

#17 ACTION LEARNING IN THE INFORMAL SECTOR STUDY

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Abstract

The 2006-2007 study, *Economic Aspects of the Informal Sector in Solid Waste*, financed by GTZ and co-financed by the CWG, was executed as a process of joint learning. This way of working is action learning with a very high commitment to capacity development.

The paper describes capacity development aspects of the methodology and the project activities. Selection, research, and analytic phases had multiple types of capacity strengthening: backstopping of research partners by the project team, testing of approaches and feedback, re-inventing and experimenting with field data-gathering techniques, using materials balance and process flow as the basis for modelling and analysis, peer review and peer coaching, and, instead of missions to the field, facilitating meetings of local researchers at the WASTE offices. On another level, the project was designed to raise local capacities to *see* and understand the informal sector, which was done by intensive consultation with formal authorities in five of the six cities.

1. Introduction

The Informal Sector Study was based on ambitious terms of reference. They envisioned a consultant travelling to three cities, researching the informal solid waste sector, and writing a report.

WASTE and Skat, the proposers, chose a different approach, based on WASTE's history of using action research in the field with multi-city, partner-based comparative action research in the period since 1995, the main projects being listed below.

- ◆ For the UWEP 1 programme (1995-2001), WASTE organised a multi-country initiative in Latin America that resulted in the publication of the book *Micro and Small Enterprises and Co-operatives, Experiences in Latin America*.
- ◆ A highly experimental aspect of the UWEP Plus programme (2002-2004) was a four-city investigation of the relationship between broadly conceived solid waste activities – including activities of the informal sector – and the cycling of the macro-nutrients carbon and nitrogen.
- ◆ In 2003-2004, the International Labour Organisation (ILO) asked WASTE to organise and produce a comparative thematic assessment of the potential for eradication of child labour in waste picking.

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The experiences gained in these multi-site studies contributed to the formulation of the study methodology and project approach for this present study. This paper focuses on the types of capacity strengthening that occurred during the research process.

Firstly, the methodological concept was capacity-based. This means that the methodology was worked out by the team and that it depended on each team member being willing to stretch their own and their team's capacities to accomplish the project's goals.

Secondly, the project activities built the social and institutional capacities of the team, and to strengthen the partners' relationships with local authorities and the informal sector. Scenario modelling activities were designed to support new levels of creativity, co-operation, and critical thinking among partners, and with the authorities in their cities. Modelling also stimulated the project team to globalise their solid waste and recycling activities, that is, specifically to engage with global processes like carbon financing, and understand their relationship to local solid waste and recycling systems.

2. Capacity strengthening: the core of the methodological concept

2.1 Capacity-based methodology

For a number of reasons, the informal sector cannot usually be studied by outsiders. The researchers themselves normally have a large influence on the data they obtain, and since the sector is informal information on it is not available. Without good local knowledge, the quality of information is very low, and all actors – formal and informal – may become suspicious. This is one of the factors that led to the design of the project being based on the idea that such a study could only be done together with local experts.

2.1.1 Team selection: local knowledge and contacts concerning technical capacity

The first capacity-related activity was the selection of the cities, which was done in the proposal preparation stage. For their proposal, WASTE and Skat invited organisations already working on solid waste and the informal sector, with existing contacts with informal sector workers and some measure of trust.

In this approach, choosing the partners becomes the means for selecting the cities. The proposal team sought a balance, not only of different types of organisations, but also of principal researchers with different qualifications, who together comprise a multi-sector and multi-disciplinary project team as shown in Table 1.

The proposers believed that the best quality of information could be obtained by working with local organisations and individuals who already had some knowledge of the situation and who had the trust of the informal sector workers. The team made a judgement that strengthening their own technical skills and facilitating working together was a more effective approach than sending a technical expert to a number of places.

2.2 Capacity-focused project management processes

The proposers opted for a two-headed project management team, with both technical capacity to focus on the methodology, and process capacity to focus on guiding the work in the field.

