- Gross domestic product (GDP) projections as of 2017: US\$9.1 trillion [16]
- GDP per capita, projections as of 2017: US\$7,400 [16]
- GDP Purchasing Power Parity per capita, projections as of 2017: US\$10,800 [Exhibit 1][16]

IIB. China's Economy

In 2018, as previously projected by Euromonitor International, the global geopolitical axis has shifted substantially, away from a largely unipolar world dominated by the United States and other Western countries, towards one with greater leverage exerted by Asian powers.[17] China's population, the world's largest, is increasingly better educated and more urban than previous generations.[13] However, China's economic growth has not come without a price. Poverty reduction remains a fundamental challenge, especially in rural areas, but also within urban areas. There are external pressures to curb carbon emissions as air and water pollution continue to rise.[18] China is the world's largest energy consumer and sustainability of the environment and economic growth are both major policy considerations for the government.[19]

IIC. China's Engagement in Foreign Development Aid

To sustain economic growth and meet its Five Year Plan goals, China employs both "hard" and "soft" means, including for example, securing energy sources and promoting China's image to the world. The former is particularly salient for less developed countries, where China recognizes a large pool of untapped energy sources and potential to reach new markets. The latter may be crucial for blunting global criticisms of China's foreign policy actions and domestic human rights record.

Although China does not release comprehensive data on its annual foreign aid, it is estimated that China's total economic assistance in 2007 amounted to US\$25 billion. [Exhibit 8, Exhibit 9, and Exhibit 10] Further evidence suggests that since 2007, China has continued to increase its annual investments in foreign aid.[20] For 2017, China is believed to have provided over US\$45 billion in foreign development aid.

China's foreign direct investments (FDI) are strategic; global activities are intended to secure inputs for the economy, protect against a possible U.S. containment strategy, and expand China's international influence.[21] China has faced criticism over its investments, in particular, support of governments with poor human rights records such as those in Sudan, Burma, Zimbabwe, and Venezuela. China's rebuttal, stated in the Beijing Declaration of the Forum on China-Africa Cooperation (2000) is that, "The politicization of human rights and the imposition of human rights conditionalities on economic assistance should be vigorously opposed." [22]

IIC1. China in Africa

From 2002-2007, China invested approximately \$33 billion on the African continent, predominantly in infrastructure and public works. As of 2007, China was investing over \$90 million to water projects in Africa per year, eight times the contribution from the private sector to water in the region.[23] A small portion went to humanitarian and development aid, including for example, the construction of schools, hospitals, medical training, agricultural aid, and food aid. [36] In 2009, China was the largest single donor to African countries, investing \$10 billion across 48 countries in that year alone.[[Exhibit 11](#)][20] At the 2012 Conference of the Forum on Africa-China Cooperation, China pledged \$20 billion of new aid to Africa.[24] China also vowed to spread investments across agriculture, civil infrastructure, cultural exchanges, and student scholarships for Africans.[25] In 2017, it is believed that China directed over \$25 billion in economic aid to African nations.

These investments had impact. According to Standard and Poor's, every 1% rise in China's GDP was associated with a 0.3% rise in the GDPs of low-income SSA countries (e.g., Mali, Democratic Republic of the Congo, Mozambique, Rwanda, Ghana) and a 0.4% GDP increase in middle-income SSA countries (e.g., Angola, Cameroon, Sudan, and South Africa).[26] Chinese investments in SSA are largely undertaken by small Chinese enterprises working with local partners.

Chinese investments in North Africa differ from countries elsewhere on the continent. Here, Chinese investments have been inspired by the rising purchasing power of North Africans and include greater emphasis on electronics, automotive, and textile industries, and the establishment of Special Economic Zones. However, Chinese investments are complicated by the discontent felt by the large "unemployed yet educated" young adult local population, often left out of hiring processes and relegated to low-wage labor positions by Chinese firms.

