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Urban infrastructure procurement in low-income countries

M. Sohail and A. N. Baldwin

The high rate of urban growth in most low-income countries has resulted in ever-increasing demands for improvements in urban infrastructure. The scarce financial, technical and managerial resources in such countries require efficient and effective management if they are to be used to optimum effect. Equally, any enhancement in performance of the delivery mechanisms for urban infrastructure is to be welcomed. Community partnered procurement (CPP) has been used in South Asian countries (India, Pakistan and Sri Lanka), as well as in African countries, to increase the access of low-income communities to urban infrastructure, and has resulted in improved access and quality of urban infrastructure. The missing link in the monitoring and evaluation of projects is a review of the wider impacts of urban infrastructure procurement, or indeed of whether community procured infrastructure actually meets users' needs and expectations. Thus a knowledge gap has been identified in terms of 'how to' trace the wider effects of urban infrastructure procurement at the neighbourhood level. This paper proposes participatory impact assessment as a tool for development professionals interested in exploring the changes brought about by an infrastructure procurement project, in the broader social, political and economic context in which the project is implemented.

1. INTRODUCTION

The majority of the world's population live in urban areas, and the numbers are likely to increase. The World Bank estimates that the number of urban poor living below the international poverty line, in 2000, was 1500 million. These numbers are likely to grow. Accordingly, demands for urban infrastructure will also rise: at present at least 250 million urban residents have no ready access to safe piped water, and 400 million do not have adequate sanitation.¹ Invariably, those in income poverty are further constrained by their physical environment—roads, water supply, sanitation, lighting etc.—to which the access of the poor is typically inadequate or non-existent. Reliable and accessible infrastructure has obvious benefits for the urban poor in terms of time, energy, health and monetary savings. The 1994 World Bank Development Report² claims that

The adequacy of infrastructure helps determine one country's success and another's failure primarily because infrastructure services are central to the activities of households and economic production.

The procurement of infrastructure is a key activity in the provision of urban services. The challenge for urban managers is to develop an effective and efficient mechanism for procuring infrastructure and services in their conventional public sector settings, in the face of population growth and in situations where resources are scarce. Large and small contracts are used in the procurement of urban infrastructure. This study describes how to evaluate the impacts of small-scale contracts (contracts less than \$15000) used to procure infrastructure in partnership with communities at the neighbourhood level. The types of infrastructure typically procured by such projects include water, sanitation, access/pavements, solid waste and small community buildings.

The benefits of infrastructure have traditionally been determined primarily through its utility, and within development contexts infrastructure is seen as the key to economic growth and poverty alleviation, and to improving physical quality of life indicators in terms of health, comfort and convenience. However, the World Bank recognises that these benefits are dependent on the provision of services that 'respond to effective demand and do so efficiently'.² Many urban service projects promote community participation in the planning, implementation and management of these services. It is widely recognised that, within the development context, effective social relations result in successful infrastructure performance. Technology alone is no longer capable of producing the results demanded by participatory development. Accordingly, traditional engineering practice is being modified to ensure that it is demand driven and that user participation in the design and implementation of infrastructure is fostered.

Reid³ states that the origins of the modern use of the words 'sustainable' and 'sustainability' can be traced back to the 1980 World Conservation Strategy published by the World Conservation Union (IUCN). OECD defines *sustainable* as 'capable of being maintained at a certain rate or level', and *development* as 'the economic advancement of a region or people', especially one that is underdeveloped. This extends the widely cited World Commission on the Environment and Development definition⁴

Sustainable development is development which meets the needs of the present without compromising the ability of future generations to meet their own needs.

In this context, sustainability is important in that the changes that take place not only meet the technical specification but also engender ongoing positive change within the community.

The concept of sustainable development in the context of urban infrastructure becomes pertinent in the context of imbalances of supply and demand. Parkin^{5,6} discussed the issues related to sustainable development, and came up with the notion of *capacity for continuance*. The implication of this concept in the context of this research is that the urban infrastructure along with its wider social development impacts is a key contributor to that capacity. This reappraisal of the practices of professionals in a development context has led to a search for more appropriate indicators for the success of projects. In place of a concern with the quantity of infrastructure as an end in itself, infrastructure is increasingly seen as a means to other ends such as social development.

