



## SAMUT PRAKARN WASTEWATER MANAGEMENT PROJECT, THAILAND

The Samut Prakarn Wastewater Management Project<sup>138</sup> (Samut Prakarn) was conceived by the Pollution Control Department of the Government of Thailand (PCD) in the early 1990s to address the severe water pollution problems in Samut Prakarn province. Due to its strategic location on the Chao Phraya River just southeast of Bangkok, Samut Prakarn province had become one of the most heavily industrialized and rapidly urbanizing provinces in Thailand. But its rudimentary sanitation and water treatment facilities could not handle the large volumes of wastewater produced by its 1.2 million residents and more than 4,000 factories. As a result, most residential wastewater in Samut Prakarn was being processed in cesspits or septic tanks that were inadequate for high-density development and that discharged effluent directly into the canals and drains that flow into the Chao Phraya. In addition, most of Samut Prakarn's industries were not adequately treating their wastewater, and were rarely in compliance with government-mandated effluent standards. And despite the heavy concentration of industry, no hazardous wastewater facilities were operating in the province.

The resulting pollution levels in the Chao Phraya and the local canals were taking a disastrous toll on human health and the natural environment. Waterborne pathogens and toxic substance concentrations far exceeded public health standards, causing an increase in water- and sanitation- related diseases. Moreover, many of the affected waterways, including the Chao Phraya itself, had lost the capacity to sustain aquatic life. The massive pollution loads in the Chao Phraya also threatened the ecological collapse of the outflow area in the Gulf of Thailand. Conditions were only expected to deteriorate

further with increased industrial expansion and related urban development.

Recognizing the severity of the problem, the Government of Thailand designated pollution control in Samut Prakarn as a national environmental policy priority, and sought assistance from the Asian Development Bank (ADB) in developing a wastewater management system for the province. ADB responded by commissioning a project feasibility study that identified and evaluated an array of project options.<sup>139</sup> Thirteen options were considered and evaluated for cost, environmental impact (based on an initial environmental examination), social impact, and technical merit. The study ultimately recommended building two large central treatment plants, one on each side of the Chao Phraya River, to be fed by a collection system of trunk, secondary, and tertiary sewers. According to the ADB, this approach was “the optimum long-term strategy because [it] represents the least-cost solution in economic terms, can achieve the desired water quality objectives, has minimal negative environmental and social impact, involves minimal resettlement, and is affordable.” Following the recommendations of the study, the PCD decided to pursue the “two-facility” option, and proposed to award a separate “turnkey contract”<sup>140</sup> for each facility, with the contractors selected through a process of international competitive bidding.

### THE SITE SELECTION PROCESS

While the PCD was seeking financing for the project from the ADB in 1995, it identified two abandoned rice paddies as suitable sites for the facilities. The turnkey contractors were given primary responsibility for actually

obtaining these lands, but since the lands were remote, uninhabited, and considered to have limited development potential, no particular problems or undue delays were expected in acquisition. To ensure that appropriate lands were obtained, the PCD also agreed to exercise its powers of eminent domain if the contractors proved unable to secure the necessary land.<sup>141</sup>

Despite these assurances, the two contractors that submitted proposals in the second round of the bidding process told the PCD that they were unable to secure suitable land for the west bank site.<sup>142</sup> Instead of asking the PCD to condemn the land, however, they persuaded the PCD to amend the bidding documents to allow alternative bids for a single treatment plant on the east bank.<sup>143</sup> Ultimately, only one contractor—the NVSPKG

joint venture<sup>144</sup>—submitted a final bid. The NVSPKG consortium proposed to build the single facility not at the original east bank site, but rather at Klong Dan, more than 20 kilometers from the east bank of the river. PCD accepted this proposal.<sup>145</sup> Figure 5 shows the Klong Dan location in relation to the primary service area of the project.