By far the largest proportion of Chinese investment in North Africa is in Algeria. Similar to investment patterns elsewhere, the bulk of China's investments are directed to the energy sector (e.g., oil and gas) and infrastructure (e.g., road-building).[27] However, as elsewhere, China's presence has met with criticism. In 2009, anti-Chinese riots took place in Algiers, and construction sites, as well as oil and gas pipelines were attacked by Al-Qaida in retaliation for the Chinese government's suppression of the Chinese Muslim minority in western China. Still, the violence is considered sparse and uncoordinated, and most in Algeria express no hostility towards the Chinese.[28]

Another case that illustrates China's partnerships in Africa is Angola. In 2010, exports to China accounted for 22% of Angola's GDP.[26] Also, Angola was recently granted \$1 billion from the Chinese Development Bank for agriculture projects.[29] In terms of investments in water and sanitation, China's emphasis has been primarily focused on improving the nation's water supply infrastructure, as well as opening up access to rural areas through road-building.[30]

Investment in Africa has important resource returns for China. China imports one-third of its oil from Africa and a substantial portion of its minerals and other raw material resources, largely from Sudan, Angola, and the Democratic Republic of the Congo [36]; by 2020, official sources estimate that China will import 65% of its crude oil from Africa.[19]

IIC3. China in South / Southeast Asia

Since the 1990s, China has made a conscious effort to extend its sphere of influence to Southeast Asia. Chinese culture, cuisine, calligraphy, cinema, curios, art, acupuncture, herbal medicine, and fashion fads are ubiquitous. Young people exhibit fascination for Chinese culture, films, and pop

music. China is also steadily increasing its support for cultural exchanges, Chinese-language programs, and programs to bring visiting-scholars to China's most prestigious universities. Additionally, Southeast Asia is a source of raw materials, a market for China's goods and services, and a shipping route for energy; but the environmental impacts of China's manufacturing often brings about tensions.[31]

China is considered to be the "primary economic patron" of the small but strategically important nations of Burma, Cambodia, and Laos, and also provides considerable economic aid to Indonesia and the Philippines. For example, China has invested considerably in the Philippine rail system. Two massive public works projects that embody China's influence in the region include a new hydroelectric dam and the Sino-Burmese Pipeline.[32] Additionally, China frequently runs trade surpluses with Nepal, Bangladesh, Sri Lanka, and Pakistan, and invests heavily in infrastructure and energy production in this region.[33] China's relationship with India has also grown over the years. At annual BRIC summits, business leaders from India and China signed trade agreements and business deals, and, as estimated, trade between India and China surpassed US\$100 billion in 2015.[34]

IIC4. China in Latin America

Since 2004, economic, financial, trade, and technology ties have brought China and Latin America closer together. China is increasingly supporting cultural and educational programs in this region, as well as fostering strong economic relationships in the form of steel, soybean, and oil trade.[31] Between 2002 and 2007, China invested an estimated US \$26.7 billion, of which over two-thirds was allocated to natural resource sectors, 28% were focused on infrastructure and public works, 1% for humanitarian activities and technical assistance, and 2% of aid was unspecified. In 2008, China committed \$350 million for public and private sector development projects.[43] From 2009-2012, the Chinese government negotiated more than 400 trade and investment deals with Latin American countries. In 2010 alone, China invested more than US \$10 billion in the region.[35]

In contrast to the emphasis on infrastructure in Africa and Southeast Asia, China's investments in natural resources and telecommunications in Latin America imply a strongly commercial focus.[36] In terms of its humanitarian assistance, China provided aid for infrastructure repair in Costa Rica, hospitals in Cuba, funding to the Bolivian Red Cross for mudslide victims, and help to people affected by an earthquake in Peru. China sent US\$1 million to earthquake stricken Haiti and a 60-person search and rescue team.[37] Though China decreased its total aid to the region from 2010-2012, an uptick in development assistance was noted beginning in 2013.

Part III: Technological Considerations for Chinese Investments in Sanitation

In addition to the soft power returns that an investment in sanitation may provide, China must consider many different technical and nontechnical factors when deciding on where and how to deploy its investments. Technical considerations encompass a range of contextual and capacity-related issues depending on whether their focus is urban vs. rural settings, wet or dry areas, and household or community-level interventions. Additionally a comprehensive strategy must consider contextually appropriate drivers and barriers to sanitation uptake as well as supply chains, current demand, sustainability, and potential for scale-up. Nontechnical considerations are also important and span a range of issues including a) community awareness and participation, (b) policy and regulation, (c)

institutional capacity, (d) private sector engagement, (e) NGO engagement, (f) financing and tariffs, and (g) monitoring and evaluation.[38]

There are a myriad of different strategies to consider for addressing sanitation (see [Sanitation Portal](#)). In doing so, it is important to ensure that both the equipment and/or infrastructure (i.e. hardware) utilized and the behavioral aspects that facilitate uptake and management of the hardware are considered. Technologies may work at various levels in a sanitation system. For example, they may work in the capacity of providing the user with water or sanitation interfaces (toilets, latrines, etc.), systems for the transport of water or sewage, or systems for treatment and/or disposal of water or sewage. Also, in recent years, for example, sanitation has been increasingly addressed through interventions that focus on behavior change, such as community-led sanitation and community health clubs, which motivate potential users through education, shame, and other behavioral motivators. Historically, China has invested largely in infrastructure and public works abroad, with the construction of many hospitals and clinics, particularly in Africa.[39] Given the variety of strategies for increasing access to improved sanitation, China can choose to invest in any scale of intervention.

