

Public Private Partnership in Urban Infrastructure Projects: 'Getting Sweet Curd from Spoilt Milk ?'

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Abstract:

Rapid growth in urban population has made Solid Waste Management an important issue for civic administration. The 74th amendment of the Constitution of India and Municipal Solid Wastes (Management and Handling) Rules 2000 has made municipal solid waste management the responsibility of urban local bodies (city corporations and municipal corporations). Further, the Supreme Court of India, acting on Public Interest Litigation directed all urban local governments to install scientific solid waste treatment plants before a set timeline. Installing a scientific waste management system was a costly proposition, which many urban bodies found difficult to bear. Many have sought participation of the private sector in solid waste management.

The city corporation of Thiruvananthapuram also invited participation of Poabs Group to set up a waste processing plant in the corporation owned land outside the city. Right from inception the project ran into social and political opposition. The investor was enticed by the government to stick to the project by offering various concessions. There were interface issues of very serious nature between the plant and corporation employees whose support was absolutely necessary for continued, viable operation of the plant. However, the concessions remained in paper and the operations of the plant reached a stalemate. Based on the experiences of the private investor, various governance and policy level implications for public private participation in urban infrastructure projects (specifically solid waste management) are discussed.

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Urban Waste will be Gold Mine of Future'

Jane Jacobs in
The Economy of Cities
Random House, New York, 1969.

INTRODUCTION

Urban areas are centers for economic activity and employment generation and the spatial dimension of all that is dynamic in the society and economy. Estimates place its contribution to India's GDP as around 60%. According to 2001 census, nearly 28 % of Indian population is urbanized. It contributes to 57 % of employment, excluding the agricultural sector. The growth of urban areas, including that due to the natural migration from rural areas in search of better opportunities, puts pressure on urban infrastructure in areas like transport housing, water, power, sanitation and waste management.

Managing the increasing amount of waste produced in urban areas continue to be a challenging task for urban managers and governments. Through the 74th amendment of the Constitution of India, urban local governments (municipal and city corporations) were empowered to deal with urban waste. That responsibility places heavy burden (financial and otherwise) on the local governments, who were already facing paucity for funds. As a result, they have increasingly sought private participation to manage urban waste¹. Interventions by GOI and the Supreme Court of India had reinforced the need for urgent attention to the problem.

Urban solid waste management (SWM) could be divided into a four-stage process comprising of waste generation, b) collection c) treatment and d) residue management. Over time, urban bodies had created systems to handle the waste, and in the process enlisted a separate cadre of employees. Unorganized ragpickers were also involved by default at different stages of the waste treatment process. Land filling and burning were the common treatment methods employed to dispose the waste. Experiences indicate that the efficiency level of solid waste handling, when done directly by the government was low. Reasons for the inefficiency, included factors like weak infrastructure, financial constrains, lack of equipment, low employee motivation, organisation structure, process inappropriate to the task, and prevalence of vested interests.

Privatization of the process generally implied the transfer of one or more of the stages to the private investor. The agency got

¹ Urban waste is highly heterogeneous in character. Discussions in this paper are confined only to Solid Waste Management.

remunerated for the activity. There are instances where community and NGO involvement were experimented with success². Current initiatives in SW management try to ensure that SW would be put to productive use through recycling, other commercial propositions like energy generation, bio-fertilizers etc. Thiruvananthapuram city corporation³ privatized the treatment of solid waste, where the private investor constructed the treatment plant on Build-Own-Operate-Maintain (BOOM) basis and had to recover investment by selling the residue in the market. Other stages of the process, specifically collection and transportation was the responsibility of the corporation.

Solid Waste Management before the Project

Like other urban centers, Thiruvananthapuram also faced problems related to disposal of the solid waste. Often, untreated solid waste used to be left at public places and it created problems like obstruction to smooth traffic flow, foul smell, blocking of drains and other health hazards. Prior attempts to solve the problem had not succeeded. Corporation employees collected the waste from the city and transported it to pre-identified locations where it was dumped or openly burned.

Due to near uniform degree of urbanization across the state and the high population density, availability of vacant land was severely limited. Moreover, land cost being on the higher side, it was not only difficult to procure land for dumping solid waste but also such an activity was cost inefficient. The city was thus forced to depend on sites that had already outlived their lives. One site was close to the international airport was it threatened aircraft safety. Other sites were near residential areas and there was considerable public pressure to relocate.