The two individuals also worked extensively to supplement and strengthen each other’s capacities.

Table 1. City partners

City	Pune	Cairo	Lima	Cluj	Quezon	Lusaka
Partner	KKPKP	CID	IPES	Green Partners	SWAPP	Riverine Associates
Type of organisation	Waste pickers association	Consultant and advocacy organisation	NGO institute consultant	Private environmental consultant	Solid waste association	Private urban planning consultant
Researchers	Social scientist, social worker	Educator, waste management specialist	Industrial engineer, economist	Environmental economist, social worker	MSc. Public administration, researcher	Architect
Role of organisation	Advocacy	Business & social Development	Consulting, Research, Lobbying	Consulting and Research	Trade Association	Urban planning
Core areas of expertise	Informal waste sector, social activism	Informal waste sector, education	Solid waste, economics, informal recycling sector	Environmental policy, water, fiscal policy	Solid waste/ recycling organisations, policy, operations,	Urban and master planning, sustainable development

The project began with a week-long start-up “technical co-ordination meeting,” (TCM) at which the methodology was worked out in practical terms among the partners, based on presentations, discussion and work sessions.

Each of the locally-based city partner teams worked from a standard terms of reference which also had a strong capacity component. Each organisation was working in parallel to collect and analyse data in *Excel* workbooks, based on an instruction manual, which did not include pre-programmed templates to be filled in. In contrast, each city partner had to build their own analysis up themselves, which had the result that they “owned” not only the substantive information, but also the approach and methodology. While these teams had primary responsibility for collection and analysis of data, they received continuous and intensive support from a decentralised, global backstopping team with its centre of gravity at WASTE in Gouda, the Netherlands. In two cases, the partners came to Gouda to be able to work intensively with their backstoppers.

Individual coaches worked with each of the city partners to devise answers to problems in data collection, to support and strengthen the technical process of data management and analysis in *Microsoft Excel*, and in the writing of the city reports. These coaches also served as one means of capacity transfer between teams. A second transfer came in the use of an internet platform, “Teamspace,” where all documents were posted and stored, and were available for downloading by any other member of the team. This was especially relevant for learning about making *Excel* worksheets and the mass balance materials flow diagrams for each city.

A third mechanism was inter-city support. In the course of the project, two of the project leaders from the city partner teams also began to function as backstoppers for their colleagues on other teams.

2.2.1 Learning by doing: environmental and socio-economic impact analysis

While the original project ToR focused on economic aspects of the informal sector, there was interest both from the contracting agencies and the project team to look at environmental impacts as well. Not only would it make the results more comparable between cities, but the team members were interested to build their own knowledge about possible relationships between informal and formal recycling and organic waste management on the one hand, and carbon financing and the clean development mechanism (CDM) on the other.

The environmental impact part of the project also had strong capacity development elements: an environmental economist from the University of New Delhi supervised a Bulgarian MSc student to develop and apply an environmental impact methodology for the project. Together they worked out the carbon equivalent methodology and advised the other teams on modelling, assumptions, and economic theory.

On a parallel track, a social scientist based at WASTE worked out a series of socio-economic indicators, together with the city teams. These indicators were used in the social impact analysis.

3. Capacity development and outward linkages

The methodology, as we have seen, had capacity strengthening as its core value and approach. The project activities also had strong capacity development components in themselves.

3.1 Co-ordination, information exchange, and engagement with the formal local authorities

The design of the project required close and repeated engagement with the formal local authorities in each of the study cities². One of the most interesting consequences of this was that the municipal authorities became actively involved in many study activities. This began with data collection, and then was broadened to include:

- ◆ exploring problems in data management
- ◆ contributing to the analysis and interpretation of data
- ◆ co-designing the hypothetical scenarios based on real plans or interpretation of existing or planned legislation.
- ◆ attending the closing workshop in Gouda
- ◆ using the methodology and information gained in policy and practical decision-making during and after the period of the research.