Regardless of the strategy developed and implemented, strong monitoring and evaluation is critical. Failure to evaluate the success and sustainability of water and sanitation interventions is one of the four universal barriers to progress in WASH.[40] In 2009, UNICEF published an evidence based literature review that outlined indicators of sustainability and effectiveness of various WASH interventions.[41] In addition, experts have developed sanitation targets and indicators for monitoring.[1] Typically, five types of indicators are recommended: Health / Disease, Environmental, Economic, Behavioral, and Access. Understanding how a program fits into a community context plays a crucial role in the design, implementation, evaluation, and scale-up.

Part IV. Water and Sanitation in China

Due to rapid economic development, urbanization, and a large, growing population, China faces its own WASH challenges.[42] In addition to demand driven by the large population size, environmental pollution from industries has contaminated already scarce freshwater drinking sources.[18] With rapid urbanization, rural areas are left behind with fewer resources and proportionally worse access to safe drinking water and improved sanitation. The burden of diseases attributable to unsafe water and poor sanitation also disproportionately impacts the poorest, inland provinces, and young children.

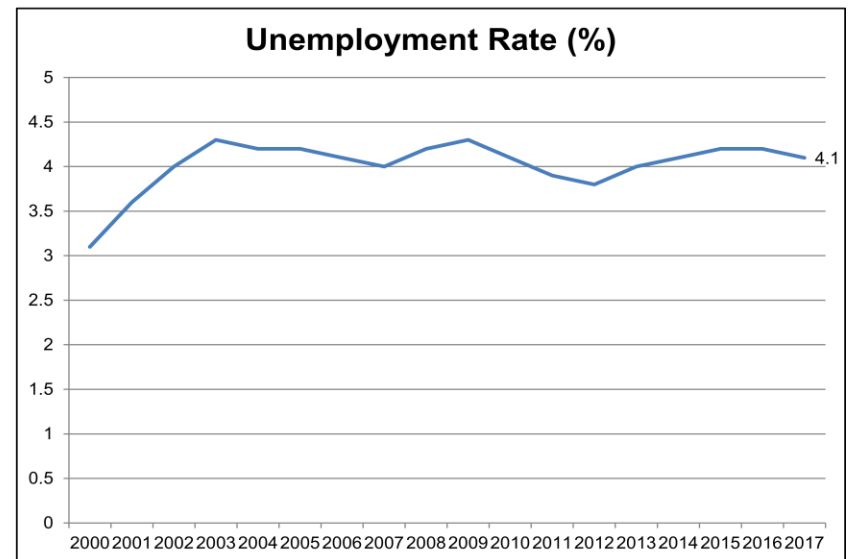
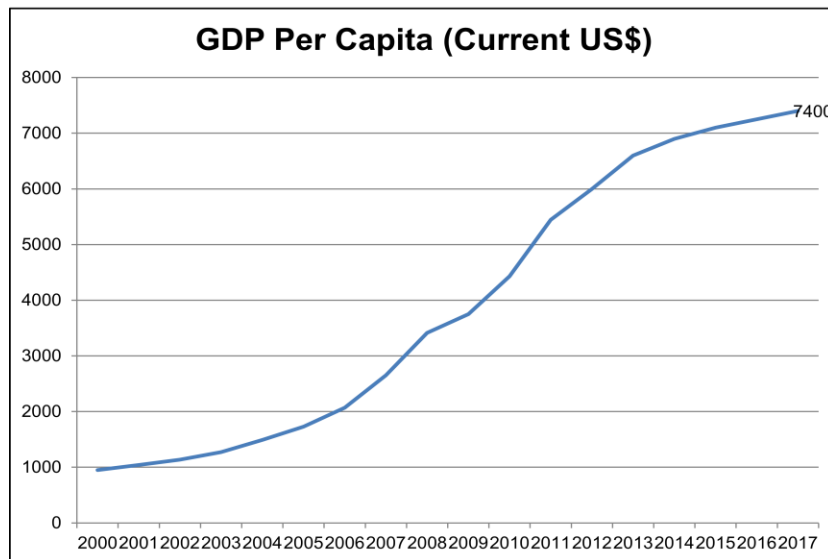
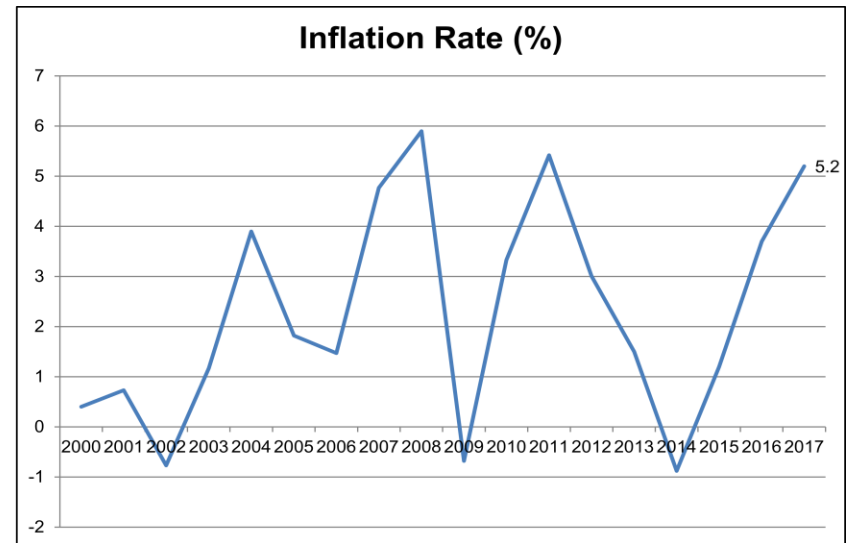
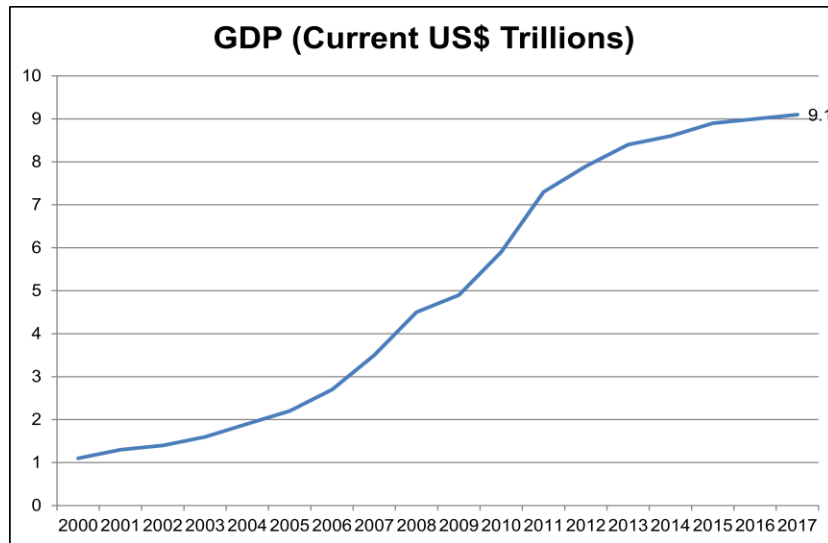