As the city grew, the administration was under pressure to identify more land for dumping. Irrespective of political affiliation, it became a common issue for all political parties⁴. The need was to create a sustainable solution, but it never happened. Some attention

² See, Rath, Binayak (2002) '*SWM and Peoples Participation: A Case Study of Kanpur Nagar Nigam*', in India Infrastructure Report 2002: Governance Issues for Commercialization, 31 Network, Oxford, NewDelhi, pp. 229 – 235.

³ Capital city of Kerala, with population of 75 lakh (2001, Census of India).

⁴ Waste Management continues to be one of the issues over which elections to local bodies are fought.

Irrespective of political affiliation, the issue figures in all the manifestoes.

was given to increasing collection efficiency, but as the dumping sites became over-saturated, its impact diminished. Corporation employees either refused to collect waste from the collection points or if it was done, offloaded it in vacant areas around the city. Informally, limited recycling and sorting of SW happened through ragpickers. A section of employees were reportedly a party to the recycling.

As a long-term solution to the problem, the corporation decided to identify land outside the city limits, preferably in a sparsely populated area. In 1989, the corporation procured 12.5 acres of land in Vilapil panchayath, 8 km away from the city limits. As soon as the news about location of the corporation waste dumping ground spread, the residents of Vilapil panchayat started an agitation. The action committee of citizens formed to oppose the corporation's decision approached the court and obtained an order that temporarily prevented the corporation from further action.⁵

Supreme Court Judgement and SWM

Lack of proper attention to safe and scientific treatment of Solid Waste (SW) could create disastrous consequences to quality of life, not only in the city but also in surrounding areas. The effects were proved as harmful to human, animal and plant life. Untreated waste apart from polluting land, water and air contributed to deteriorating quality of life. Accumulated solid waste piled up on roadsides obstructed city traffic and caused difficulties for pedestrians.

The general apathy of civic administrations in India while dealing with city waste had forced environmental activists to approach the Supreme Court of India with a public interest petition. They prayed for a court directive to state and central governments to establish solid waste processing facilities in all large cities. The Supreme Court (1999) passed an interim judgement instructing the government to ensure that all cities with population of more than one lakh had facilities for scientific treatment of solid waste. Subsequently, Government of India notified the Municipal Waste (Management and Handling Rules) in September 2000, specifying the parameters and

⁵ Formal city limit in Kerala is merely an administrative category, with little meaning otherwise. The above situation is because of uniform urbanization in a large part of the state.

compliance criteria for different activities related to solid waste handling in cities.

THE PROJECT.

In order to comply with the Supreme Court directive, the corporation decided to establish a modern facility for scientific treatment of solid waste.⁶ Government of Kerala (GOK) also supported the corporation's proposal.⁷ Since the corporation was not in a position to finance the venture, private participation was invited. According to the announcement made by corporation, the SW treatment plant was to be located at Vilapil where corporation had acquired land. Eventhough, the corporation was interested in Excel Industries Ltd.⁸, and had contacted them directly to set up the plant, they were reluctant to invest directly in Kerala.

The Bid

The corporation invited national bids for SW treatment facility and four agencies indicated interest in the venture. Poabs Group of Companies, a Kerala based industrial group with interests in construction, farming etc was awarded the contract for developing the solid waste processing plant on Build-Own-Operate-Maintain basis. Poabs Group had proposed to use the technology of Excel Industries that converted organic solid waste into bio-fertilizer through anaerobic process. The plant was to be located on the land, leased to the company by the corporation for 30 years. The bio-fertilizer would be sold in the market to recover the investment. Though they did not have any prior experience in SW treatment, they had interests in organic farming and their 833-acre farm was the largest multi crop organic farm in India and employed 700 workers. The group bought the farm from European planters and every year Oranges from the farm was shipped to the Queen of England. The group had a captive organic waste processing plant that used accelerated aerobic composting to convert farm waste into organic manure. An in-house research team of

⁶ In order to win popular support, corporation initiated a "clean city" movement, of which SWM was an important component.

⁷ The Left Democracy Front (LDF) was in power at both the state government and city corporation did help in winning support. However, though Vilapil panchayat where the waste treatment faulty was eventually located was also with LDF similar support from the facility did not come through.

⁸ Excel Industries Ltd. is a Rs 4000 million company, which has the required know-how about solid waste management through anaerobic process. (www.excelind.com)

the group was engaged in developing environmental friendly pesticides for use in organic farms. In addition, the group was one of the largest public works contractors in Kerala.

