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www.experians.net

Setting up a sanitation project in urban poor districts in developing countries:

a different approach

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Reflection leads for project leaders

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Foreword

Who are we?

Experians is a non-profit organization created in January 2004 by two young engineers who graduated from "Ecole Polytechnique": Célia de Lavergne – who also graduated in urban planning at Ecole Nationale des Ponts et Chaussées – and Julien Gabert – who also graduated in chemical engineering at Mc Gill University (Montreal, Canada).

The organization aims at studying sanitation in poor urban districts of developing countries. To this end, the organization sent the two authors of the present report in six different cities in order to understand the urban sanitation related issues, determine solutions and identify sustainable projects for urban sanitation in poor districts. The six chosen cities are (see Figure 1): New Delhi (India), Hanoi (Vietnam), Phnom Penh (Cambodia), Buenos Aires (Argentina), Santiago de Chile (Chile) and Antananarivo (Madagascar). These cities were chosen purposely because of their geographical, political and cultural differences.

Figure 1: Studied Cities and Countries.
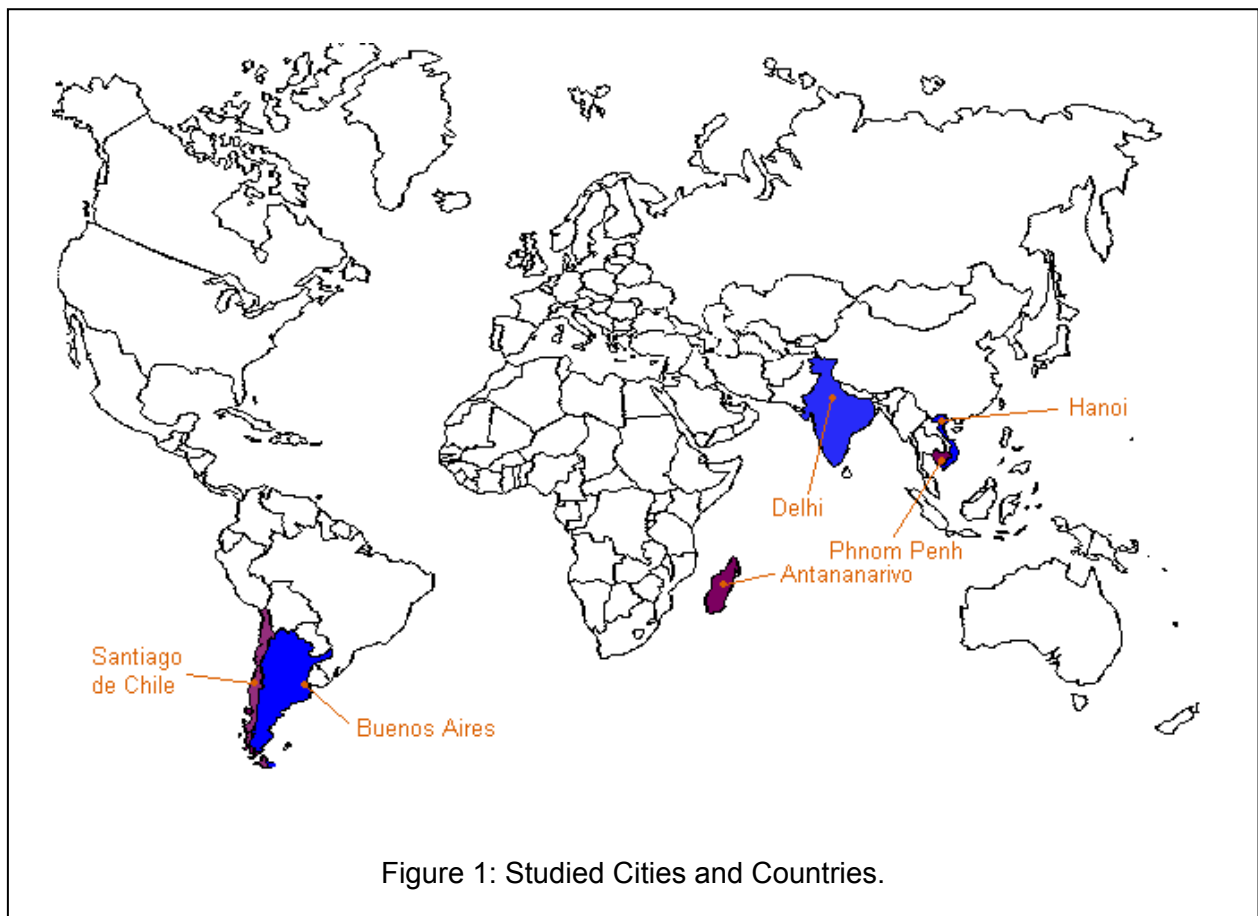
Investigation and testimony: a deliberate different approach

Box 1: "A field approach": the authors' testimony

"Our young, new and objective vision allowed us to address the many problems and solutions related to sanitation without any bias or parti pris. Our determination to go on the field led us to be in direct contact with the population, in the very heart of their true concerns and way of living. The empiric information collected during our presence on the field were manifold and regionally diversified: this gave us a larger vision of the different possible types of project to be implemented in this domain. This field approach was completed by a documentation collected there and in France[1]."

Our investigations on the field about urban sanitation in poor districts emphasized a certain number of aspects of development projects that appeared to us as particularly important. As we are not expert on the subject and did not have any constraints (no terms of reference) as to the drafting of this document, we have thought about presenting this testimonial study as a reflection "guide" for project leaders.

Some current subjects we felt particularly concerned about are sometimes more developed than others that we did not feel as striking in the context of our field approach: this unusual "imbalance" is perhaps what makes this document original.

Udham Singh Park's slum, New Delhi₁ India.