To address these disparities, China increased investment in rural areas through multiple campaigns promoting proper hygiene and programs to improve access to safe drinking water sources and improved sanitation facilities over the last three decades, and the country has made progress. From 1990 to 2010, 457 million people in China gained access to safe drinking water. As of 2010, only 9% of the entire nation lacked access to safe water.[1] The proportion of the population with access to improved sanitation increased by 34% in China during the same time period. China has constructed large wastewater treatment facilities for urban areas and established a government subsidies program for household-level biogas production in rural regions. However, hundreds of millions of Chinese still live without access to improved sanitation facilities.[1] Sewage systems cannot keep up with the waste of a growing urban population, and septic tanks are often cleaned manually.[18] Urban-rural disparities continue to persist and most people still boil water before consumption.

Summary

China was at a critical moment in its history as the world's new leading economic power. Innovative global investment strategies had the potential to help the country sustain its economic leadership. With great experience developing public works projects in the developing world, Wang knew that sanitation offered an ideal development aid focus for China's 14th Five Year Plan, but identifying the most optimal interventions and where and how to invest to maximize China's returns were urgent unknowns. Also, despite successes in providing improved sanitation in China over recent decades, millions still lack access to safe drinking water and improved sanitation in China. Wang feared the Chinese government would face criticism for investing in sanitation improvements outside of the country when there was an unfinished agenda within its borders.

