

Case studies

1.1 Introduction

These case studies have been collected as part of a project to bring issues of social exclusion in the practical development of infrastructure in low-income countries into the core of project planning and design. They have been used to influence and illustrate the guidelines that have been produced as part of the research.

The case studies are being set out here to provide a resource for engineers and the trainers of engineers. They can either be used as a supplement to the training notes produced under the project or used separately to provide illustrations of the overlap between gender issues and the development of infrastructure.

One of the problems in collating the case studies has been the lack of *engineering* issues. There are many case studies of the importance in considering the needs of men and women in the development of infrastructure, but these have come from gender studies rather than mainstream civil engineering. This leads to the impression that gender issues lie outside of the core of project development and design, forming a specialist area requiring specific expertise. In contrast, many engineering examples do not bring out social issues explicitly, so there is a gap between “gender” knowledge and “engineering” knowledge that these case studies and associated books and booklets aim to bridge.

1.2 The studies

The case studies have been kept short, to make them accessible and useful as part of larger initiatives. They have been edited slightly to bring out the engineering issues, rather than other aspects, such as politics or rights based actions. A comment is provided to expand on some the lessons that can be drawn from the case study.

The studies are grouped according to sectors:

- water resources;
- water supply
- sanitation
- solid waste
- transport
- irrigation
- construction
- management and organization
- emergencies
- hygiene activities

Within each section, the case studies are grouped according to the project cycle (planning, feasibility, design, construction, operation and maintenance, evaluation).

1.3 Other project outputs

- For a short introduction on infrastructure and its impact on people, see *Building with the Community* (WEDC 2002)
- For guidelines on how on engineers can include gender issues in their work see *Infrastructure for All* (WEDC 2002).
- To train engineers and technicians to meet the needs of men and women see *Developing Engineers and Technicians* (WEDC 2002)
- Website: <http://www.lboro.ac.uk/wedc/projects/msgender/index.htm>

1.4 Referencing

The case studies have been provided by a wide ranging group of people over several years. Some are personal observations or have been extracted from published or unpublished reports. Attempts have been made to identify the originator of these extracts, but this has not always been possible. If you know the original source of a case study, please contact Brian Reed (details below), in order that credit can be given.

1.5 New Case studies

If you have examples of engineering issues that have a gender or social exclusion aspects, that you think would be useful additions to these case studies, please contact Brian Reed (details below).

1.6 Acknowledgements

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The project was advised by an international review group, consisting of:

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CONSTRUCTION

Case study 1 Working hours	2
Case study 2 Pregnant and elderly workers	3
Case study 3 Food for work	4
Case study 4 Tool selection and working methods.....	5
Case study 5 Tool storage and power relationships	7
Case study 6 Task rates for labour based construction.....	8
Case study 7 Vulnerability and violence.....	9
Case study 8 Vulnerability and violence.....	10
Case study 9 Hiring workers	12
Case study 10 Traditional building roles	13
Case study 11 Project supplementary activities.....	14
Case study 12 Interviewing techniques	15

Case study 1
Working hours

1.1 Background

Project Urban Self Help (PUSH) is a World Food Programme/ Government of Zambia food for work shanty town infrastructure upgrading project in the townships of Lusaka.

1.2 Action

The project hours were restricted to four hours a day to reduce the burdens on the women workforce, allowing them time to undertake tasks expected of them due to their gender and cultural roles.

1.3 Comment

Project design must take into account the other work undertaken by groups. Much of women's work is 'invisible' and often ignored.

Sarah House

Case study 2

Pregnant and elderly workers

2.1 Background

Project Urban Self Help (PUSH) is a World Food Programme/ Government of Zambia food for work shanty town infrastructure upgrading project in the townships of Lusaka.

2.2 Action

- Pregnant women were allowed only a few days off with food ration after the birth of their child before the ration was stopped. Hence they had to return to work if they wanted to receive it.
- Pregnant and elderly women and men were given lighter work wherever possible. Where there were men on the sites and there was heavy work such as mixing concrete or moving concrete pipes the men were usually allocated these jobs by the mainly male supervisory staff. The Zambian (mainly male) supervisors had their own boundaries as to what is physically acceptable for women to do. They also generally showed a lot of respect to the women workers and in many ways were gender aware.