### CONFLICT WITH THE COMMUNITY OF KLONG DAN

The residents of Klong Dan were not informed of the decision to relocate the wastewater treatment facility to their community.<sup>146</sup> When they became aware of the nature of the project, they strenuously objected. They raised a number of concerns with the PCD, ADB

FIGURE 5 | MAP OF PROJECT SERVICE AREA AND KLONG DAN



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management and project staff, and ultimately with the ADB's independent Inspection Committee, about the site selection process and the negative impacts the facility would have on their environmental quality and economic well-being.<sup>147</sup> First, they objected to the nontransparent and nonparticipatory manner in which the change to the location was made, and to the fact that appropriate environmental or social assessments of the impacts at the new site were not conducted. Second, they noted that since the new site was in a less polluted and more environmentally sensitive area than the industrialized area that the treatment plant was intended to serve, it would have net adverse impacts on the area's ecosystem and resource base. In particular, the community was concerned that the discharge of between 525,000 and 1.8 million cubic meters of wastewater would have adverse impacts on the local marine and mangrove ecosystems, and therefore on its traditional shrimp, fish, and shellfish harvesting. Local residents were also concerned that since the facility was not designed to remove the heavy metals and other industrial pollutants in the wastewater, their coastal environment would be polluted by these toxic substances.<sup>148</sup>

## ALLEGATIONS OF CORRUPTION IN THE PROJECT

Community leaders soon came to suspect that the decision to move the project was driven more by corruption and the desire to enrich a handful of politically well-connected landholders than by any considered assessment of the public interest.<sup>149</sup> They pointed to a number of irregularities in the relocation of the project and acquisition of the Klong Dan site that, taken together, suggested that the siting decision was tainted by corruption. Among the allegations were that:

- The PCD agreed to scrap the original "two-facility" plan and move the project to Klong Dan without the requisite cabinet approval and without conducting any impact assessments or feasibility studies of the new site, as required by ADB policy and Thai law.<sup>150</sup>
- The PCD purchased the land for the Klong Dan site from politically powerful interests with close ties to relevant ministries.<sup>151</sup>
- The PCD grossly overpaid for the land, paying more than twice its assessed value at a time when land prices were depressed due to the East Asian economic crisis.<sup>152</sup>

- The purchase price exactly equaled the maximum purchase price allowed under the contract. This, along with the inflation of the purchase price, strongly suggested collusion between the buyer and seller.<sup>153</sup>
- The land was not well suited for the facility, as it was acidic, weak in structure, prone to subsidence, and often under water.<sup>154</sup>

As part of their advocacy efforts to stop the project, the community leaders filed a claim with the ADB's Inspection Committee and pressed the ADB and the Thai government to investigate the corruption allegations. Thai authorities investigated and corroborated these allegations, and uncovered additional evidence of corruption. Thai law enforcement authorities concluded that PCD officials, executives of the joint venture, and the owners of the Klong Dan property had conspired to inflate the purchase price of the parcels by as much as 1,000 percent.<sup>155</sup> Thai authorities also found that the property purchased by the PCD included publicly owned land that had been illegally titled through corrupt dealings with the land ministry,<sup>156</sup> and that executives of the joint venture owned shares in the company that had illegally obtained the land.<sup>157</sup> They accused the former head of the PCD of advising the bidders to propose the single-facility design in violation of a cabinet resolution that called for a facility to be built on each bank of the Chao Phraya.<sup>158</sup> Finally, Thai authorities accused the joint venture of deceiving the PCD in the bidding process by failing to disclose that a member of the consortium with critical expertise had withdrawn from the joint venture before the contract was awarded.<sup>159</sup>

A number of senior officials of the PCD, real estate developers, and executives of the joint venture have now been criminally charged as a result of these investigations. Four top officials of the PCD, including two former director-generals, have also been transferred out of the PCD in connection with the scandal.<sup>160</sup> As a result of the government findings of corruption, the PCD declared the turnkey contract void in February 2003 and in May 2004 sued the contractors for restitution of all monies it had disbursed under the contract. The court rejected this claim, and advised the PCD to resolve the matter through the contract's arbitration provisions.