The literature related to community infrastructure procurement^{7–13} has been concerned with the inability of national and city governments to satisfy demands for infrastructure and services, and with the promotion of community partnered procurement as an adequate alternative. There is an implicit assumption that community infrastructure procurement will necessarily lead to successful outcomes, will meet a community's perceived needs, and will match their expectations. This paper presents the diverse perspectives and opinions of the stakeholders, with respect to the wider impacts, in the process of community infrastructure procurement with regard to the 'success' in meeting basic needs.

The key questions addressed in this paper are how to trace and support the wider impacts of urban infrastructure procurement at neighbourhood level, and how to ascertain whether community procured infrastructure actually meets users' needs and expectations. The paper addresses the major knowledge gap of how to trace the wider effects of urban infrastructure procurement at the neighbourhood level. The study builds on a typical procurement process used internationally and in the public works departments in the case locations. The details can be found in References 14 and 15. In the cases described, the services were procured through partnerships between communities and formal and informal small-scale enterprises. For such projects participatory impact assessment indicators were developed and tested using participatory research methodologies including semi-structured interviews with key informants and focus group discussions. Some consideration has been given to community partnered procurement, and to the knowledge gap identified here by Sohail and Baldwin.¹⁶ Work on community partnered procurement in the context of Sri Lanka has also been reported by Pathirana and Sheng.¹⁷ There is also a substantial body of work addressing the issues of community participation and empowerment in a development context, which identifies barriers to increased community participation and suggests ideas and techniques related to participatory appraisals in order to tackle these concerns. However, there is a lack of guidance on how to include such tools along with the conventional objectives of procurement in an engineering context.

2. A CASE STUDY ON THE WIDER IMPACTS OF INFRASTRUCTURE PROCUREMENT

The key question that we have addressed is how to monitor the performance of contracts in relation to the wider impact of infrastructure procurement. The work has centred on the exploration of relationships (contracts), and roles and responsibilities in the context of urban service projects. A series of case studies from 1999 to 2002 included utility- and community-managed urban infrastructure projects in Colombo (Sri Lanka), Faisalabad and Karachi (Pakistan), and integrated urban services for poor communities in Cuttack (India). The case studies reviewed urban projects through to completion in order to investigate procurement of infrastructure and operation and maintenance (O&M) performance, relationships and contracts between stakeholders, roles and responsibilities, and consumer satisfaction. Most of the project studies lasted for more than two years. They enabled the research team to learn more about the wider impact of infrastructure procurement, assess the capacity of local actors to manage the processes of performance monitoring, and share experience of performance monitoring between local stakeholders.

The study included the projects procured under a donor-funded upgrading programme as well as non-government and community-based projects in Faisalabad city. Faisalabad has some of urban Pakistan's worst living conditions, with two-thirds of the population living in largely unserved areas. Half the population has no piped water, and less than a third have access to sewerage. Extensive rural to urban migration means that most people living in the city still possess the ethos and norms common to rural areas. The provision of low-cost housing has not kept pace with demand, with about one third of the city population living in slums and *katchi abadis*. The service provider agencies have failed to deliver services to these settlements in the light of rapid development between 1947 and 1998, in which Faisalabad's population increased by 19 million.

The Katchi Abadi Improvement and Regularisation Programme was established in 1978. The programme consists of providing a 99-year lease to individual house owners, and of providing developments—that is, water, sewerage, gas, electricity and road paving. The agencies involved in development in Faisalabad are the Faisalabad Development Authority (FDA), the Faisalabad Municipal Corporation (FMC), the Water and Sewerage Authority (WASA), and the Cantonment Board. WASA has a master plan but, owing to financial constraints and political pressure, work is done on an emergency and ad hoc basis. There is no coordination between WASA activities and the MNA/MPOA and Councillor Projects.

The case study that led to the development of the participatory impact assessment tools reported in this paper was in turn part of a larger research programme that reviewed over 800 micro-contracts in South Asia in the case locations.^{15,18,19} The research programme comprised two stages. The first stage collected information on the procurement of infrastructure through a review of literature, documents and project files, interviews and focus group discussions. The second stage developed indicators to explore the performance of both conventional tender contracts and community partnered contracts. The case study presented in this paper reveals that infrastructure procurement can lead to other, unexpected

benefits, which are revealed only by eliciting the views of the poor.

Typical general criteria for assessing the impact of infrastructure procurement are listed below. These provide a good initial checklist for participatory impact assessment, and make possible an initial assessment of the inter-organisational cooperation and partnerships formed as a result of the project, as well as providing an insight into a number of socioeconomic views. However, they reflect only the views and priorities of those who contribute—the officials, non-governmental organisations (NGOs) or other project operatives—rather than those of the end user.