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[1] We have tried to include bibliographical references as often as possible. The analyses resulting from bibliographical research appear in the footnotes. The bibliography can be consulted in Annex 3.

Who is this document for?

This document is intended for anyone who aims at carrying out an urban sanitation project[2] in an underprivileged district of a developing country's major city. It applies to those who want to implement a non-existent service in a district as well as those who want to improve an inefficient service.

Different kinds of persons or entities can carry out a sanitation project: NGOs, inhabitants of poor districts, private companies, municipalities, international organizations, etc.

Why writing such a document?

Our field study brought out a number of obstructions and systematic errors but also interesting success factors applying to urban sanitation projects. Our intention is to give project leaders of any nature elements to ask themselves the questions necessary to carry out a useful and sustainable project, to give them reflection leads and concrete examples of sanitation projects, problems to overcome and solutions brought about in the six studied cities.

This document does not pretend to be absolutely complete. It does not claim either to give all the answers[3] to the questions a project leader is confronted to in the matter of urban sanitation.

Taking into account our observations in the six quoted cities, it can be asserted that the success of a project mainly relies on the pre-project reflection and a consistent setting of the project. Therefore, we strongly advise any project leader to ask himself, among others, the questions mentioned in this document.

How to read this document?

This guide offers reflection leads (in the text itself) illustrated by examples chosen among observations made in 2004 in the six studied cities: New Delhi, Hanoi, Phnom Penh, Santiago de Chile, Buenos Aires and Antananarivo. These examples are developed in "boxes" and give a concrete illustration of the tackled subjects. A synthetic version (data sheets) of this document can also be consulted by contacting the organization Experians (www.experians.net).

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[2] Described in details on page 9.
[3] As a matter of fact, there is rarely a unique answer to each of these questions.

Table of Contents

Preamble on poverty

A multi-faceted notion

Most of the time, in developed countries, the notion of poverty mainly refers to income considerations. This point of view is not really correlating developing countries' reality where poverty includes other aspects such as housing quality and access to basic services (drinking water, sewerage, electricity, education, health services, etc.), which are, more often than not, already implemented in developed countries.

Not having access to water and sufficient food, living in frequently flooded districts, in critical sanitary conditions, income insecurity in the case of informal workers... All these elements have to be taken into account in order to appreciate the uncertain situation of the impoverished populations in developing cities[4].

Fighting against poverty then does not just involve increasing the income level but also enhancing and improving access to infrastructures and basic services – indeed, in many developing countries, an income increase does not necessarily implies access to basic services.

Geographical location of poverty

Apart from being difficult to define, poverty also brings out problems of geographical location. Although poverty is most commonly identified with "districts of poverty" such as slums, in developing countries, poverty cannot be assimilated to slums and vice versa. For example, in Hanoi (Vietnam), civil servants are traditionally accommodated in the same district by type of Ministry, from the driver to the minister. This wide desegregation holds extreme social inequities, half-way between dissimulated wealth – well-off families staying in these administrative districts to save money – and false wealth – decent but overpopulated apartments herding together three to four generations of a same family.

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[4] D. Mitlin (2003).

Illegal overhangs on the walls of the buildings to increase the net floor area of overpopulated apartments in Hanoi (Vietnam).

This wide range of "poverties" in a same underprivileged district, even if it is not always as obvious as in Hanoi, is present in many metropolises and brings out the question of how to adapt a development project to the entire population of a district. In Phnom Penh (Cambodia) for example, the prerequisites to the participation in an infrastructure-building project in a poor district – participation to a microcredit programme, title deed, etc. – often lock out the most destitute – tenants for instance. The solutions to be offered are generally different according to the standard of living of the dwellers concerned in a precise district...

Preamble on urban sanitation

Sanitation and drinking water supply

Usually, people use the phrase "water and sanitation development projects". Initially, these two issues were treated jointly because it was commonly accepted that the hydrological cycle had to be considered as a whole, including the drainage and treatment of the water after it was used. However, most of the time, the terms "water and sanitation" are used to denominate development projects which are actually dedicating the major part of their money and action to drinking water supply, which is an evident priority of the population as well as development organizations' "noble fight" above all else.

Now, ignoring sanitation needs when dealing with drinking water comes down to ignoring serious environmental and health risks: how many standpipes installed by NGOs quickly ended up surrounded by disease-vector stagnant water ponds because of a faulty drainage? How many ground water get polluted and saturated with waters rejected directly on the ground – increasing the frequency of floods as well as the health risk for the inhabitants still drawing their drinking water from them – when a private operator installs drinking water supply without any wastewater disposal system?

It is undeniable that these two issues are closely interconnected. However, due to the water need emergency and the technical and financial weight of sewage networks, sanitation has become an issue, though still systematically present and officially connected to water, which does not square with any concrete or financial reality on the field.

Bearing this conclusion in mind, we have chosen to adopt a different approach.

Urban sanitation: an integrated approach

Observing the insufficient involvement in wastewater management, compared to the involvement in drinking water, along with the close connexions between solid waste management and wastewater management, led us to adopt a different approach. This one tackles the sanitation issue on the hygienic and health point of view. With this study, we intended to consider solid waste and wastewater management as a whole including the collection, the drainage, the treatment and the final disposal of the following health risks: excreta and household wastewater, household solid waste and rainwater.

The purpose here is to ward off any health danger for the populations in order to improve their health and living conditions as well as their urban environment.

Besides, issues involving solid waste and stagnant water or wastewater are often connected: what is the advantage of a drainage project if the channels are systematically obstructed by solid waste? What is the advantage of implementing a waste collection system if floods prevent the dump trucks from going about the streets and collect the garbage? Each of the four quoted risks entails a particular threat and requires specific technical and human solutions. Nevertheless, the connexions between these domains (illustrated in Figure 2) brought us to consider them jointly.