Wang and his team were fast approaching the deadline to contribute their recommendations for the 14th Five Year Plan. He eagerly looked forward to Saturday morning when the consultant teams would present and justify their proposals. He had confidence that their multidisciplinary approaches, innovation, and creativity would lead to suitable answers that he and the Chinese government so desperately sought.

Exhibit 1. GDP, Inflation, and Unemployment Rates for China*[13]



*Projections estimated by continuing growth trends, while considering the economic recession of 2013-2017.

FACTS



1bn

Approximately 2.5 billion people live without improved sanitation, of which almost 1 billion people continue to defecate in the open.

1/5



Sanitation remains a neglected issue with financial investments representing only 1/5 of the total water, sanitation and hygiene sector expenditure.

0.85m



Diarrhoeal diseases are the second leading cause of child deaths in the world. Every year 0.85 million children die from diarrhoea. 88% of these deaths are caused by poor sanitation and unimproved water.

120m



To reach the MDG target on sanitation in 2015, more than 120 million people would need to gain access to improved sanitation every year.

43%



Globally, 43% of those living in rural areas do not have access to improved sanitation. This compares to 27% of those in urban areas.

<5



The health implications of poor sanitation fall disproportionately on the poorest households and particularly on children under the age of five.

443m



It is estimated that 443 million school days are lost every year due to WASH related diseases.

3-34



The World Health Organization estimates a rate of return of \$3-34 for each \$1 invested in water and sanitation, depending on the context and system adopted.



Improved sanitation and handwashing facilities have a particularly positive impact on the education opportunities of young girls, who are disproportionately affected by lack of privacy and cleanliness during their period.



Diarrhoeal diseases caused by inadequate sanitation, and unhygienic conditions put children at multiple risks leading to vitamin and mineral deficiencies, high morbidity, malnutrition, stunting and death.



There is some anecdotal evidence that lack of toilets in schools may affect the concentration of learners, due to them having to wait for longer periods before being able to relieve themselves.

1/3



Studies have estimated that improved sanitation can contribute to an approximate one third reduction in diarrhoeal diseases.

Exhibit 3. Definitions of Improved and Unimproved Sanitation[1]

Improved	Use of: <ul style="list-style-type: none"> - Flush or pour-flush to: <ul style="list-style-type: none"> - Piped sewer system - Septic tank - Pit latrine - Ventilated improved pit (VIP) latrine - Pit latrine with slab - Composting toilet
Unimproved	Use of: <ul style="list-style-type: none"> - Flush or pour-flush to elsewhere (that is, not to piped sewer system, septic tank, or pit latrine) - Pit latrine without slab, or open pit - Bucket - Hanging toilet or hanging latrine - Shared or public facilities of any type - No facilities, bush or field (open defecation)

Exhibit 4. Benefit-Cost Ratios of Interventions to Attain Universal Access of Improved Sanitation, by Region (2010)[3]

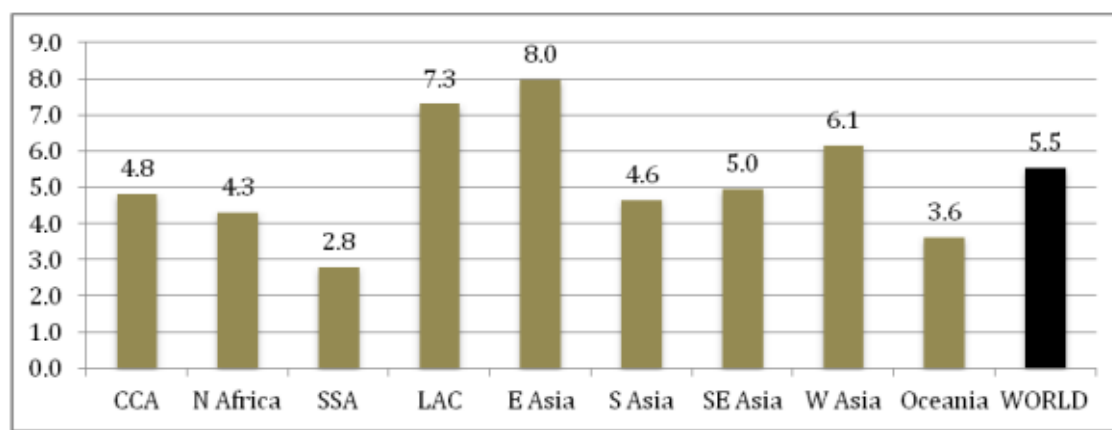


Exhibit 5. Total Financial Capital Costs to Expand Coverage to Achieve the Water Supply and Sanitation MDG Target, from 2011-2015 (in billions of US\$)[3]