Despite the fact that the project is 95 percent complete, all work on the project remains suspended as the PCD determines how to proceed. In early 2005, independent consultants commissioned by the PCD to conduct a review and options assessment of the project found

that the facility was poorly constructed and would most likely have adverse environmental impacts when brought online. It recommended that to avoid adverse environmental impacts, the PCD should extend the water-discharge pipeline from 3 kilometers to 10 kilometers offshore, upgrade the water treatment technology, and install a recycled-water distribution system. The report also argued that relocating the facility to a more suitable site could be considered as a second option.<sup>161</sup> Despite these recommendations, the Government of Thailand has expressed its intent to complete the project and bring it online.<sup>162</sup> Predictably, this has brought a renewed round of community opposition. As of this writing, it remains unclear whether the wastewater treatment facility at Klong Dan will ever be completed.

### PROJECT COSTS AND FINANCING

When the Government of Thailand originally sought financing for the project in 1995, it estimated that the wastewater treatment plant and its associated infrastructure would cost US \$507 million. To cover these costs, the Thai government earmarked US \$257 million from its central budget and US \$100 million from its Environment Fund. Of the Environment Fund, US \$70 million came from an existing loan from the Japanese Bank for International Cooperation. The Thai government secured a loan from the ADB for the remaining US \$150 million.

By the time the contract was signed in August 1997, however, the estimated costs of the project had escalated to US \$948 million. This 87 percent increase was caused by design changes in the project—including relocation of the treatment facility, the selection of a different treatment process, and the government's requirement that tunneling rather than open-trench technology be used to lay the collection infrastructure.<sup>163</sup> Then, when the baht declined dramatically against the dollar during the Asian financial crisis in mid-1997, there was a concomitant fall in the baht-denominated costs of the project, and the total estimated project cost fell to US \$687 million—\$240 million in direct foreign exchange costs, and \$447 million in indirect foreign exchange and local currency costs. Including the results of the currency devaluation, this represented a net foreign exchange cost increase of US \$180 million over the original cost estimates. To help cover these additional costs, the Thai government sought and received a supplemental US \$80 million loan from the ADB. Despite these increases in costs, the Government of Thailand still anticipated that user fees from the project would cover all recurrent expenditures

and depreciation, and would generate a small amount of additional revenue.

To date, the Government of Thailand has spent an estimated US \$650 million to complete 95 percent of the project.<sup>164</sup> However, finishing the project and bringing it online in accordance with the recommendations of the independent commission will require substantial additional expenditures—an estimated US \$140 million to complete and upgrade the facility, or US \$180 million to relocate it to a more appropriate site.<sup>165</sup>

### FINANCIAL AND ECONOMIC IMPACTS

The most important impact of the community conflicts and corruption controversy in the Samut Prakarn project has been the project's forgone economic, environmental, and public health benefits. The project was expected to achieve a number of quantifiable public benefits, including improved public health, increased rice production, avoided septic tank costs to households, industrial relocation cost savings, and factory-cost savings due to reduced on-site treatment. As part of its 1998 appraisal of the project, the ADB estimated that these quantifiable benefits would yield a 15.1 percent economic rate of return (ERR) over the project's 50-year life.

The project was also expected to deliver a number of other important, but less quantifiable, benefits, including the environmental benefits of improved water quality in the canals, Chao Phraya, and the Upper Gulf of Thailand; increased commercial value of fisheries and aquaculture currently affected by Chao Phraya river pollution; increased commercial value of fruit orchards; the retail value of wastewater sludge and treated effluent; and the elimination of wet areas around houses caused by on-site waste disposal. The ADB determined that these less quantifiable benefits were so significant relative to the quantifiable benefits that ADB's ERR calculations significantly underestimated the project's actual net benefits. For this reason, ADB asserted that the calculated benefits represent a low estimate of the true economic returns.