Drain blocked by household waste in a slum in Phnom Penh (Cambodia).

Figure 2: Connexions between health problems and dangers of the different sectors of sanitation (and drinking water supply).
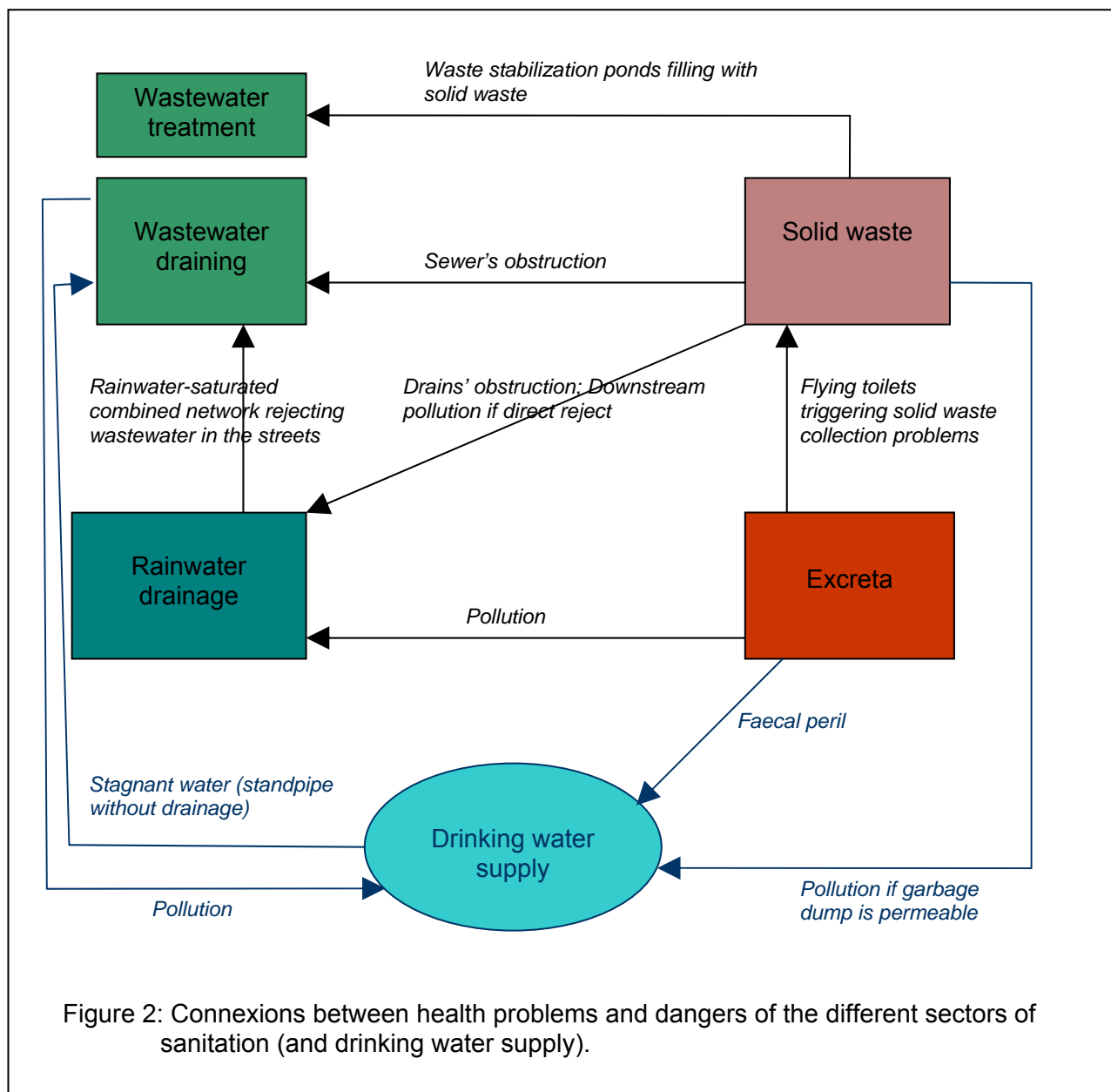
Consequently, we think that it is better to consider sanitation as a means to eliminate health risks resulting from liquid as well as solid waste.

Sanitation: what scale?

Sanitation is at the junction of three domains connected to three successive scales:

- On the <u>individual scale</u>, reaching an appropriate sanitation means, first of all, improving the living conditions at home: women not having to hide anymore to defecate, no more need to raise all the objects in the house to palliate recurrent problems of floods, etc.

- On the <u>district scale</u>, sanitation results in the improvement of the urban environment. Children do not hurt themselves anymore playing on stacks of garbage; channels are not blocked anymore by solid waste, triggering floods and making the roads impassable; mosquitoes and smell nuisances disappear; inhabitants begin to use common areas again, etc.

- On the <u>city scale</u>, an appropriate sanitation is a matter of public health: cholera and plague risks are reduced. Indeed, even if epidemics often appear in the unclean districts of a city, they quickly spread up to the whole city. Therefore, sanitation of poor districts actually concerns the whole population of a same city.

It can be observed that the interest and involvement of the people are decreasing as we go from the individual to the city scale.