Meanwhile, the residents of Vilapil resumed agitation after they learned about the project through the media. There was directed against the decision to transport city waste to their locality in order to keep the city clean. All political parties (including the LDF that was in power at Vilapil) and social as well as religious groups supported the agitation. To avoid direct confrontation between the residents and bidders, corporation dissuaded the bidders from visiting the location before submitting the bids. Poabs group representatives officially⁹ visited the location with police protection only after the bid was finalized in their favor.

Bargaining for Concessions.

However, after the visit and conducting a preliminary feasibility study, the group decided to withdraw from the project. The decision was orally conveyed to the corporation leadership. The feasibility study established that the project cost would be around Rs 90 million, while the cost for a similar capacity facility would have been closer to Rs 50 million¹⁰. Financial Institutions were reluctant to lend at such high project cost, caused by some undisclosed constraints. Excel Industries who provided the technology also advised withdrawal. But the political leadership of the corporation and GoK (both ruled by LDF) were adamant on building the plant at the earliest.

The corporation approached Poabs Group to re-negotiate. The city mayor took special interest in negotiating with the group and coordinating with GoK. At that time GoK had declared an informal moratorium on payments to contractors who had undertaken construction work for the government, and around Rs. 50 million was due to Poabs Group on that account. As an incentive to take the project, the group was promised immediate release of the dues, bypassing the

⁹ They made an informal attempt to visit the location, but failed to reach the site since action committee members recognized them and they were forced to return.

¹⁰ The layout of the land was along a steep slope and it required additional investment to level. After leveling, the effective useable area got reduced to 4 acres from 12.5 acres. The entire plant area had to be covered with roof to prevent rainwater.

payment schedule set by GOK. In addition, the following were offered¹¹.

- Thiruvananthapuram Corporation will provide land, approach road, electricity at concessional rates etc on priority basis.
- The corporation will be responsible for collection and delivery of unprocessed waste to the site, every day. The corporation will bear all costs related to the above operation.
- The corporation will deliver 300 tonnes of organic waste to the factory every day. In case the corporation failed to deliver adequate quantity, compensation will be paid to the company.
- Steps will be taken to settle local agitation and obstructions to the smooth functioning of the plant. Poabs can also request for police protection, if required.
- The government will help the company to avail central government subsidy to the tune of Rs. 0.50 million.
- State Agriculture department will buy organic fertilizer directly from the company (without the normal government procedure of tenders) at a fixed price¹².

Revised Business Model

Based on assurances from the corporation and GOK, Poabs Group formed a company called Poabs Envirotech (P) Ltd. to develop and manage the new venture. The technology deployed was anaerobic (check with Biju) processing developed by Excel Industries¹³. Excel agreed to provide the required technical training to employees of Poabs Envirotech and station their employees (technical experts) in the plant for supervision and troubleshooting. The group generated Rs 90 million

¹¹ The concessions were negotiated at different points, some after the plant was commissioned.

¹² This was not part of the contract signed by corporation and Poabs. The agreement was arrived after negotiations with GOK, not corporation.

¹³ Technology choice was taken in favour of aerobic decomposition since the group had exposure to it in their farm. Also, this was considered more suitable to the waste composition, that included harbor (fish) and slaughterhouse refuse, market waste, hotel waste etc. The process was fast (45 day) exothermic and without foul smell. The process was considered superior to other organic waste conversion options like pelletization, grinding, power generation through anaerobic digestion and composting through vermin-culture. Treatment of garbage with specially developed biological inoculum causes accelerated bioconversion in an exothermic environment destroying harmful pathogens and seeds. The process is considered environmental friendly and without any side effects on people handling the waste.

for the project through internal accruals. (The promoters expected immediate release of Rs 50 million from government and central government subsidy of 0.50 million, but both never came through. Though the ministry of non-conventional energy provides incentives for pilot power generation projects from solid waste, the technology chosen by the group did not support power generation. Other concessions and help promised like preferential treatment for power connection from KSEB did not materialize.)

The plant was installed with the capacity to process 400 tonnes of organic waste per-day and corporation was obliged to deliver 300 tonnes of organic waste to the plant, daily (Guaranteed MSW). Corporation employees had to collect SW from the city and transport it to the factory in vehicles arranged by the corporation. They were expected to sanitize the waste before transporting. Sanitation was necessary to prevent decomposition at the collection point. The company was entitled for compensation at the rate of Rs 49000 per day from the corporation, if the delivery commitment failed. The revenue inflow came from the sale of organic waste to the state agriculture department (as per agreement with government) and in the open market. Poabs was expected to pay 2% of the sales to the corporation as royalty. Some revenue was expected from the sale of waste with resale value, like metal and rubber (truck tyres). Annual land rental payable to corporation was Rs 1 per sq meter.