At the end of 2005, the delivery of these economic benefits had been delayed by 4.5 years from the projected commissioning in early 2001. These delays have had disastrous impacts on the project's economics. In net present value (NPV) terms, the people of Thailand have already lost more than US \$1.27 billion in quantifiable economic benefits as a result of this delay, and ERR has

**THE REVOLT OF THE RATEPAYERS: WATER SERVICE PRIVATIZATION AND THE IMPORTANCE OF CONSUMER CONSENT**

The conflicts between projects and their host communities discussed in this section have generally arisen over what economists call “negative externalities”—incidental social costs that are imposed upon groups that were not parties to contracts with the project sponsors. But there is another important category of conflicts that have not been caused by the imposition of externalities, in which consumers of project services—the project’s putative beneficiaries—have organized community-level opposition. This dynamic has been most evident with regard to the privatization of water services. In a number of cases, water privatization plans have gone awry because of the failure of project sponsors to adequately account for the interests of the public as consumers—most notably, the willingness or ability of formerly subsidized ratepayers to pay the provider’s rates for privatized services.

The most spectacular collapse of a privatization scheme caused by onerous rate increases by the private-service provider occurred in the Bolivian city of Cochabamba. In 1999, the Bolivian Government granted a 40-year concession for the provision of water services to Aguas del Tunari, a subsidiary of the American engineering firm Bechtel.<sup>1</sup> Under the terms of the US \$2.5 billion deal, Aguas del Tunari was given control of the city’s water networks and exclusive rights to all the water sources in the district. Private water cooperatives that were not publicly created or subsidized would also have to pay user fees to Aguas del Tunari. In addition to being afforded a monopoly on water provision, the company was guaranteed a minimum 15 percent annual return on its investment.<sup>2</sup> In exchange, the company was expected to invest in capital improvements and upgrade and expand service delivery.<sup>3</sup>

As people began to fear that their existing facilities might be expropriated or their rates raised dramatically, their representative civil society organizations—neighborhood associations, water cooperatives, and labor unions—organized a broad coalition called the Coordinator for the Defense of Water and Life (La Coordinadora) to protest the deal. When the citizens of Cochabamba received their first monthly water bills from Aguas del Tunari in January 2000, many found that their bill had risen by 100 percent or more.<sup>4</sup> Many ordinary workers were faced with water bills that equaled a quarter of their monthly income.<sup>5</sup> As a result, La Coordinadora’s protests gained in size, momentum, and urgency, and by February the dispute had grown into what locals called *la guerra del agua*—the water war. Over the next couple of months, thousands of

protestors participated in demonstrations, shutting down the city’s streets and central plaza, and drawing violent reactions from law enforcement authorities. By April, it was apparent that the contract was no longer politically viable in the face of the civil unrest, and the government revoked the company’s concession. When Bechtel was unable to negotiate a settlement with the Bolivian Government, it sought more than US \$25 million in damages and lost profits in international arbitration. In January 2006, Bechtel abandoned this claim in exchange for a token settlement.<sup>6</sup>

The government, Bechtel, and protest leaders each has decidedly different views as to the cause of the failure of the Aguas del Tunari venture. But in retrospect, it seems clear that the public’s visceral reaction to steep rate hikes could have been anticipated (and probably avoided) had consumers been consulted on their willingness and ability to pay higher water tariffs in exchange for the prospect of improved or expanded services. Neither Aguas del Tunari nor the government undertook such a dialogue. And Bechtel’s officials in Cochabamba were predominantly engineers—not market researchers or social scientists—who did not fully appreciate the political environment in which they were operating.<sup>7</sup> On the other hand, Bechtel maintains that the municipal government failed to follow its recommendation to conduct an outreach campaign to inform the public of the costs and benefits of the private concession.<sup>8</sup> In any event, the failure to conduct this basic market research and public education exposed the project to political risks that would not be viable to its proposed tariff structure.