Figure 3: The sanitation of a district, an issue at the junction of three domains.
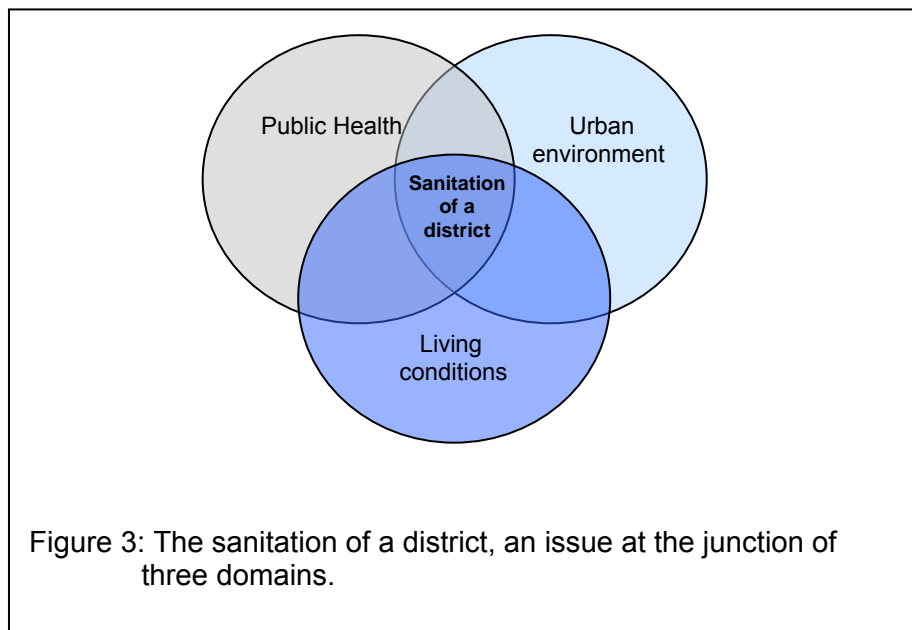
Sanitation of a poor district: a fundamental stake

- On the <u>human</u> point of view, it stands as a powerful integration factor: inhabitants recover a kind of human dignity and a more serene atmosphere is conveyed between neighbours.

- On the <u>environmental</u> point of view, all the populations living in the vicinity can take advantage of it as downstream local pollutions are reduced. So, sanitation has to be included in the issues of water resources management and preservation.

- On the <u>health</u> point of view, the epidemic risk is reduced for the population of the whole city. For the exposed population, diseases due to a lack of hygiene are manifold: diarrhea, dermatological, respiratory and viral diseases, etc.

- On the <u>socio-economic</u> point of view, an improvement of the hygienic conditions results in a reduction of the public health expenditure and a decrease in sick leave – a high number of the diseases being water-borne, water-related (insects proliferate in garbage or stagnant water) or due to faecal contamination. Thus, in Madagascar, diseases resulting from a faulty sanitation would account for a 5 million working days loss and economic losses amounting up to 93 % of the Ministry of Health expenditure and up to 300 times the public sanitation expenditure[5].

- On the <u>commercial</u> point of view, a faulty sanitation can have a negative impact. Hence, the use of non-treated wastewater for irrigation downhill Santiago de Chile (Chile) entailed threats of economic sanctions on the Chilean agriculture from the international community, as health security standards were not respected on these cultures.

Each of these points of view on urban sanitation strengthens the idea that, today, sanitation must hold an important place in development projects.

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[5] Water Aid (2002).

Particularities about sanitation

Sanitation is a relatively complex domain. Its specificities, compared to other sectors of development, need to be always kept in mind.

Compared to water, populations do not consider sanitation as an immediate need[6]: demand as well as involvement and willingness to pay for this service are not as high as for other services. The demand will then have to be aroused in the population and means will have to be found to convince the inhabitants to invest and participate in sanitation improvement.

Sanitation is very often linked to cultural beliefs and traditions. Some regional particularities can constitute obstacles and have to be taken into account for the sake of the project's success. For example, in India, the notion of secretion is synonym with impurity; in Madagascar, defecating on the ground means disrespect to the ancestors.

Waste pickers in a garbage dump in Antananarivo (Madagascar): garbage, a health danger seen as a source of income.

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[6] Except for the drainage of rainwater during the floods. These give rise to manifestations of dissatisfaction and to demands for a drainage improvement.

Part I.

Pre-project

Reflection and

Research

I. Pre-Project Reflection and Research

I. A- Geographical Location and Type of Project

Setting up a project somehow implies an intervention on a particular territory. Unless the project leaders already know the territory for specific reasons – prior effective presence in the district for other types of intervention, acquaintance of local representatives (leaders, municipality officials, etc.) – the first important step in the setting up of a project is the identification of the territory. Besides, the choice of the type of project is strongly linked to the choice of the geographical location, so these two have to be treated jointly.

I. A- 1. Collection of general information for the choice of the district: interviews and indicators

In order to choose the district in which to intervene, you have to determine, within the city, the "high-priority" poor districts. To this end, general information on poverty in the whole city has to be collected. Given the multiple aspects of poverty[7], you have to take into consideration not only the low-income criterion, but also the health and land criteria.

I. A- 1. a) Health information

Meeting local officials

First, you have to meet a series of officials such as municipalities or Ministries[8] officials in charge of the various aspects of sanitation and/or poverty in the city: health, public works, social affairs, etc. These entities normally have at their disposal relevant information on urban poverty location and sanitation infrastructures in the city.

This way, they will not only help you to choose the intervention district in accordance with their policy, but they will also unveil their municipal and governmental strategies on sanitation. Your knowledge of these will be necessary to integrate the project into a larger development dynamic. In

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[7] D. Mitlin (2003).

[8] Decentralization is the transfer of a certain number of competences (such as sanitation) to municipalities in order for these local authorities to manage them with a maximum level of efficiency, as it is the case in the developed countries. But, as it is mentioned in paragraph I.B-1-b), there can be malfunctions in this system and information about large cities have to be collected in the municipalities as well as in the national agencies or the Ministries concerned.

fact, in the recent years, many large cities came up with master plans, and more specifically with a sanitation master plan. The poorer districts – unrecognized districts in particular – are not always accounted for in these plans. However, when they are, you have to take into account the choices made by the municipality: you are not supposed to replace the established authorities, which are officially in charge of sanitation.