The SW Treatment Process

Corporation employees collect unsegregated waste from different parts of the city and store them at points for transportation to the treatment plant. By that time, decomposition would have started, raising foul smell. Hence a biological agent that retards decomposition would be applied. The sanitized waste would then be delivered to the company. Poabs maintained a weighbridge at the site to track the quantity and quality of waste. They had powers to reject the waste if it was contaminated by construction, industrial, chemical or hospital waste.

Inside the treatment plant, the waste was manually sorted to remove non-organic contaminants like metal, rubber, plastic, stones, glass etc. The organic part was heaped and a special bacteria colony would be introduced to accelerate the aerobic decomposition process. Special chemicals would be added to prevent foul smell. Bacterial action continues on each heap (churned in intervals for better

results) for 40 days, followed by thermal treatment of the residue at 80 degree C to neutralize living seeds and other pathogens. The final product would be sold in the market under the brand POABS GREEN.

Community Opposition to the Project - Stage I

The residents of Vilapil village led by the village panchayath and various groups had opposed the location of garbage dumping facility in 1989 itself. As a result, the 12.5 acre land owned by Thiruvananthapuram corporation in the village was left as it was. Agitation against the corporation restarted when news about the location of the treatment plant in corporation land became public. At that stage, the protest was not directed against the Poabs Group, but against the corporation for locating the plant in their village. Since the corporation already owned the land, eviction of residents and rehabilitation of project affected people were not issues. The local community was worried about the possible deterioration in the quality of life and reduction in land value. According to them, the village was a scenic and a preferred as a residential location by city residents moving away from the centre. Land prices in the locality had increased after city residents started to purchase land in the area. Initially, citizens groups led the protests. Soon the Vilapil panchayath and local affiliates of political parties took over. While they recognized the need for such a project, they wanted the corporation to shift the project elsewhere, preferably within the city.

At first, the corporation attempted a political solution to the agitation, through the Left Democratic Front (LDF) that was in power at the state, in Thiruvananthapuram Corporation and also the panchayath. As a conflict resolution technique, the corporation on its expense sponsored a study tour for a 30 member delegation to a similar plant (technology provided by Excel Industries Ltd.) in Vijayawada, Andhra Pradesh. Representatives of residents, local leaders of all political parties and elected representatives of the panchayath were in the delegation. The objective of the study tour was to educate them about the technology and remove fears about perceived harmful effects of a solid waste processing plant. But the visit failed to help the corporation to alleviate the fears and opposition to the project. Political infighting between parties complicated the dispute and the corporation was not able to build a consensus. From the cost-benefit perspective, the project was seen to

largely benefit the city and its population without any advantage to the panchayat.

Project Execution

In spite of protests from the locality, the corporation went ahead with the contract. Poabs Group was pressurized to commence construction, before the agitation turned more forceful. The plant, considered the one of the largest of its kind in Asia was completed in record time, under the supervision of Excel Industries. Under the agreement, POABS group had 18 months time to complete construction of the processing plant and commission it. However, Poabs Group finished construction of the 400 tonne per-day capacity plant in five months. 1.5 lakh cubic meters of soil was shifted to level the land, In addition entire plant area was covered by asbestos to protect it from rain and the boundary was fenced so that fears about birds and animals spilling the garbage were removed. The Chief Minister of Kerala inaugurated the plant on 24, July 1999 and it became operational by October 1999.

Community Opposition to the Project - Stage II

As a symbol of their protest against the processing plant and the government, villagers boycotted the inauguration function. An action committee of villagers led the boycott move, with the support of all political parties and other community leaders. According to the action committee members, their apprehensions came true after the plant started functioning. In the subsequent months, the media reported that:

- a) The air quality of the village, particularly in the surrounding area deteriorated due to the foul smell of decomposing waste.
- b) Pollution of the fresh water stream flowing through the village that resulted in health hazards to the villages who used it for bathing and washing. Some villages reported skin rashes and sores after bathing.
- c) The village was attacked by swarm of flies and insects.
- d) Decomposing waste from the corporation trucks transporting garbage to the plant spilled over on roadsides and

remained there. There was no system to collect the spilled waste and foul smell enveloped the area.

e) Presence of yellowish liquid mass around the factory and near the stream.

f) Residents from other villages refused to enter into social relationships (marriage) with the village residents due to the social stigma attached to staying near the plant.

g) Demand as well as price of land had plummeted.