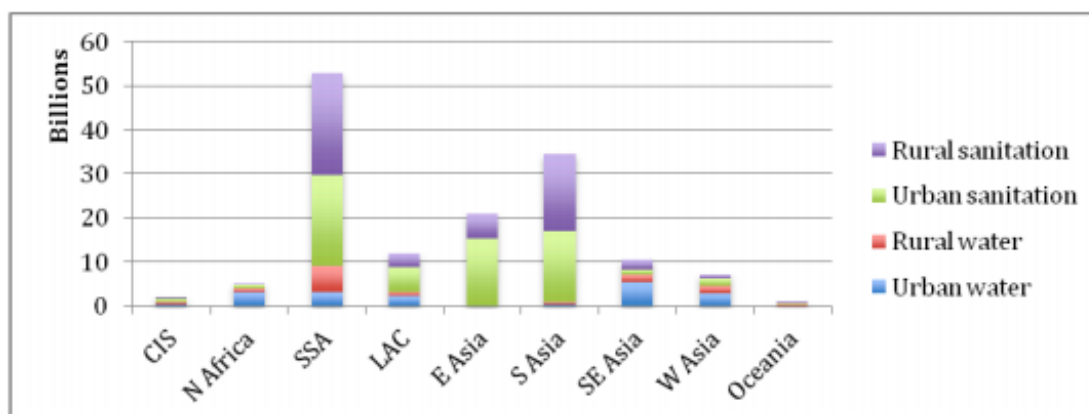
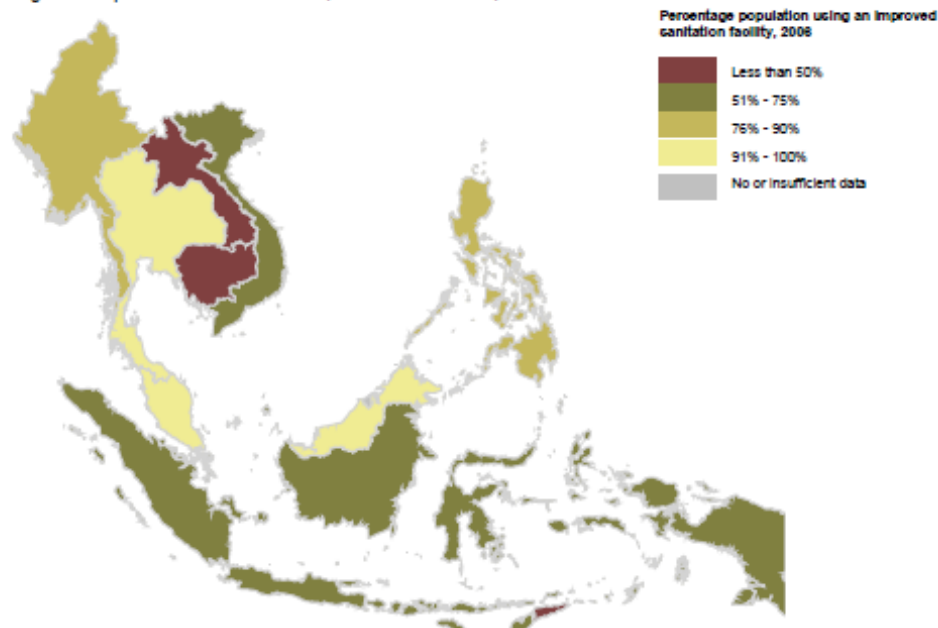


Exhibit 6. Overall Summary of Sanitation in South-Eastern Asia [8]

Access to Sanitation – Basic facts and figures

Figure 1: Coverage with improved sanitation facilities, South-eastern Asia, 2006



- 378 million South-eastern Asians had access to improved sanitation facilities in 2006. Coverage increased from 50% in 1990 to 67% in 2006.
- The South-eastern Asian population without access to sanitation decreased by 32 million, from 219 million in 1990 to 187 million in 2006. Increases in coverage outpace population growth.
- The rate at which South-eastern Asians gained access to sanitation, 156 million people since 1990, is sufficient to meet the MDG sanitation target.
- In four of the eleven countries in South-eastern Asia sanitation coverage is less than 60%.