Other water service providers have also been forced to relinquish their concessions due to popular opposition to their tariff schemes. For example, in 1995 Aguas del Aconquija, a subsidiary of the French water company Compagnie Generales des Eaux (now Veolia) obtained a water concession in the Argentine province of Tucumán. Soon thereafter, it raised tariffs by more than 100 percent, and substantially altered its conditions of service delivery. Consumers, who considered this to be both a financial burden and a violation of their rights, resisted these increases by organizing sustained protests throughout the province. After three years of conflict between the company and its customers, the company was finally forced to give up the concession when consumer groups organized a payment boycott, and large numbers of customers refused to pay for water and sewerage services.<sup>9</sup>

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## BOX 4 | CONTINUED

Consumers have instigated popular backlashes that have scuttled water privatization schemes in a number of other countries. In Ghana and Malaysia, proposed privatizations have been suspended or reversed due to popular opposition. In Panama, public resistance to an attempted privatization contributed to the electoral defeat of the president.<sup>10</sup> Public opposition has also caused the cancellation of water privatizations in Lima, Peru, and Rio de Janeiro, Brazil, and has led to protests in numerous countries, including Sri Lanka, Indonesia, Pakistan, the Philippines, India, South Africa, Poland, and Hungary.<sup>11</sup> And in a public referendum in Uruguay, a majority of citizens voted to amend the constitution to define water as a public good and guarantee that it be supplied by public entities.<sup>12</sup>

These cases illustrate that the failure to gain the prior informed consent of ratepayers can have disastrous impacts on a water privatization scheme. In this respect, the market for water services differs dramatically from the typical market transaction, in which consumer consent is inherent in the agreement to purchase the goods or services for sale. Water concessionaires are typically monopoly providers of essential public services; there is usually no real competition or

alternative. Thus, in the absence of explicit consent, ratepayers must rely on government regulators to establish equitable rates and terms of service. But for reasons of politics, competence, capacity, or even corruption, the government may not be an effective agent of the public in negotiating the terms upon which water services should be delivered. These cases make clear that regulatory approval is not the same as popular assent, and water service providers that conflate these issues face increased risks.

### Notes

1. Johnson 2002.
2. Finnegan 2002.
3. Aston 2002.
4. Chang 2006; Eichenseher 2005.
5. Nicholson-Lord 2005.
6. Johnson 2002; James 2002; Environmental News Service 2006.
7. Finnegan 2002.
8. Bechtel Corporation 2005.
9. Giarracca 2006; Tagliabue 2002.
10. Finnegan 2002.
11. Finnegan 2002; Tagliabue 2002.
12. InterPress News Agency, Nov 1, 2004.

been reduced to about 9.34 percent. If the project is not brought online until the beginning of 2008, the NPV of the reduction in benefits will be US \$1.42 billion, and the ERR will be reduced to 8.84 percent.<sup>166</sup> Since the project initially assumed an opportunity cost of capital of 10 percent, the delays have meant that the project is no longer economically viable under its original assumptions.

The direct project financial costs of the delays, while less important than the broader economic costs to the country, have also been significant. During project appraisal, the ADB calculated that a 3-year delay in the project would result in a loss of US \$48 million in user fee revenue. Since tariff rates, collection rates, and the volume of treated wastewater were all expected to rise significantly over time, the unrealized anticipated revenues from the project for 2004, 2005, and beyond are considerably higher.

## CONCLUSION

Samut Prakarn teaches two essential lessons about the importance of achieving community consent in large

infrastructure projects. First, it shows that the patina of popular legitimacy that may surround a public project does not necessarily insulate it from community opposition—public-sector projects may be just as vulnerable to risks of community conflict as private-sector projects. Second, it shows that community involvement can be critical to exposing corruption. Projects that proceed without community involvement and consent may be exposed to greater risks of the kind of corruption that can compromise their public purposes. Together, these lessons provide an important corrective to the facile assumption that projects that are designed and approved through political or bureaucratic planning processes need not also provide meaningful opportunities for public involvement in oversight and decision making.