These meetings will also be the opportunity to tell the authorities about the project you want to implement and provide them with the elements already available: funding, planned budget, working method, sanitation approach, etc.

This double initiative will allow the project to integrate the city's global logic of sanitation, notably concerning the ulterior choice of network or autonomous solutions[9] and the connexions between sanitation and cleaning systems in the different districts.

Then, you will have to design and implement the urban sanitation project in accordance and/or with the help of the various technical and social services of the municipality. It is thus recommended to meet them in the early pre-project phase. Apart from the fact that they can bring a useful help to the implementation of the project and to the target population, this initiative also shows a will to integrate local policies and to comply with the definition of sanitation as the means to ward off health dangers threatening the whole city.

Interviews with government or municipality officials bring out a potential problem of objectivity: corruption (see box 11) and elections can create a bias in their arguments and advice. As a matter of fact, we have to keep in mind that development projects often stand as manna from heaven for developing countries. Likewise, the influence of certain informal districts on the election results can bring some governmental officials to favour these districts when it comes to implementing development projects. This way, they profit from a positive image in the eyes of public opinion. For example, in Buenos Aires (Argentina), the concessionary company was encouraged to develop the "Agua + Trabajo" programme in the districts of *La Matanza*, which total more than one million inhabitants (see box 10).

Meeting civil society

In order to complete your knowledge of the environment, it can also be interesting to meet the NGOs, organizations and other project leaders in the city. They will give you a different and

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[9] Open pits, pit latrines and other kinds of septic tanks are a few examples of the so-called "autonomous" or on-site sanitation solutions – for one family or one building only – as opposed to a sewage network or a drainage network which collects wastewater and/or rainwater on a determined zone of the city.

complementary vision of the current situation and political stakes, and they will already be acquainted with the officials. In the same perspective, meeting women associations – systematically present in developing countries – is a judicious initiative as women are in charge of the domestic hygiene and accordingly, they are the principal actors in sanitation issues.

Laundry and children washing in New Delhi (India).

In any case, for the project to be sustainable, it turns out very useful to integrate municipal and governmental policies on sanitation and coordinate your action with the other project leaders (NGOs, communities, etc.) since the project must not compete with the other interventions but complete them. Box 2 gives an example of the different entities you have to meet to determine the district of intervention.

Box 2: Determination of the districts of intervention for the organization OVE

NGO OVE (Danish Organization for Renewable Energy) intervened for the urban environment improvement of an underprivileged district of Hanoi (Vietnam) from 2000 to 2003. Therefore, they got to be better acquainted with the Vietnamese interveners in this sector. For the second phase of the project (2004 to 2008), the organization consulted, among others, the DONREH (Hanoi Department of Environment and Housing) and the Women Union in order to determine the high-priority poor districts. In this manner, they identified together three urban sectors located in former industrial parks in the South of the city. These districts experience, among others, flood problems due to the fact that the city's waste and rainwater all flow towards these zones.

Figures

Indicators can be very helpful in the decision-making process. Hence, indicators of drinking-water and sanitation coverage, and of household waste collection can allow you to target high-

priority zones to be supplied with these services. Besides, health indicators for oro-faecal diseases – diarrhea in children under 5 or cholera for example – often provide precious data on the districts' health situation. Finally, indicators of river pollution, flood frequency or topographic elements – water flow and easily flooded zones – can provide further background knowledge to help you determine sanitation high-priority districts in the city. Unfortunately, these data are not always available.

As a precaution, it is better to check the relevance of these indicators by inquiring what calculation methods have been used. Indeed, numerous problems are due to the origin of the data submitted by governments, for example to WHO which sometimes publishes data without being able to check their reliability[10]. There can also be confusion problems with the definitions of an appropriate sanitation. For example, families sharing a classical latrine – and consequently categorized as having access to a sanitation installation – can be exposed to a higher health risk than people defecating in the open air if the latrine is not appropriately maintained.

Once this reconnaissance milestone is reached, you have to focus on a really important factor on which the success of a project very often depends: the land situation of the target districts.

I. A- 1. b) Legal information related to the land

We have noted that real estate insecurity is one of the main problems in slums. The first great difficulty of any development project is to take this notion into account and this has to be done really early provided the length of possible judicial procedures.

Local authorities standpoint as to slums

Slums, and more generally very poor districts in developing cities, are quite often considered as illegal and do not abide by the established land legislation. Basic services are then commonly denied to their inhabitants since they are not recognized by the authorities.

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[10] D. Satterhwaite (1995).

As outlined in Figure 4, the municipality policy vis-à-vis these districts can cover multiple forms:

- The choice of some governments is to literally evict the inhabitants from the slums, most of the time by force. For example, before year 2000 in Phnom Penh (Cambodia), slums' inhabitants were expelled by armed forces (police and army). As international partners were threatening to cease all public help, the evacuation procedures began being less official: in the recent years, fires of "undetermined origin" began to break out at night in the slums, casting inhabitants out of their homes and burning the constructions made of wood and palm leaves.

- Other governments tolerate slums but deny them any official recognition. In this case, inhabitants have to find their own means to have access to basic services: theoretically, they are entitled to nothing. At best, the municipality sometimes provides them with an emergency service – such as standpipes connected to the municipal network or water tank trucks – according to the extent of the needs or the electoral weight of the district.

- A government can bend for more constructive solutions such as recognizing a district in order to improve it or rehouse its inhabitants in healthier zones[11]. For that matter, rehousing can sometimes complement the improvement of a district, for instance when a district's density is too high or when construction and health standards require the rehousing of a part of the population. For example, in Buenos Aires (Argentina), the governmental programme PROMEBA (Poor Districts Improvement Programme) includes the rehousing of part of the inhabitants when their houses do not comply with legal security standards – for example when they are too close to a river.