- (a) *Roles and responsibilities.* Identify the various roles played by different stakeholders (for example promoter, engineer or contractor) at different stages in the project process (identification, formulation, planning and design, implementation and post-implementation).
- (b) *Identification of stakeholders.* Consider the different aspects of the community—age, gender, mobility etc.—being alert to the involvement of women at different stages of the process, and to the possible exclusion of groups such as poorer households, ethnic or religious minorities, tenants (as opposed to the property owners). Try to elicit whether all groups benefit from the output.
- (c) *Sustainability.* Is there evidence of sustainability: for example willingness of all parties to enter into these kinds of partnerships again, and ongoing community organisation around other needs or issues?
- (d) *Information sharing.* Is there evidence of information sharing and learning on all sides?
- (e) *Conflicts.* Were there disputes, and how were they resolved, by whom, and through what mechanisms?
- (f) *Financing.* What was the process of approving and agreeing financing; if the community financed the works, and was it affordable to all community members?
- (g) *Enterprise development.* Did enterprise development or opportunities for income earning result from the activities?
- (h) *Distribution of work.* Who actually did the work? Did the community hire contractors themselves? Did they supervise them and assess people for quality control? Did communities engage in labour themselves and, if so, which members of the community? Did any of the community representatives or community-based organisations (CBO) members engage in works themselves and, if so, in which aspects of the works?

To investigate the views and perceptions of the community a more detailed participatory impact assessment (PIA) at the neighbourhood level or end-user level is needed. The following case study describes the outcome of such an assessment in Faisalabad, and aims to demonstrate the relevance and workability of the participatory impact assessment tool and methodology presented above.

To produce the criteria, focus group discussions were conducted in 20 localities in Faisalabad. These discussions were organised with the help of community organisations and involved both the community leaders and end users, with representation from both women and men. Discussions were conducted and recorded in the local language. No attempt was made to rank

different kinds of impact in order of importance for particular groups or stakeholders (although the methodology would allow for this if it was deemed important, for example in cases where there are competing groups within a neighbourhood or if women and men in a particular community voice starkly different priorities).

These impacts and concerns have been organised into five key themes: physical impacts; economic and financial impacts; social and cultural impacts; community organisational impacts; and political impacts.

Various issues were identified within each main theme. These are listed below. Although these issues are specific to the Faisalabad case study under consideration, they also provide a reasonable starting point for more general use. The benefits within each of these themes are then described in more detail.

- (a) *Physical impacts*
 - Has the facility (urban infrastructure) improved access?
 - Has the facility improved the sanitary conditions inside and outside the house?
 - Has the facility contributed towards making the building's structure more stable?
 - Has the facility contributed towards improving the houses both inside and outside?
- (b) *Economic and financial impacts*
 - Has the facility resulted in increased rental value? Please give examples.
 - Has the facility resulted in increased land and property values? Describe with percentage increase etc.
 - Has the facility resulted in more and frequent sale and purchase of properties? (This means that people outside the area are more interested to come to it, and local people are getting better value for their land or properties.)
 - Has the facility provided new opportunities for business? Give details.
 - Has the facility provided more earning opportunities for outside hawkers?
 - Has the facility resulted in less expenditure on health treatment?
 - Has the facility resulted in less expenditure on wear and tear of services?
- (c) *Social and cultural impacts*
 - Has the facility resulted in positive changes in attitude of the people?
 - Has the facility provided more leisure opportunities?
 - Are people more satisfied after implementation of this facility?
 - Has the facility contributed towards improved community relationships and a decrease in conflicts among community members?
 - Has the facility enhanced the self-reliance of the people?
 - Has the facility improved the social status of the people?
 - Do people feel a sense of ownership for the facility?
 - Is the facility providing a chance for gender equality?
- (d) *Community organisational impacts*
 - Has the facility facilitated the formation and capacity building of the CBO?
 - Has the facility contributed and made the community more empowered than before?

Are the projects implemented through the community more sustainable?

Has the project led to community groups carrying out additional work?

Are people more willing to pay, now, for the services to the line departments?

Are people more convinced about the participatory approach of the project?

Are people more willing to pay for projects on a participatory basis?

Has the project provided an opportunity to the CBO/people to develop linkages with the line departments?