2.3 Comment

- To expect the woman to come back to work too soon after the birth of the child could affect the health of the woman and the child. Medical and cultural advice should be sought as to acceptable time periods for absence. Additional food payments could have been written into the project documents to cover these periods.
- Project activities can be modified to suit the physical condition of the workforce members.

Sarah House

Case study 3

Food for work

3.1 Background

Project Urban Self Help (PUSH) is a World Food Programme/ Government of Zambia food for work shanty town infrastructure upgrading project in the townships of Lusaka.

3.2 Action

Food for work was included in the project design to bring additional food into the townships, with the overall objective of reducing the rising malnutrition levels of the children. The rising malnutrition levels were attributed to the effects of structural adjustment. Food was offered instead of money as it was felt that the food was more likely to get to the children than money which could be used for other activities such as drinking (a common activity in the townships). Due to the payment for work being food, the project recipients were almost all women. Men generally did not see food for work as acceptable for them, even though there was a high level of unemployment in the shanty towns. The World Food Programme hence set the working hours as four per day to try and reduce the burden on the women and allow them time to undertake their other tasks.

The project was very popular especially with women. During some periods the workforce had to work on a week on, a week off, basis to allow all those who wished to participate to do so.

The food for work method of payment was more attractive to women than men. The high level of interest in participating on the project by women indicated that in this particular situation the four hours was felt reasonable. The women did however continually ask for soap as the project work was very dirty. It was not provided. They appeared to like the food for work payment as the food was their wage and they could use it to feed the family. The price / wage continued to increase with inflation and they were reduced from the burden of going into the centre of town to buy mealie meal, which was very expensive to transport back to the shanty towns. However, it could be argued that by providing food rather than money an added burden was given to the women.

3.3 Comment

- Project design can influence the gender balance of the participants.
- Care must be taken to ensure that it is targeted effectively to reach those in need without giving additional burdens.
- Opinions of the target group should be listened to seriously.

Sarah House

Case study 4

Tool selection and working methods

4.1 Background

Project Urban Self Help is a World Food Programme/ Government of Zambia food for work/ infrastructure upgrading project in the shanty towns of Lusaka. Certain items of equipment were selected with the gender balance of the workforce in mind.

- Headpans were generally preferred by women for hauling material as they carry loads on their heads and it is better for the back. Some wheelbarrows were provided, which were preferred by the men. These were limited in number versus the headpans. The headpans were strong and had strengthened edges to stop the workers' hands from being cut.
- The mattock (pick one end and flattened, but solid, hoe shape at the other end) was chosen over the spade for shaping of the ditch slopes. The mattock is used more like the agricultural hoe from an upright position and does not involve so much bending as the shovel.
- The 'platforming method' of road construction was used instead of the 'profile method'. The method needed to be easily understood and performed for the following reasons:
 - there was only limited supervision for large numbers of workforce;
 - the majority of the workforce were 'unskilled' in construction; and
 - most of the workers were poor women who had been denied schooling. They learnt quickly, but the mathematics needed to set up profiles was unnecessary complex.
- For similar reasons simple measurement tools such as ditching sticks and ditch profile boards were used.

4.2 Results

- The headpans were very much appreciated and were used by the workforce. Until they wore out.
- The mattocks were used but not to the extent expected as workers found that the spade gave a smoother finish to the ditch slopes, even though more bending was needed.
- The platforming method was well received, understood and implemented.
- Ditching sticks were preferred to ditch profile boards as they were much lighter and less cumbersome to carry to the worksite.

4.3 Comment

CONSTRUCTION – CONSTRUCTION (AND TESTING)

Equipment and methods should be chosen to meet the gender and training level of the workforce.

Sarah House

Case study 5
Tool storage and power
relationships

5.1 Background

Project Urban Self Help (PUSH) is a World Food Programme/ Government of Zambia food for work shanty town infrastructure upgrading project in the townships of Lusaka.

5.2 Action

There were large numbers of handtools on each site. In the early stages of the project tools were taken home by the workforce to be looked after as there were no central storerooms. Many tools went missing and were never returned. This was a difficult additional burden for the women workers especially as neighbours would come and ask for the tools and then not return them. The women who were made responsible for the tools were usually on the lowest ranks of the social scale and had no power to refuse the loan of the tools or to retrieve them when required. Later, central storerooms were provided for the project. This of course added other managerial and security complications but it did take the additional burden from the women.