To express their protests, the action council decided to block the garbage carrying trucks from entering the village. The panchayat passed a unanimous resolution requesting the government to close down the factory. The villagers were uncompromising about the plant and wanted it to be shifted elsewhere. Police acted against the agitators who had blocked the trucks, and many activists were booked for obstructing public servants from discharging duty. (Reportedly, there were also incidents like stone pelting and physical assault of corporation employees accompanying the trucks.) Police action turned the villagers against the group, and the villagers accused the company of influencing the police to act against their peaceful agitation.

The villagers filed a petition before the High Court of Kerala and the court ordered an investigation by the Kerala State Pollution Control Board. In addition several cases were filed against the plant and the group by private individuals, in the lower courts. Following the adverse media reports against the plant, the state Ombudsman for Local Bodies issued notice to the corporation and demanded a report on the functioning of the plant and the environmental and health problems caused by its presence. Meanwhile, the action council initiated a mass signature campaign to be submitted to the CM and planned protest meetings inside Thiruvananthapuram city, including a 'dharna' (sit in strike) in front of the secretariat building.

A monitoring committee chaired by the District Collector had to act as the watchdog over the performance of the plant. Though the committee was set up before the plant was commissioned, it never

functioned. Only after the court and the ombudsman intervened in the problem, the corporation initiated steps to convene the meeting. The action committee suspended the agitation, since their grievance was before the court. As a conciliatory gesture, corporation agreed to transport waste to the site only at night so those residents along the truck route were protected from transient odour.

The group also got involved in the efforts to pacify the agitation. It offered daily wage employment (Rs 150 per day) to local residents in the plant, but not many turned up because of the strong social ostracisation. It complied with the additional requirements imposed by the state pollution control board (PCB) like covering the sides of the plant and constructing a sedimentation tank to collect every drop of rainwater, though it increased operating cost. (According to Poabs, some of the PCB requirements were un-necessary). Diary grass was planted on unused land around the plant for the benefit of the villagers. Eventually some residents were ready to sell the land at a good price and the corporation acquired additional 18 acres around the plant¹⁴. But the populated areas (people there had problems with the plant) were left out.

FACT FINDING MISSIONS

As the dispute intensified, it invited lot of media attention. While the corporation and Poabs stood their stand that the project was environment friendly, residents complained about the effects on health and environment. Various agencies got involved in studying the operations.

Internal Study

As per the agreement, the corporation was responsible for collecting and transporting garbage to the plant. Corporation workers with government employee status did that work. For processing effectiveness, specified pre-treatment of waste had to be done at the collection points and corporation was responsible for that. The waste had to be sanitized applying biological inoculums (a bacterial spray that reduces water content in garbage and lessens the foul smell) at the collection point.

¹⁴ According to company, additional land was acquired at Rs 10,000 per cent, while the market rate was Rs 4000 per cent. A cent is a hundredth of an acre.

Corporation employees were not keen to sanitize the waste, and even if they wanted the inoculums were in short supply. Neither the corporation nor the company took initiative to train corporation employees in sanitization. Most trucks used for transportation were open bodied and loading was done carelessly. Untreated waste fell out from the trucks during transportation. Corporation employees refused to clean the spill from waysides and left it to decompose there. That directed the public against the company. On the other hand, employees complained about lack of tools for SW collection and loading, short supply of inoculums and lack of adequate number of trucks.

Waste was a good business proposition for some corporation employees, who made money from it. Builders and landowners used SW as landfill material. Some farmers also sought the waste to convert it into compost for their farms. They bought waste directly from the employees, who used corporation's trucks to deliver the waste. There were also instances when the employees received some rent to clear waste regularly. SW treatment plant implied an indirect stop to such rents, and they protested by engaging in acts that brought down the reputation of the plant.

The unions of government employees were apprehensive about the possible job loss and non-creation of further employment opportunities. They feared, even if there was no job loss, the possibility of privatizing garbage collection in the next stage existed.

Media was very active in highlighting the adverse effects of the plant on villagers. However, a section of media highlighted the vested interests behind the business of garbage handling also. Some political activists were unhappy with the introduction of scientific waste treatment, since it took away a very potent political weapon from their hands. Many political leaders had exploited the issue to their advantage and installation of the treatment plant was a blow to them. They felt that the city mayor, who piloted the project and supported Poabs, received public attention and political mileage. Subsequently, demand for closing the plant became the political agenda.