Are people, after implementing this project, taking local initiatives?

(e) *Political impacts*

Has the project made people more aware politically?

Has the project brought any change in local politicians?

Has the process for implementation of the project brought any shift in traditional leadership?

2.1. Physical impacts

The perceived problems prior to the infrastructure project studied in Faisalabad were muddy and often impassable roads, and dirty and stagnant water due to poor drainage (see Figs 1 and 2). The main perceived impacts of the project were as follows.

Fig. 1. Lack of maintenance resulting in blocked sewers

Fig. 2. A playing field flooded by sewage

Physical access to the neighbourhood had improved. Taxi and rickshaw drivers now entered the area without fear of damage to their vehicles. Better access was of particular importance to women and school-going children, who prior to the works were virtually housebound or risked getting filthy and wet during the rainy season if they left the area on foot. Improved sanitation and hygiene conditions were greatly appreciated. An important finding was that improved infrastructure outside the household improved not only the neighbourhood environment but also that of the home in terms of improved cleanliness (see Figs 3 and 4).

Paving of streets has given people greater pride in their neighbourhood and homes. Paved streets reduce the accumulation of dirt inside the house, which in turn has meant less housework for women and girls. Sewerage and stormwater drainage have improved the stability and safety of buildings by preventing overflows, which cause damage to the foundations of houses.

Fig. 3. A typical low-cost settlement with community-managed drains

Fig. 4. Access roads for the settlement

The removal of garbage heaps has reduced mosquito breeding and therefore malaria. A reduction in other seasonal diseases was also noted, such as boils, coughs, scabies, rashes, diarrhoea, influenza, allergies related to dust, dirty water and unhygienic conditions. The establishment of a grassed park in the centre of one neighbourhood was welcomed because of the better drainage provided and the fact that it prevented people from grazing buffalo there, which in turn has led to improved sanitation.

A key physical impact was that a clean environment led to a greater sense of pride both in the neighbourhood and inside households. There was a gender difference in this sense of pride, in that women emphasised their newfound ability to keep their homes neat and clean, whereas men emphasised their greater preparedness to invest in their properties through maintenance, extensions and improvements.

2.2. Economic and financial impacts

The main perceived problem prior to the project was the dirty environment, which evidenced deterioration and decay. People felt demoralised, and aimed to move from the area as soon as they were financially able. The main perceived economic and financial impacts of the project were as follows.

Infrastructure improvements have led to increased property values in the project area. There are now fewer sales of housing and land, as people no longer want to move out of the areas. Women were particularly pleased that they did not have to move, possibly because of the importance of neighbourhood social and support networks to women who are more house-bound and tied to the localities.

However, the success of the infrastructure procurement also had unintended negative consequences: advantages for property owners often meant problems for tenants. Rising rents now precluded poorer tenants from moving into these areas or remaining in them. Similarly, some small entrepreneurs had been forced to move out of the area owing to higher rentals: this led to the emergence of different types of trade. Better access to the neighbourhood meant an increase in itinerant hawkers selling wares and services door to door. This was of particular value to women in a society where purdah or seclusion is strictly observed. However, the establishment of parks meant that women could use outside space more easily and acceptably, and this in turn had led to improved business for the shopkeepers from whom they make purchases.

2.3. Social and cultural impacts

The perceived problems prior to the project included the following: people were habitually quarrelling with each other; people were facing serious problems due to the poor conditions of their houses and neighbourhoods; and people did not sit together. The main perceived impacts of the project were as follows.

The improvement in infrastructure had led to changing attitudes and better social interaction. Relationships were strengthened as community members sought to coordinate the development and maintenance of infrastructure in their areas. For all groups the development of a park helped to break down social barriers, and provided increased opportunities for leisure

activities, particularly for women. Children had a place to play, and it was noted that young men no longer hung around on street corners as they now had somewhere to go. There was a great sense of pride, in that women from other areas came to walk in their park, and social esteem resulted from the ability to hold family ceremonies and celebrations in the park. Such celebrations were not restricted to the closed confines of individual homes.

The self-help initiatives and the involvement of communities in the planning and implementation of facilities has led to a great deal of pride and confidence, to the development of a 'can do' attitude, and to satisfaction with standards and levels of service. Significantly there was no comment from the women on these issues as, owing to socio-cultural norms, they were largely excluded from these processes. Nevertheless, women appeared to be supportive, albeit passively, and were enthusiastic about the benefits provided by the facilities, particularly in relation to improved sanitation, living environments and neighbourhood-level facilities. Improved social status was recognised by everyone in the neighbourhood. This was directly linked in people's minds to area-based improvements.