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[11] Rehousing remains a complicated process even though developing countries are increasingly implementing it. Its implementation is often subject to difficulties: rehousing sites are not provided with basic collective installations (schools, drinking water supply, sanitation, etc.) and they are often located far from the city or any economic activity. So, inhabitants lose their job and do not have any income to survive. Rehousing people in order to offer them land security without any sustainable living and working conditions is not a solution either.
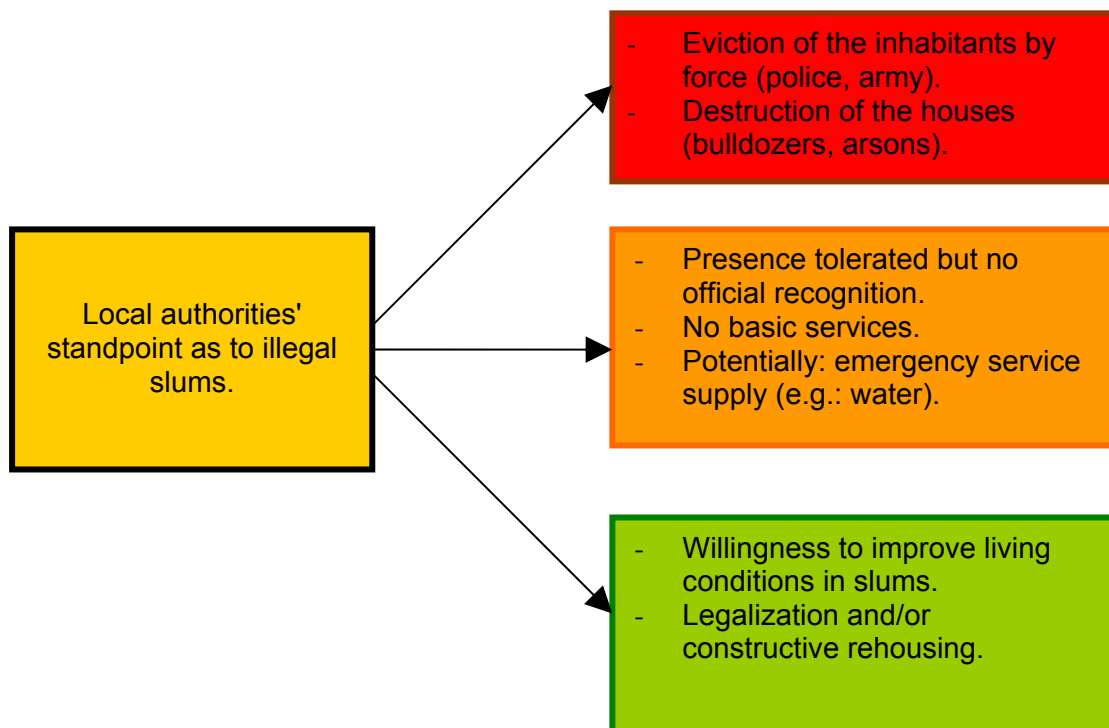
Figure 4: The different standpoints of developing countries' municipalities when confronted to the slum problem.

Banks of the Bassac River in Phnom Penh (Cambodia): the building (background) is being constructed on the site of a former slum, which burnt in the year 2000.

Land constraints for a project leader

A project leader can be confronted to a number of problems related to the land. These problems can be the following:

- Land insecurity and securisation: whatever the authorities' standpoint is, land security is the first priority for inhabitants of poor districts. They are increasingly asking for a title deed before claiming any life quality improvement! The more uncertain the situation of the slum is, the more inhabitants will define land security as a priority. Indeed, as shown in box 3, an eviction threat often freezes any infrastructure-building project in a district. This easily explains the NGOs reluctance to work in such conditions and invest – and make inhabitants invest – at a loss. Then the decision to intervene or not depends on the nature of the NGO and the project to be set (emergency or development). In any case, these experiences bring out the necessity to securise the territory where the project has to be implemented, as shown in box 4.

Box 3: Two examples of failure due to land insecurity in Phnom Penh (Cambodia)

In Phnom Penh, NGO CSARO (Community Sanitation And Recycling Organization) and the inhabitants of an illegal district had invested in water supply infrastructures. Six months after the works were achieved, the authorities expelled the inhabitants and the NGO. The infrastructure was demolished together with the slum. The initial investment, amounting to US$300, was then lost for good while it represented a very important sum for these people who live with less than a dollar per day. From this time on, the NGO is turning down any project in districts where the inhabitants are not owners, entrusting this task to organizations specialised in emergency.

Besides, slums are also located on the roofs of some inner city buildings in Phnom Penh. Following the death of several children that had slept in the access stairs of one of these buildings during a water supply duty, UN-Habitat invested in the renovation of these stairs. The night following the inauguration of these stairs, a fire "of undetermined origin" wiped out the squat from the roof and killed several of its inhabitants...

> Box 4: Land securisation of *Villa Besada* in Buenos Aires (Argentina)
>
> In Buenos Aires, the inhabitants of *Villa Besada* (*villa* means slum in Argentina), in order to improve their living conditions, began securising the land on which they were living. They clubbed together to buy the squatted land and nearby playgrounds. This land was divided in parcels according to the legal standards of minimum dwelling area. The parcels were then redistributed to the members of the community. In exchange, they committed to building personal permanent houses at their own pace and according to the financial investment they could afford for it.
>
> This initiative from the *villa*, in terms of funding and housing quality improvement, resulted in its recognition by the municipality followed by its access to municipal services. So, in 1995, on demand of the inhabitants, the municipality asphalted the streets of the district.