State Pollution Control Board

State pollution control board was involved with the project from initial stages itself. Later, on instructions from the court, PCB studied the plant, specifically from the contamination of water, particularly a fresh water stream used by locals for bathing and washing. They found no technical possibility of water contamination, but raised the possibility of rainwater mixing with garbage during rainy season. (Kerala has heavy rains for six months a year. According to company sources, the stream was dry when pollution control board inspected the plant). Since the plant was located on a hillside, there was possibility for contaminated water flowing down. The board chairperson even went to the extend of describing the plant as "*certainly the best waste treatment plant in India*", but did not rule out negligence from different stakeholders¹⁵. At the same time, company officials denied the possibility of any contaminated rainwater flowing out.

*World Bank Expert*¹⁶

A solid waste consultant of the World Bank visited the plant and opined that the technology was very appropriate and cost effective.

Report by Expert appointed by GOK

In the light of allegations about environmental damages caused by the plant, GOK requested a reputed environmentalist to review operations of the plant. While the expert accepted that odour was a problem, she expressed satisfaction with the technology and precautionary measures adopted by the plant. On the contrary, the problem was traced to the waste collection side. It was observed that the waste delivered to the plant was already in decay due to collection and transportation inefficiencies. The night only transportation rule was also questioned, since it forced garbage to lie unattended during daytime and caused it to rot.

The report lauded the company and suggested that the corporation extend more support for its smooth functioning including additional land for the plant (though promised, power connection was not given, forcing the plant to work on generators). The company was advised to go for minor process improvements to reduce the odour and improve cost effectiveness.

¹⁵ Source: Report in The Week, Feb 21, 2001.

¹⁶ Source: Comments recorded in the visitors diary maintained by Poabs Green

PROJECT RISKS AND THE STALEMATE

Input Risk

The corporation and company acted on some of the concerns based on reports. Apart from procuring more biological inoculates for sanitation, the corporation constituted a separate supervisory squad to monitor the garbage collection process. Even though, the smell from properly inoculated garbage was reduced after sanitation; it was impossible to fully control it. The company constructed a boundary wall around the factory to prevent rainwater from mixing with garbage. The villagers were then worried about the possibility of ground water contamination.

In spite of commitments, the corporation failed to fulfill the quantitative obligations even on one day. While the contract required daily supply of 300 tonnes of garbage, the corporation was able to deliver on an average 100 tonnes of garbage. According to company records the maximum delivery was 150 tonnes. Though sufficient waste was generated in the city, the corporation was not equipped with sufficient logistical support to service the obligation. When the poor work habits and rent-seeking behavior of corporation employees were cited as reasons for inefficiency, the employee unions pointed to shortage of trucks. The proposal to purchase more trucks was caught in red tape. Moreover, the truck purchase plans got disturbed, since the plant was commissioned in five months instead of the proposed 18 months and the corporation required more lead time to complete purchases. Efforts to hire private vehicles were unsuccessful due to unattractive rent fixed by the corporation and reluctance of truck owners to rent them for garbage transportation.

Quality of SW delivered at the plant was another concern. High quality wastes like slaughterhouse refuses and market waste was missing, since they already had a ready market outside. Instead, low quality waste like leaves used for packing and coconut husks was transported. The latter was heavy and made up quantity, but not very useful for processing. The waste was also moist (up to 50% while acceptable was 25%) and contaminated, predominantly by sand (20%). As a result, the final conversion rate was around 13%, (13 tonnes of bio-fertilizer for 100 tonnes waste) while the industry standard was 25%. The wear and tear of machinery increased due to contamination,

resulting in higher maintenance costs. The company was also finding disposal of contamination (sand) a problem¹⁷.

*Output Risk*¹⁸

According to the business model, sale of bio-fertilizer manufactured from SW was the major revenue stream. Before the group initiated the project, GOK had promised to procure the bio-fertilizer through the agricultural department and other agencies of the government. Fertilizer purchase was decentralized and the agriculture officer was responsible for purchases. Subsequently, GOK issued a government order (No 48916/03/99 L.S.G.D) instructing agriculture department to initiate necessary steps to procure the product at the government fixed price of Rs 4.50 per kg. The agriculture department also instructed its officers to purchase the product. But, politically, the decision was questioned, since the government was seen to favour a single manufacturer. In spite of assurances by government and sales efforts by the company, the officials refused to purchase from the company. Many officers were already engaged with established suppliers and they were reluctant to break the relationship. There were also allegations about rent seeking also.