5.3 Comment

Unnecessary burdens can be placed upon both men and women by inadequate thought in planning and management.

Sarah House

Case study 6

Task rates for labour based construction

6.1 Background

A project run as part of Raleigh International's Malaysian expedition to Sabah, E. Malaysia aimed to build a 30m long suspension footbridge in tropical rainforest, for use by a scientific research establishment and an ecotourism lodge.

6.2 Action

The project used a group of young international volunteers and local labours to construct, by hand, a steel cable and timber suspension bridge. The tasks involved a large amount of physical labour including:

- Carrying delivered materials 700m from the road head;
- Excavating sand and gravel from the river bed;
- Excavating foundations; and
- Mixing and shovelling concrete.

The female members of the group recognised that they did not have the same physical strength as the male members which made undertaking some the tasks described above difficult. However they did not resort to only undertaking the less physically demanding tasks e.g. painting and creosoting but often worked in pairs to undertake all tasks. The male members of the group generally undertook tasks on an individual basis.

The work rate of the female members of the group was comparable to that of the male members. Although the women's work rate initially appeared to be less than the men's, over a longer period the women working in pairs achieved an average work rate approximately double that of the male members individual effort. The women generally worked at a slower pace and therefore required infrequent rest breaks. The women acknowledged and accepted their obvious physical weakness but by addressing each problem they encountered in a logical manner they were able, working together, to overcome their physical weakness.

6.3 Comment

- Task rates can be adapted to suit strengths and weaknesses without a reduction in productivity.
- Task rates can be set for groups rather than individuals to balance participants strengths and weaknesses.

Case study 7

Vulnerability and violence

7.1 Background

Project Urban Self Help (PUSH) is a World Food Programme/ Government of Zambia food for work shanty town infrastructure upgrading project in the townships of Lusaka.

7.2 Action

Due to the large numbers of workforce and low numbers of technical staff on the project a pyramidal structure of supervision was formed consisting of the general worker to the gang leader (for 15-20 workers) to the senior gang leader (5 to 10 gangs) to the assistant technicians and site technician (200-400 workers) to the implementation engineer (3 townships with between 200 - 400 workers on each). On each township site there was also a council community development officer and NGO community development workers or supervisors. Most of the technicians, community development officers and supervisors were male. Most of the workers, gang leaders and senior gang leaders were women. There were a mixture of male and female engineers. Several incidents occurred relating to the different levels of the workforce which related to gender:

On one occasion a female member of the workforce had not been turning up for work. The other women informed the project staff that she had returned home late from work one day and that her husband was very angry that she had not got his food ready and beat her very badly. She was not allowed back to the project.

7.3 Comment

- That women members of the workforce have certain vulnerabilities which men do not have.
- Repression of women or men should not be excused away through culture or rich or poor issues.
- From a background of privilege, opportunity and safety it is easy to excuse gender issues as not being important.

It takes a lot of courage to stand up for your (human) rights when you are vulnerable for security or similar reasons.

Sarah House

Case study 8

Vulnerability and violence

8.1 Background

Project Urban Self Help (PUSH) is a World Food Programme/ Government of Zambia food for work shanty town infrastructure upgrading project in the townships of Lusaka. Due to the large numbers of workforce and low numbers of technical staff on the project a pyramidal structure of supervision was formed consisting of the general worker to the gang leader (for 15-20 workers) to the senior gang leader (5 to 10 gangs) to the assistant technicians and site technician (200-400 workers) to the implementation engineer (3 townships with between 200 - 400 workers on each). On each township site there was also a council community development officer and NGO community development workers or supervisors. Most of the technicians, community development officers and supervisors were male. Most of the workers, gang leaders and senior gang leaders were women. There were a mixture of male and female engineers. Several incidents occurred relating to the different levels of the workforce which related to gender:

8.2 Action

Several members of the workforce were promoted to the level of assistant technician (and later a couple of these to the position of technician). Out of six sites two women and one man were given the posts of assistant technician. All three had shown a very good technical understanding, enthusiasm for their work, supervisory capabilities, they were reliable and had a good relationship with the workforce. None had previous technical training.