Basic Facts and Figures South-eastern Asia: in percentage

	Population (millions)			Population using improved sanitation			Population using shared sanitation			Population using unimproved* sanitation			Population practising open defecation		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
1990	139	301	441	74%	40%	50%	8%	4%	5%	6%	21%	17%	12%	35%	28%
2000	206	314	520	77%	51%	61%	9%	5%	6%	3%	15%	11%	11%	29%	22%
2006	253	312	565	78%	58%	67%	8%	5%	7%	4%	13%	8%	10%	24%	18%
2015	326	302	628	-	-	75%**	-	-	-	-	-	-	-	-	-

Basic Facts and Figures South-eastern Asia: by population

	Population (millions)			Population using improved sanitation (millions)			Population using shared sanitation (millions)			Population using unimproved* sanitation (millions)			Population practising open defecation (millions)		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
1990	139	301	441	103	120	222	11	13	24	8	62	72	17	106	123
2000	206	314	520	158	160	318	18	15	33	7	48	55	23	91	114
2006	253	312	565	197	181	378	21	17	38	9	38	47	26	76	102
2015	326	302	628	-	-	471**	-	-	-	-	-	-	-	-	-

* excludes shared facilities and open defecation, ** MDG target

Exhibit 7. Strategic Foci of China's Recent Five Year Plans

11th Five Year Plan (2006-2010)[14]	12th Five Year Plan (2011-2015)[15]
<ul style="list-style-type: none">• Combining rapid economic growth with low inflation, rebalancing industry with services and investment with consumption,• Enhancing independent innovation capability to shift economic growth to relying on science and technology advancement and human resources.• Improving basic public services in social protection, education, health, and conditions in rural areas.• Reducing energy intensity, air and water pollution, treating industrial solid waste, increasing the efficiency of water use, and expanding forest coverage.• Building a new socialist countryside, speeding up rural development, and narrowing the rural-urban gap.	<ul style="list-style-type: none">• Maintaining stable and fast economic growth, with a focus on price stabilization, more job creation, improved balance of payments, and higher quality of growth.• Achieving major progress in economic restructuring, with higher share of household consumption and the service sector, further urbanization, more balanced rural-urban development, lower energy intensity and carbon emissions, and better environment.• Increasing people's incomes, reducing poverty, and improving living standards and quality of life.• Expanding access to basic public services, increasing the educational level of the population, developing a sound legal system, and ensuring a stable and harmonious society.• Deepening the reforms in the fiscal, financial, pricing, and other key sectors; changing the role of the state; improving governance and efficiency; and further integrating into the world economy

Exhibit 8. Reported People's Republic of China Aid by Year and Region, 2003-2007[36]

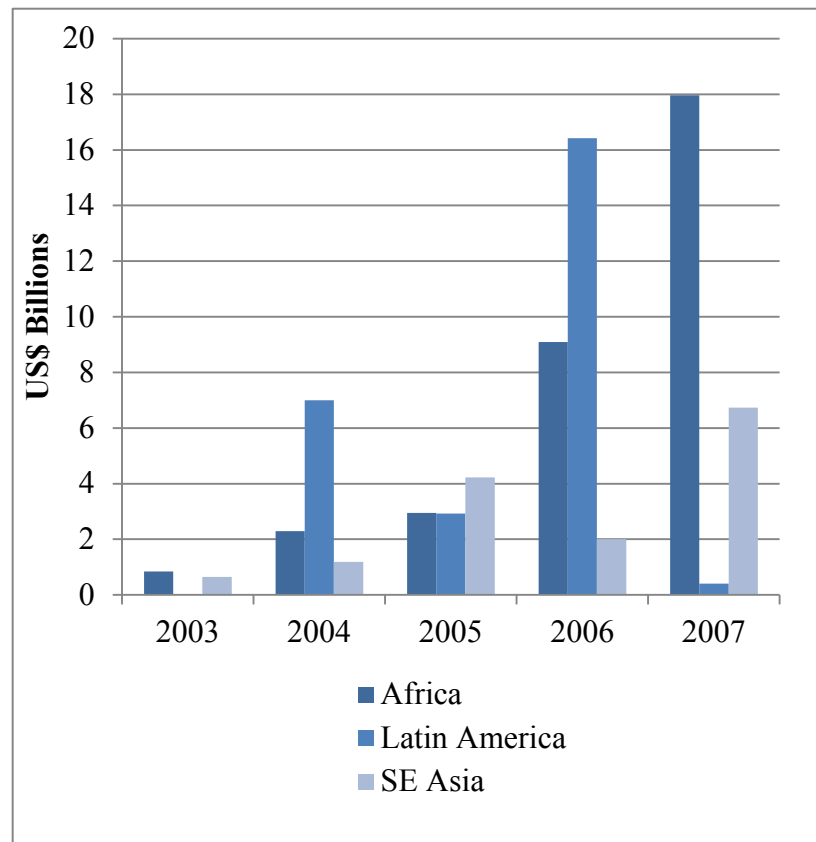


Exhibit 9. Geographical Distribution of China's Foreign Aid Funds in 2009[25]