Though there was no single acceptable quality standard for bio-fertilizers in India, the company ensured that its product was of high quality and suitable for crops. Inputs for that was sought from Kerala Agriculture University. Apart from general purpose products, value added bio-fertilizer enriched with bacteria was also introduced in the market. Faculty from School of Environmental Studies, Cochin University of Science and Technology closely monitored the quality standards, both of the product and emissions. They also maintained in house quality control and research laboratory. The quality check ensured that all seeds and parasites present in the fertilizer were dead and chemical traces were removed from the fertilizer. The group also devoted resources to brand their product as 'Poabs Green'; and retailed it through supermarkets and plant nurseries. Company sales personnel contacted plant nurseries and purchase points (mainly agriculture officers of government and purchase in-charge for private farms/estates) to direct sell their product. At the same time, products with generic name 'Organic' flooded the market. Many small manufactures with inferior technology and zero quality practices were

¹⁷ Since the court has banned sand mining from rivers, the sand accumulated by Poabs may have a ready market.

¹⁸ Includes revenue and market risk.

able to save manufacturing costs and their product was available cheap.

The unregulated quality standards for bio-fertilizers prevented Poabs from differentiating its products. Bio-fertilizer ran into a reputation risk in Kerala after some agencies marketed burnt industrial waste as organic, causing crop damage. There were also instances where coloured and chemically treated farm waste was sold as organic product. There were also instances where low cost manufacturers sold inferior product under Poabs Green label using recycled packing. Such instances affected the market credibility of bio-fertilizers and the company. Agriculture officers were reluctant to suggest the product in the absence of specific standards.

Though some revenue was also planned from sale of reusable waste like metal, rubber etc., the company could not realize that. Informal ragpickers collected the valuable waste before it reached the plant. The company found storing and disposing non-reusable (organic and non-organic) waste as a problem. Though they requested for permission to burn some waste like leaves (the burnt residue containing potash can be used as an enricher), the permission did not come through.

At cross roads.

Even after two years of operation (December 2001), the situation at ground level had not improved much. The political composition of GOK changed after the general elections in April 2001. The new governments demanded time to study the issue. Local agitation also refused to die. The legislator (MLA) who represented Vilapil area had promised during election that, 'if elected, the plant will be closed' got actively involved in agitations. Without any improvement in sight, the group decided to withdraw from the project and requested GOK to take over the plant at cost. However GOK prevailed on them to continue. Table I summarizes the conflict areas between the company and various stakeholders.

PRIVATE PUBLIC PARTNERSHIP IN SWM: LEARNINGS FROM THE EXPERIENCE

Involvement of private sector in solid waste management in Indian cities is bound to increase. Traditional practices like land filling and open burning are not preferred anymore due to the high cost of

land and environmental impacts. Local governments are moving to alternate solutions like Waste-to-Fertilizer, Waste-to-Energy and Waste-to-Reuse, with the involvement of private sector and community. The experience of Poabs Group discussed above raises some critical issues.

Project Location and Community Interface.

Identifying suitable land for infrastructure projects is a difficult task. The problem becomes more profound when land requirement is in thickly populated localities. The local community members for multiple reasons, that include economic, health and political reasons generally resist land acquisition. Existing legal framework for land acquisition and price fixation is inadequate to meet current market requirements.

The case brings to focus (once again) the limitation of the Land Acquisition in terms of defining 'Project Affected People'. In an urban waste treatment project, the effects impact an entire community, not only economically but also socially. Some of the social costs (like refusal to enter into a marriage relationship with a resident in the vicinity) are not considered under the legal framework. But for the community, the social effects are equally significant.

Community opposition in this case has another dimension. Since the corporation had acquired land outside city limits, it was interpreted as a deliberate move to harass the people residing in Vilapil panchayat area, for the benefit of city residents.

Employee Interface Issues: Government Employees' v/s Private Sector

Dealing with employees who are well entrenched into the system is a contentious issue for all private participation initiatives. Employee unions have been in the forefront to stall privatization, both from ideological standpoint and to protect interests. Possibility for the loss of job security and maintenance of conditions of service are common demands raised. Lack of social security scheme for such displaced employees forces them to cling to the demand to maintain status quo. It is necessary that such concerns be addressed upfront, both at the political levels and operations levels. Dialogue with employee unions and assurances about the job continuation, retraining and a honorable exit option through a liberal separation scheme can

mitigate the resistance to some degree. These are going to be very difficult options taking into consideration the highly unionized scenario in the state. Hence more than the private investor, it is the governments duty to ensure that such a dialogue is initiated. Some of the efforts initiated by GOK had shown some results, and there are positive signals about unions accepting private investment as inevitable.

The next issue is about the vested interests among employee groups. Inefficient performance monitoring and lack of accountability has created the culture of low productivity and possible rent seeking among employees. In the case, evidences indicate that some employees did engage in such practices. Often employees are observed to be involved in creating situations that prevent the private investor from operating at the required efficiency¹⁹. More stringent monitoring (like surprise checks) and enforcement of accountability can help to stem the problems to some extend.