- However, the land securisation of a district is not always that simple. Lack of information or of well kept registers, existence of fake title deeds or corruption... All these criteria can hamper the good interpretation of the city's cadastre, as shown in box 5.

> Box 5: Cadastre and land legislation in Antananarivo (Madagascar)
>
> In Antananarivo, there is no recent land cadastre. Numerous households happen to claim the ownership of a land, either because they have a fake title deed they bought several years ago to a so-called owner, or because their family has lived during several generations on the land. So, there can be various problems due to land legislation and the government is currently elaborating a new cadastre with the help of the city.
>
> In the meantime, the projects suffer from this absence of cadastre. In the framework of an AFVP project (French Association of Volunteers of Progress) around the RN1 (Main Road 1), a parcel of land was needed to build a public toilets facility. One of the inhabitants offered his estate; but it turned out this land belonged to the whole family and joint possession problems required the signatures of several members of the family. This situation entailed a one-year delay in the beginning of the works after the land was chosen.

- Finally, another effect of land insecurity results from land gaining in value in some districts, in particular those where development projects are implemented. The visible improvement of a district makes it more attractive: inhabitants are then tempted or forced to leave as described in box 6. The beneficiaries of a project then tend to be newcomers who are wealthier than the original target population... Even projects set with the best will in the world can bring about opposite effects: land securisation has then to be undertaken – by obtaining title deeds when possible – before any intervention in poor districts. This is especially necessary in the case of infrastructure building.

Box 6: Rent increase in the *Thanh Xuan Bac* district in Hanoi (Vietnam)

Danish organization OVE developed an urban environment improvement project (Greenhanoi) in Hanoi in a middle-class district where a few underprivileged households were still living. For judicial reasons, it was only possible to acquire a title deed late in the course of the project, so the poorer households did not get the chance to do so. With the success of the project and the visible improvement of the district's salubrity, these poor households could not access ownership or even pay the increased rents. Therefore, they had to leave the district…

In the case of rehousing sites – often located very far from the inner city, or even the urban network –, the lack of services and the distance of economic activities drive many households to go back to the city, in illegal sites, in order to look for a job. They are compelled to sell their rehousing land to speculators. Then, in the end, wealthier people will populate these rehousing zones and enjoy the late implementation of essential services[12].

It can be concluded that land security is part of the global urban development issue and is often indispensable – though not sufficient – for a project to be sustainable.

I. A- 2. Choosing the type of project

The nature of the project often affects the technical, financial and social choices that have to be done. This is why it is better to clarify at this point the type of project that you want to set up.

I. A- 2. a) "Emergency" or "development" project?

The local environment can impose on the project leaders some constraints that they ought to take into account: relative land security, level of cooperation from part of the public authorities, etc. Setting up a project in a district threatened of destruction by the authorities comprehends risks for the sustainability of the infrastructures, of the investments and consequently for the scope of the project. Building an infrastructure that is necessary – to improve precarious health conditions in a slum – but only temporary – because of a destruction threat – constitutes an "emergency project". For instance, in Phnom Penh, NGO URC (Urban Resource Center), acting for the improvement of the city's slums, chose to build toilets in an illegal slum normally meant to

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[12] P. Fallavier (2001).

destruction by the municipality. If the district is wiped out, the toilets will be wiped out too, but, meanwhile, they are a great help to the population on sanitary point of view.

For these reasons, many organizations choose to intervene only in districts that benefit from land security, in order to guarantee the survival of the infrastructure and the durability of the investment. That kind of project is called "development project".

URC's emergency toilets in Phnom Penh (Cambodia).

Burying of a sewer network in a regularized district of the PROMEBA programme in Buenos Aires (Argentina).

<u>I. A- 2. b) Project's scale</u>

Size of the target district

Once the first reconnaissance phase of the high-priority zones is complete, you have to specify the intervention scale of the future project. What is the adequate size of the territory and/or of the population for the project to be efficient? The answer to this question depends on geographical, historical, institutional and cultural specificities. Here follow a few matters of reflection:

- Respecting the established distribution of geographical administrative zones is the first thing to do for the project to be sustainable, since the municipality is responsible for the wastewater and solid waste management services. To reach sustainability and consistency with the legal and institutional local system, the project will have to be, as far as possible, in accordance with the local entities in charge of sanitation.

- To reach an optimal level of agreement from the inhabitants, the project leaders can also take into consideration the links existing between them in the district: immigrants coming from the same place, workers working in the same factory – with the same rhythm of life – children going to the same school, etc. These links will be powerful levers to build up the project and it would not be a good thing to exclude administrative neighbours having strong links with the target district.

- The project must be of a "reasonable" size in order to maintain a local aim.

The case of a pilot project

When a project leader carries out a project in a district of an important city, the long-term objective is not only the improvement of the district, but also the examination of the possibility for this project to help development interveners solve issues on the city's scale (see box 35).

If the future project is a pilot project, it is better, in theory, to comply with the administrative distribution so as to allow a more rational scaling up in accordance with the municipality. At present, this "scaling up" increasingly concerns international development partners, at all levels: the interest of setting a local project on a small scale also resides in taking part in the reflection and search for local solutions, in order to favour a global development.

You have to keep in mind that the pilot project is only the first step of a project; it is not finality in itself. A scaling up then has to be carried out to cover the entireness of the target territory, an operation that will imply much more staff and means. Additionally, one should avoid multiplying pilot projects that do not report mistakes or good practices, thus preventing any common assessment procedure through which repetition of mistakes could be avoided and operational projects identified. Before setting up a pilot project, it is necessary to analyze different sanitation pilot projects that have already been implemented in the city.