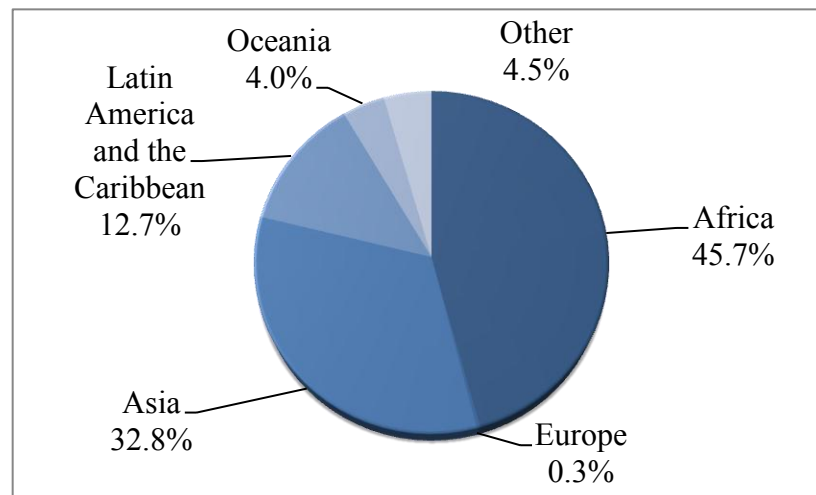
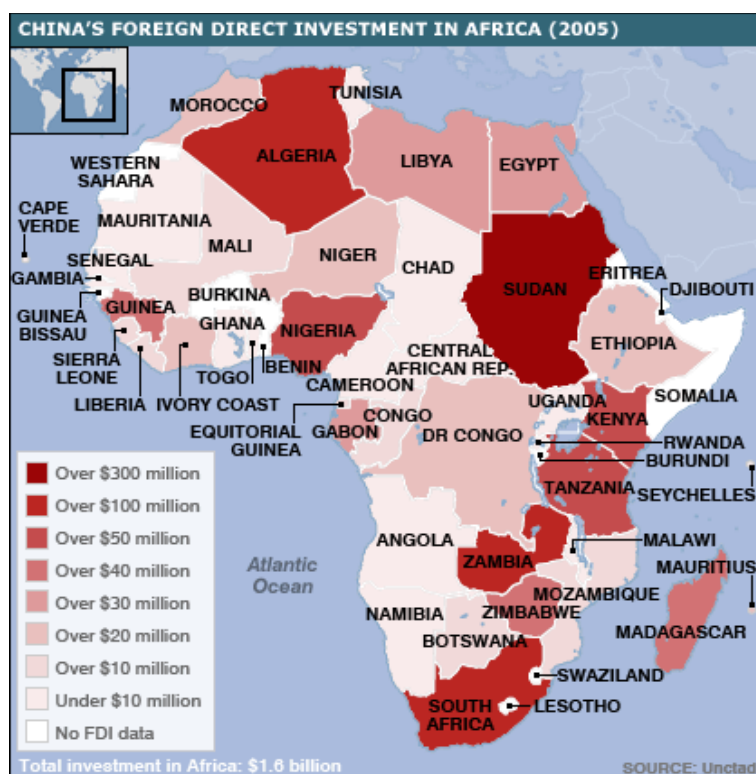


Exhibit 10. Sectoral Distribution of Projects Overseas Completed with the Help of China (at the end of 2009)[25]

Sector	Number of Projects
Agriculture	215
Farming, animal husbandry, and fisheries	168
<i>Water conservancy</i>	<i>47</i>
Public Facilities	670
Conference buildings	85
Sports facilities	85
Theaters and cinemas	12
Civil buildings	143
Municipal facilities	37
<i>Wells and water supply</i>	<i>72</i>
Science, education, and health care	236
Economic Infrastructure	390
Transport	201
Power supply	97
Broadcasting and telecommunications	92
Industry	635
Light industry	320
Textiles	74
Radio and electronics	15
Machinery industry	66
Chemical industry	48
Timber processing	10
Building materials processing	42
Metallurgical industry	22
Coal industry	7
Oil industry	19
Geological prospecting and mineral exploration	12
Others	115
Total	2025

Exhibit 11. China's Foreign Direct Investments in Africa [17]



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