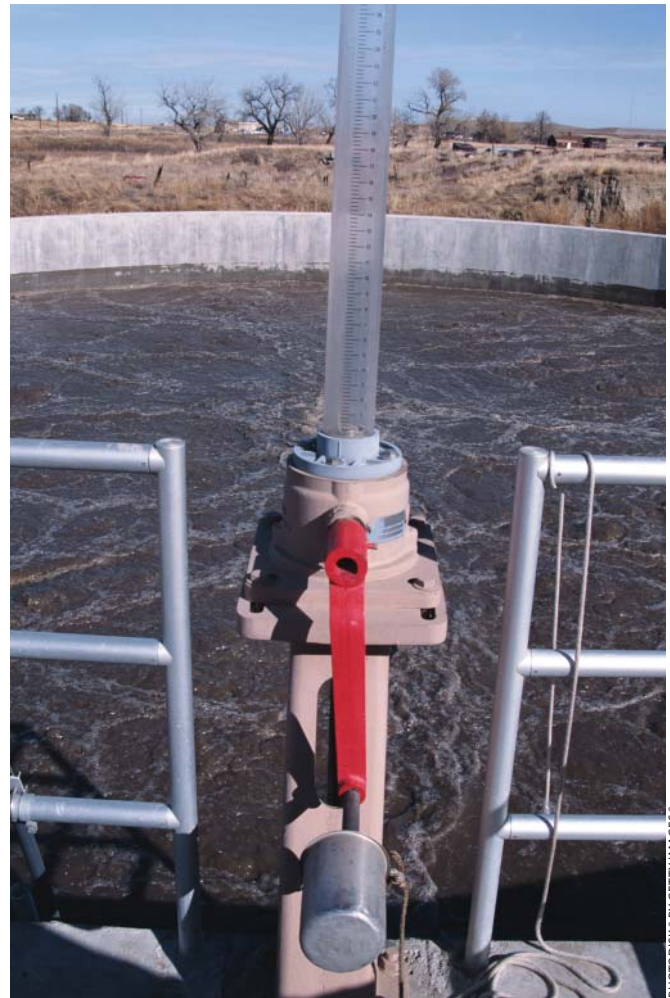
By all accounts, Samut Prakarn was designed to deliver critical public benefits. There was a broad consensus that water quality in the region had deteriorated to the point where it posed a danger to the regional environment and public health, and that a governmental response was required. Because they viewed Samut Prakarn as a “good environmental project,” the PCD and ADB acted as if they

had broad license to site the project in any community that would receive some of the benefits.<sup>167</sup> This proved to be a misapprehension of local preferences. As it happened, the communities that were forced to shoulder most of the economic and environmental costs of the treatment facility were not mollified by the fact that they would also receive some of the benefits, and they refused to accept a siting decision that did not adequately include their inputs or account for their preferences.

Since the revelations of serious corruption ultimately caused the project to founder, it may be tempting to ascribe responsibility to the alleged corruption of key decision makers in the Thai government and the consortium. Focusing on the sensational allegations of corruption, however, would tend to obscure the importance of broader governance problems to the failure of the project. The exclusion of Klong Dan residents and political leaders from the site-selection process created the conditions in which corrupt officials could arrogate their own pecuniary interests over the public good. Indeed, it was members of the community—not government or ADB officials—who uncovered the corruption in the land transaction. Had the community been involved in the process from the time the consortium first identified it as a potential site, it may have uncovered the irregularities sooner, perhaps in time for the government to pursue other options.

Anticorruption experts are increasingly recognizing the importance of this kind of public role in fighting corruption.<sup>168</sup> They note that citizens and user groups are often the most motivated watchdogs and most effective advocates for the proper use of project resources.<sup>169</sup> And members of the public generally have the most nuanced understanding of the nature of local corruption, and can provide invaluable information on where corruption may be occurring, and how to design and implement projects to minimize it.<sup>170</sup>

Researchers at the World Bank have found that mobilizing the public to “audit” and oversee government operations can be an effective antidote to weak government capacity to implement its own fiduciary controls. Indeed, public participation can be even more effective in combating corruption than more conventional public-sector management tools, such as increasing



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civil service wages or strengthening internal oversight and enforcement. According to the Bank’s researchers, “corruption [usually] has been reduced not so much by overarching visions of good government as by the growing ability of people and groups outside the state to defend themselves against official abuse and to check the unfair advantages of others.”<sup>171</sup> For citizens to defend their interests in this way, however, they must be empowered through adequate mechanisms of transparency, accountability, and public voice.

Box 4 considers how consent challenges can impact the success of plans to privatize the delivery of social services by examining efforts to privatize water services in Bolivia.