2.4. Community organisational impacts

The perceived problems prior to the project were as follows: people were initially reluctant to get involved because they lacked both confidence and trust; and women were neither welcome nor interested in getting involved owing to cultural factors.

The main perceived impacts of the project for the men were that involvement in procurement provided a focus for community-based activities and interactions, and feelings of empowerment resulting from successful and united action in relation to dealings with line departments in local government. Previously, people in the same neighbourhood were not known to each other, and the focus provided by infrastructure procurement projects provided them with an opportunity to get together in common cause. This in turn built the organisational capacity of both formal organisational structures and informal CBOs. Women felt that they played an influencing role. They also gained socially from increased interaction with other women and from reduced isolation in the home.

The relationship between community-level involvement and sustainability was seen as important, particularly in relation to quality control of the facilities. The fact that everyone was involved in monitoring quality at all stages meant that people contributed readily and were more willing to take care of the facilities once installed.

A *demonstration effect* was evident as word about the procurement initiative spread. This put pressure on contractors and government officials. Women from neighbouring communities said that they were going to put pressure on their menfolk to initiate something similar in their area. Although people were more willing to pay for services that had been clearly identified both in terms of quantity and quality, there was still a reluctance to pay for services from line departments. Some people argued that, as they had spent their own money in construction, the line department should not claim any further charges. Others were willing to pay for services provided the

agency concerned improved maintenance and customer satisfaction. Bills from one particular agency were not paid because the agency did not fulfil its side of the maintenance bargain. In this sense the community saw itself as empowered, although it was acknowledged that there was considerable dependence on the activism and energy of the community leadership. Although not all members of the community were totally convinced of the value of participatory approaches, an enthusiasm for working together collectively developed. However, this did not stop people from 'looking towards government for development'.

2.5. Political impacts

The perceived impacts of the project were as follows. People were more politically aware and thought more carefully about how they cast their votes. One group of women said they used to follow their menfolk when casting votes, but they now listened to the recommendations of a social worker in the area. As a result they 'kicked out' an ineffective traditional leader and elected a new leader. There was a sense, conveyed more generally, that people in communities are more closely linked with local activists and have reduced their dependence on traditional community leaders, who were perceived as usually looking after their own personal interests.

Although there is a long tradition of trading votes for resources, people were now asking for *firm commitments* from politicians. Another impact was to reduce the community's dependence on politicians as conduits to public officials, as communities began liaising with line departments directly. Both at local and at community level, a new breed of political activist has emerged—activists who are organising activities around local issues. It is difficult to establish a causal link between this phenomenon and community involvement in infrastructure procurement. However, there may well be a synergistic relationship at work. Clearly, people are willing to become active and involved around issues that will improve their environments and life chances. This in turn has led to enhanced political accountability, and it is no wonder that local politicians are feeling threatened by community-level initiatives. The challenge for development, which is by no means politically neutral, is to find ways in which the benefits can be extended to the poor.

3. CONCLUSIONS

This paper describes the results of a participatory impact assessment in Faisalabad, Pakistan, and generates new insights into the process of community partnered procurement of infrastructure. It shows the importance of the wider impacts, contributors to sustainability, that result from the involvement of community members in the procurement process, and proposes a design for a participatory impact assessment.

The demands for adequate infrastructure and services in developing countries are increasing. This situation is especially pressing for the urban poor, as those in income poverty also typically live in overcrowded, unsanitary conditions with limited access to basic services. These problems were evidenced by those living in the case study location, Faisalabad, who list environmental health (water supply, sewerage systems etc.), housing rights and public services as of great concern to them. The relatively novel procurement process, in which urban

services are procured through partnerships between the community and formal/informal small-scale enterprises, offers new opportunities for the successful introduction of sustainable infrastructure. Successful implementation is reliant upon the successful procurement of services. The participatory impact assessment framework developed will provide guidance to engineers, project planners or NGOs concerned with the wider impacts of infrastructure provision, in their attempts to integrate participatory tools alongside the more conventional objectives of procurement in an engineering context. One of the main contributions of this study was to propose a method of tracing the wider impacts of infrastructure, which are the key contributors to sustainability.

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