² For this reason, one criterion for selection was that the local partner organisation had a good relationship with the formal authorities and the means to get information from official sources. In Cairo, the fact that this was not possible made the quality of the analysis less. In Cluj, the largest private sector company served as a proxy for the city authorities, who were not willing to engage directly.

The result of this engagement is that in all the cities, the study itself served to stimulate discussions on the economic value of the solid waste informal sector, and how to better co-operate with them in building recycling and waste collection systems. Even before the completion of the study, this had begun the process of influencing decision-making.

3.2 Build-up of the operational analysis

The approach to analysis built on capacity in the organisation, but also depended on that capacity being strengthened in the course of the study. The technical co-ordination meeting was for many of the city partners their first experience with process flow and materials balance diagramming. Two of the partners had some experience, and this helped to move the group rapidly to a general understanding.

But the real capacity development occurred in the actual doing and analysis. A short diversion to explain the approach will make this clearer.

A process flow diagram (PFD) presents the movement of materials through **process steps** in the solid waste system. Process steps begin with *generation* at the household (or business), the point at which a decision is made that an item is no longer useful and should be discarded. Other common process steps include *primary collection* or *separate collection* from households, by city or private collectors or by itinerant waste buyers (IWBs); *disposal* in a landfill or in a managed or unmanaged dumpsite, *transfer*, and *processing*.

Transfer, the shifting of waste from being carried on the head, back, in the hands or in a small vehicle to a larger vehicle, is also called *secondary collection* when the waste is put into a container or unloaded directly into a waiting truck. *Processing* refers to manual, or in rare cases mechanical labour where recyclable (dry) materials or organic (wet) materials are cleaned, cut into smaller pieces, organised by type, and prepared for sale to a junk shop (micro, small, or medium), an intermediate processor or an end-user industry. Organics are sold for pig feeding or given for composting. In some cases *processing* takes place at a materials recovery facility (MRF) or at a junk shop or recycling business, but in most cases it occurs at least in part on the dumpsite or in the homes of waste pickers.

The initial process of diagramming was perhaps where the most amount of capacity development occurred. For the partners and the backstoppers, a complete picture of the entire waste system emerged from the data, and immediately, new questions arose. For example, an initial hypothesis that formal and informal sectors have “their own” separate materials flow processes was rapidly and definitively proved false in all cities. The fact that materials “cross” from formal to informal not only once, but repeatedly, meant that the methodology had to be adapted. In the process both city partners and backstoppers learned a lot about avoiding double-counting, and also about the role of a dump in poor countries.

The process of making a materials balance was also rich in the growth of knowledge and capacity. At each step, the total of materials needs to balance, otherwise a loss should be quantified. In this study, the PFD also makes clear which steps are in the formal sector system, and which are in the informal sector. Materials which enter the system divide at various points, but may later cross over to the other sector. In some of the cities, there are also “loops” – materials disposed of in the controlled landfill by the formal system collection vehicles are then removed from the landfill by waste pickers, pass through additional informal sorting and processing steps, and end up in the formal recycling sector markets.

The balancing required the researchers to include in the PFD, at each “box,” or step in the process flow, the quantities of materials entering and leaving a step, and how much is lost or unaccounted for. This loss may correspond in practical terms to a loss of mass or change of state through burning or through evaporation, or to an undocumented exit from the solid waste system, for example through being buried, eaten by animals, thrown onto an unofficial dumpsite, or discharged into water. Thinking about the concept of losses was an important new dimension to how the city partners understood the waste system in their cities, and it laid the basis for the carbon equivalent analysis of environmental impacts.

Both mass balance spreadsheets and process step spreadsheets draw on global, or overarching assumptions and parameters that apply to that city. These include such items as salaries for low-, medium-, and highly-skilled workers and managers, fuel costs, waste generation and composition rates specific to the city, and the like. For some of the partners, it was the first time that they were confronted with the need to make assumptions, or critically evaluate assumptions used in other studies. There was considerable learning in both accepting and rejecting assumptions, and in making a decision to develop their own data sets when existing data seemed insufficiently reliable.