Process Improvement and Technology Selection.

The approach to SW management in India is focussed at resolving the problem by introducing technology solutions at the end stages of the SW chain, i.e. processing. Sometimes the decisions are taken under pressure, including political compulsion or international agencies that finance such projects. At source intervention that results in reduction, segregation and recycling of SW is not attempted, except for in isolated pockets. Experience does indicate that results of solutions without focus on at source management will be unsustainable and uneconomical. In that context, the contribution of the informal sector i.e. rag pickers cannot be ignored. Community involvement, education and co-ordination between waste generation points and collectors will improve the quality of SW management in Indian cities.

¹⁹ Media reports highlighted that, when Delhi Government went ahead with privatization of power transmission.), various parts of the city experienced power disruptions. Restoration work, according to newspaper reports took more time than what was taken by the state enterprise (Delhi Vidut Board). One reason cited for the above situation was that the erstwhile employees of DVB were deliberating sabotaging the power lines. More than any sort of ideological opposition to privatization, employees were reportedly unhappy about the loss of extra income from graft, hence restored to sabotage and delayed attending to complaints. But the reasons cited by government were the learning curve of private agencies and rampant power pilferage.

Different technologies are being used for SW treatment. The Municipal Waste Management and Handling Rules 2000 has specified standards for some of them. However, questions have been raised about the choice of technology versus the economics of operation. Though both, Waste-to-Energy and Waste-to-Fertilizer technologies are costly, local bodies favor them. As a result SW facilities are centralized at one location, requiring investments in transportation and collection point sanitation to prevent damage (in case of composting). Low cost alternatives like recycling or even localizing composting may be considered. Since an informal local market for waste (using it for land filling, composting, swine farming etc.) exists, local bodies can think of converting it to a commercial proposition where individuals can procure waste for a price. Community groups and NGO can participate in such initiatives that will reduce the quantity of waste that needs to be processed at high cost.

Case for a Regulator

In this case, the absence of a proper regulatory framework is a reason for the precipitation and non-resolution of issues. Proper regulation is necessary in such instances to ensure a level playing field and conflict resolution within a uniform framework. The void allows other agencies to interfere, since there is no clarity about jurisdictions. In such cases, issues get pushed to the government for resolution or are challenged in the courts. Currently, in the absence other structures, the PCB assumes the function of the regulator. Under the central rules, SPCB's have only a technical compliance role, i.e. to monitor and maintain standards and to license. Since the technology itself is new, PCB faces a situation where the specialized competence required to advise and set standards is missing. Monitoring committees controlled by district administration becomes ineffective, since its overburdened members may not be able to devote sufficient time.

In reality, the role of regulator is much more. The unclear situation allows multiple agencies to be involved in regulation, affecting the efficiency of the utility. Without clear accountability for results, these agencies transfer the ball from one to another without finding an amicable solution. An independent regulator with jurisdiction covering the entire state can be a better option.

Will Sops and Promises Work ?

It is quite customary for governments to offer concessions and soaps to attract private investment for infrastructure projects with high risk and low potential for return. Realization of the promises is necessary for the smooth functioning of the project, since the investor would have factored the promises into the business model. Often such promises fail does not materialise and the entire project suffers. As the case indicates, the group was forced to invest in the project by offering soaps that even amounted to bending the rules. Failure of the government to fulfill commitments has created difficult situations for the company, government and public. The investor also has to share part of the blame for resorting to hard bargaining tactics and attempting to leverage the vulnerability of the government to build monopoly positions. In this case, the extra role initiatives taken by the cooperation Mayor who wanted the project to be completed has invited criticism including allegations about possible rent. Failure of such incentive driven projects can have strong signaling effects on the state government's credibility and affect future investments.

The Drama Continues

The repeated pleas to the government, to ensure that the plant's output, as had been agreed, failed. The company refused to accept waste and notified the corporation its decision. (June 2002) That placed the corporation and GOK in a tight spot since it was impossible to find an alternate arrangement at short notice. With the intervention of Chief Minister (Shri. A K Antony) the matter was temporarily resolved. A high level committee of a minister and secretary, Local Administration Department was appointed to study the issue.

After a month, (August 19, 2002) the company again notified the corporation inability to accept any more waste for further processing. According to them, they were saddled with accumulated stock due to the refusal of government agencies to abide by the earlier assurance given. While the stalemate continued over the next fortnight, uncollected garbage continued to pile up in the city.