One of the woman who had been given the post was selected over two men who were also considered. She was considered the most suitable candidate due to her abilities, reliability and enthusiasm for the work. This woman is a widow with six children. The particular site on which this assistant technician worked also had a small contingent of men working, The female assistant technician had to put up with some very unpleasant occurrences. She had to put up with slander such as 'she only got the job because she is sleeping with the technician' and even worse, with physical violence. On one occasion she was attacked by one of the men who had not been selected for the position of assistant technician. He locked her in a room in a community centre and then proceeded to beat her up including violently 'kicking and punching her head'. She could very well have died had a female community development officer not broken down the locked door and prevented the man from continuing the attack.

The engineer in charge of this site was very shocked by this course of events and wondered if she should have, basically, discriminated against the female assistant technician and not given her the job, because by doing so she was interfering across cultures and traditional roles. The assistant technician was questioned about this and her reply was as follows: 'How can you ask me that, especially you ! That man was wrong in what he did. I got this job on the basis of my

skills. Why should I not have the chance to bring up my children. I am a widow. What would my children have done without me'.

8.3 Comment

- That women members of the workforce have certain vulnerabilities which men do not have.
- Repression of women or men should not be excused away through culture or rich or poor issues.
- From a background of privilege, opportunity and safety it is easy to excuse gender issues as not being important.
- It takes a lot of courage to stand up for your (human) rights when you are vulnerable for security or similar reasons.

Sarah House

Case study 9

Hiring workers

9.1 Background

In a food for work programme in Tanzania, project managers hired fewer women than men, at a lower rate, and for female tasks. In practice the women did all the work at the site, irrespective of its arduousness, and they were keen to be trained in maintenance.

9.2 Comment

- Many of the roles perceived to be suitable for men or women may not be followed in practice. All staff may prejudge the situation, so ask what jobs men and women are willing to do before assigned tasks according to “traditional” practice.
- In a food for work programme, the family of each worker will need to eat, whether the main worker is male or female. The pay for equal work should be equal.
- A food for work programme has two aims; to carry out the work and to distribute food. All groups in society should have equal access to the food, so only employing men (or women) will exclude people from the scheme.
- Preconceptions over the ability of different groups of people to work may not be borne out in practice.

Tomoda et al 1987

Case study 10

Traditional building roles

10.1 Background

A civil engineer was shocked to see women in south-west Uganda taking part in building work as he thought it was not suitable. He was from the north of Uganda, where building was a job for the men. However, women in the cattle rearing areas of west and east Uganda traditionally built houses, as the men were away tending the herds. In one area, in the east, men would build the house, but women would build the roof.

10.2 Comments

- Women may traditionally carry out construction work in some areas.
- Cultural practices can vary within a country.

P. Nyeko and J. Eyatu, Department for Water Development, Uganda

Case study 11

Project supplementary activities

11.1 Background

Project Urban Self Help (PUSH) is a World Food Programme/ Government of Zambia food for work shanty town infrastructure upgrading project in the townships of Lusaka.

11.2 Action

Some of the NGOs used the opportunity of large groups of women coming together to arrange other activities to support them. Some examples are as follows:

- In Kanyama, CARE Canada provided child care facilities with activities for the children provided by members of the workforce acting as child carers.
- In Chaisa, PACT Services (a local NGO) developed several activities:
 - 'CATCH' consisted of schools held in the open spaces of the township for children of the workforce who did not have the chance to go to school. The service also extended to other children. In the first enrolment they had 1000 children and had to restrict numbers further. CATCH provided training for the mothers who taught the children for free and materials with funding from UNICEF.
 - A women's group was started in which women undertook activities such as soap making and sewing. They also learnt things such as new types of fuel efficient stoves.
 - Education was provided for children who otherwise would not have had the opportunity to go to school. Women had the chance to learn new income generating activities and seemed to enjoy the chance to undertake the activities in groups.

11.3 Comment

Large projects that bring women or men together can be used to arrange other activities which may be a priority for them such as education for their children. However, projects which have too strict boundaries and limit this kind of innovation from the programme participants can limit potential benefits.

Sarah House

Case study 12

Interviewing techniques

12.1 Background

A spring was being protected as part of a rural development programme. A local woman who was tending crops near to the spring was asked what she thought of the work going on, through the male head of a local NGO who was translating. The woman was, by her gestures, obviously not happy with the situation but the translation given was that she was very happy.

12.2 Comment

Interviewing should where possible, be carried out by persons of the same gender and social group as the interviewee.

Observation and Lila Pieters