Another stage of capacity development came when there was no clear or reliable source of data. The city partners agreed to supplement existing data with limited field investigations, extrapolations, and some measurements. This was for many of them their first experience with doing a visual composition study, triangulating data, or extrapolating based on income levels of communities. In the process they increased their understanding of formal information channels, especially in terms of the limitations of existing data. This contributed to the growth of critical thinking that the partners applied to waste management statistics in their cities.

The process flow steps in the PFD served as the basis for an operations and cost analysis in *Excel* spreadsheets. One spreadsheet was prepared for each process step, based on the idea that for each step, it is possible to model “the typical cost of one”. For some of the partners, thinking in this way shifted their view of the system, so that instead of a fragmented set of actors, they began to see patterns and to understand relationships in the recycling supply chain.

A cost for each process flow step was developed based on capital and operating cost parameters such as type, cost, and years of life of equipment, number and salary levels of staff, energy use associated with equipment, utilities and other operations costs, revenues, and other factors. These were calculated and related to the capacity of that process step to handle materials. If the step is, for example, a transfer station, the analysis uses the cost per step to build up the total costs of transfer in the system, multiplying by the number of transfer stations. Then this total is divided by the number of tonnes that are actually transferred, to arrive at a cost per tonne for transfer. When transfer occurs differently in the formal and informal sectors, there are two “boxes” in the PFD, and, correspondingly, two process spreadsheets associated with materials from the mass balance. The initial level of competency in *Excel* differed between partners. The partners from Lima, Quezon City and Pune were consistently able to work out the *Excel* approaches, and in many circumstances share them with their colleagues.

The main output of the operations analysis was a total system cost or benefit, and a system cost or benefit per ton, based on input tonnes³. The secondary output was a process step cost per ton. For example, within one city, the cost per tonne for separate recycling collection by a formal sector franchise collector using a dump-truck can be compared with the cost per tonne for an IWB going house-to-house on foot, carrying a sack or a basket on her head. The costs for the IWB only go as far as she takes the waste, which is usually to the nearest junk shop. The further cost of taking the materials from that junk shop to the processor or end market are included in the operational steps for junk shop and processor, so they are included in the informal sector system cost.

Here too, the substantive approach to calculating total system cost stretched the thinking of the city partners, especially those in Pune and Cairo, whose organisations had been more focused on social development and support to the informal sector, than on analysis.

For the organisations whose expertise is more on the formal side, including those from Cluj and Lusaka, this process was also a big eye-opener. Comparing costs and benefits for formal and informal operations showed surprising discrepancies: some operations were much more expensive when done by formal actors than by informal ones.

3.3 Scenario modelling and analysis

The scenario modelling was addressed to answer the questions:

- “What would be the consequences to society of having the informal sector disappear in each city?” and
- “What would be the consequences if the informal sector were integrated into formal solid waste operations?”

Each city partner, in close consultation with their city authorities, formulated the specifics of the *subtraction scenario*, a hypothetical situation in which the current informal solid waste sector is prevented from continuing with its current activities, and all or some of the street pickers, dump pickers, IWBs, junk shops, and informal or illegal service providers lose their access to the waste stream or are forced aside by modernisation or privatisation. In five of the cities, the subtraction scenario represented one possible and plausible interpretation of a newly enacted law, a newly endorsed plan, or other planned modernisation activity.

The *addition scenario* was a second hypothetical situation in which the formal authorities and the informal sector work together to achieve sustainable modernisation of the city, by facilitating recognition of the current role of the informal sector in recycling and waste management. The addition scenario was constructed on alternative, but still plausible interpretations of recently enacted or implemented laws, rules or plans. In some cases these

³ In recycling and other recovery activities, there is always a dilemma as to whether to use input or output tonnes as the basis of a cost analysis. In this study, we have chosen to use input tonnes because of the complications introduced by the loops described above. The conceptual problem with this is that when revenue is earned for materials, this is always based on output tonnes. For example, while the cost for composting is based on the tonnes of raw organic waste processed, the revenues from the sale of compost are based on the tonnes of compost produced. The composting process causes a volume and weight reduction of a minimum of at least 40% of the input tonnage, due to volatilisation, evaporation, steam and leachate formation, run-off, and other processes. In the study, we pro-rate the income from sale of materials over the total number of input tonnes to account for this problem.

interpretations, to become real, would require minor or significant amendment of laws or changes of policy.⁴

The capacity impacts of modelling were also important. First, the process of developing scenarios builds the capacities both of partners and authorities to think creatively and strategically about the future of the informal sector. Secondly, in preparing the scenarios, all parties worked together in developing possible alternatives. This process actually made previously discarded options thinkable or discussable.

In summary, the study in this way built the social and institutional capacity within the cities to create space for change.

4. What were the lessons and impacts?

In this experience, there were many lessons, and some of the participants can tell more. Even though the study hasn't been published, it has contributed to a critical mass of energy and interest in the informal sector at the CWG.

- a) It stimulated international workshops in Cluj and Bogota.
- b) Presenting the study and its results added to the impetus for an informal sector forum at the World Bank.
- c) The term "PPP" (public-private partnership) is being broadened to describe co-operation with the informal sector.
- d) In the cities, discussions about the future of solid waste management include the informal sector in a different way.

Some of the specific lessons include:

- a) Working with local research partners has strong advantages, not only in terms of information, but in terms of commitment, spin-offs, and general increase in institutional capacity.
- b) Action research strengthens linkages between participants and key stakeholders.
- c) Formulation of scenarios is a powerful communication tool which enabled the partners to engage the formal authorities in the project. Five of the cities based their scenarios on contrasting interpretations of recently passed legislation, rules, or plans, rather than on abstract 'thought experiments'.
- d) A modelling approach broadens the discussion, opens space for creative problem-solving, and increases critical thinking. By formulating scenarios, the teams opened new options for decision-making and implementation.
- e) The broadening of the capacities of the teams and the city partners resulted in a demand for more capacity and even more challenge.
- f) The capacity development impacts in fact exceeded all expectations.
- g) Capacity strengthening is a self-generating process.

In spite of the challenging and time-consuming nature of the work, the city partners have expressed their satisfaction with the modelling experience, and their intention to use this tool further. From Lima: "We are going to include the materials balance-process flow approach in all our solid waste plans." From Cluj: "I thought we knew everything about the solid

⁴ In Cairo the addition scenario represents a conceptual rolling back of the privatisation policy and an optimisation of the situation that existed before 2000.

waste system, but modelling in this way gives a completely different level and type of understanding.” From Lusaka: “If we had known this much about the informal sector when we were formulating the solid waste strategy with Danida, we would have made completely different choices about how to handle informal activities. Fortunately it is not too late.”

References

- German Technical Co-operation (GTZ) and the CWG (2007): *Economic Aspects of the Informal Sector in Solid Waste*. Draft Report, GTZ, Eschborn, Germany.
- ILO. (2004), *Addressing the Exploitation of Children in Scavenging: a Thematic Evaluation of Action on Child Labour*. A global synthesis by WASTE, Netherlands. ILO, Geneva, Switzerland.
- Mol, A.P.J. and David Sonnenfeld. (2000), *Introduction* in Mol and Sonnenfeld (eds.), *Ecological Modernisation Around the World*, London and Portland, Oregon: Frank Cass Publishers, pp. 3–17.
- Scheinberg, A. (2003), *The Proof of the Pudding: Urban Recycling in North America as a Process of Ecological Modernisation*; *Environmental Politics*, 12:4.
- Simpson-Hebert, M., Aleksandra, Mitrovic, Gradimir Zajic. and Milos Petrovic. (2005), *A Paper Life*, UK: WEDC, Loughborough University.