NGO CSARO pilot project for garbage collection in some districts in Phnom Penh (Cambodia): the project went from 1,800 to 6,000 households covered and plans to reach a 10,000.

A pilot project has a double purpose:

- it enables the identification of good practices and mistakes in the design and implementation of the project by comparing the different solutions contemplated to the field and to the population's reality;

- it can serve as an example for the ensuing scaling up: valorization of the living conditions improvement for the people affected by the pilot project, illustration of the project's viability, etc. In this perspective, it is interesting to choose the pilot district while avoiding the most important obstruction points in order to facilitate the implementation of the project. For example, one will stave off districts with unsuccessful prior experiences or corrupted community leaders, etc.

I. A- 3. Collection of information specific to the target district

Let us imagine that the territory has been identified through the interviews and information collection previously mentioned. It is now time to gather more information on the target district

specifically. Although this process can present a number of difficulties, it remains necessary in order to anticipate any complication. This information can be:
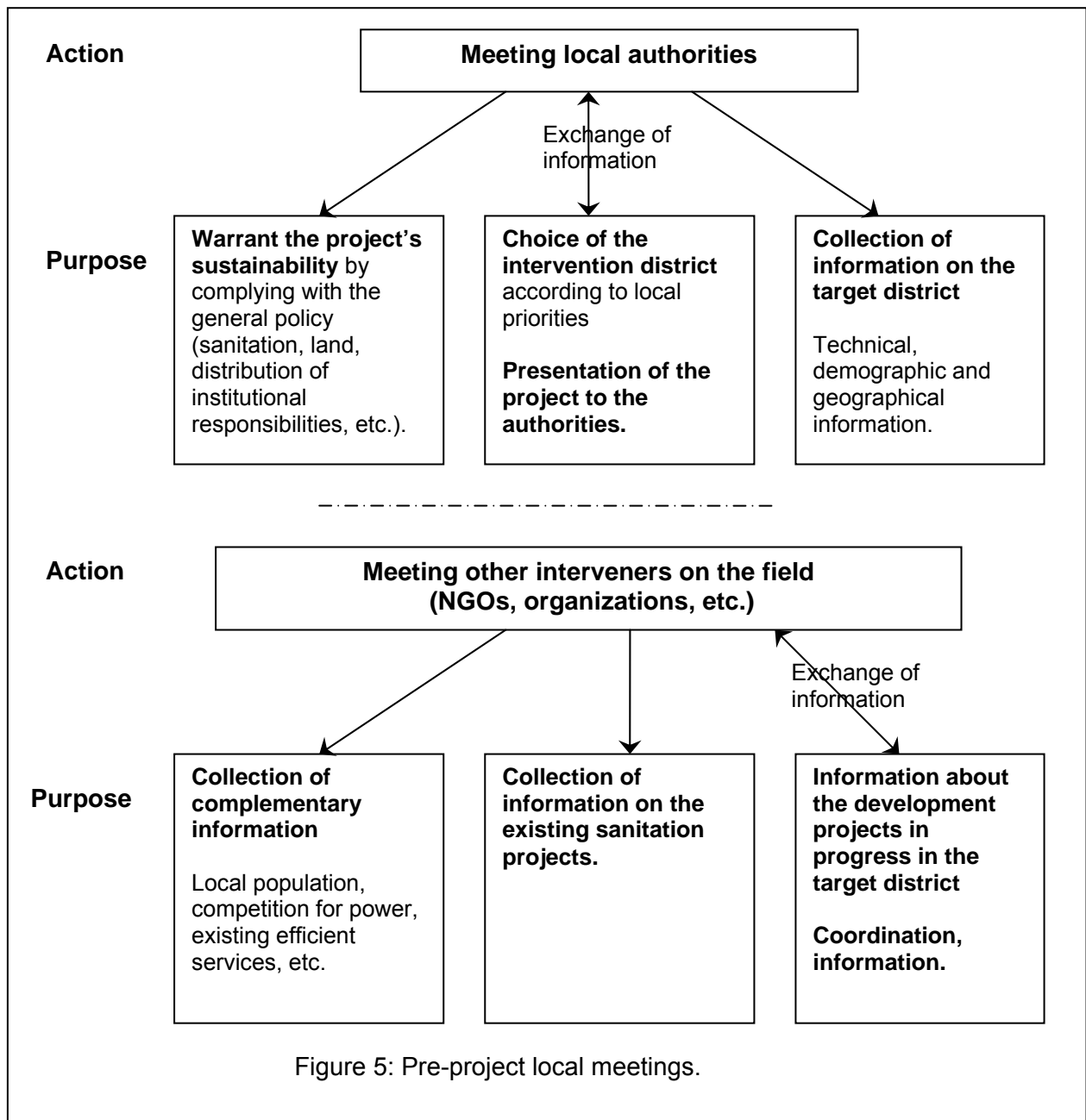
- geographical or technical: the existing networks have to be thoroughly acknowledged as well as the topographical and geographical field constraints. Collecting a maximum of technical information from the municipal agents, or other local actors, can give you a first idea of the district's practices on a sanitation point of view: is the drinking water supply abundant? Is it a network or a standpipe? Where does the wastewater flow? What are the obstruction points? Are the streets flooded? Are the streets passable? Are there any open spaces that could be used? Where is the garbage dumped? etc.

- institutional: knowing the theoretical responsibilities in the sanitation domain, as well as the formal and informal systems implemented, will give you an idea of the theoretical and real roles of everyone. Is the municipality responsible for sanitation? Is its role specified in the legislation? Does it apply to all the aspects of urban sanitation? What criteria can explain the current situation – absence of initiative from the municipality, general passivity, absence of dialogue between the municipality and the inhabitants, lack of technical and financial means, etc.?

- social and economic: information about the district's inhabitants is vital – social organization, job situation, incomes, education level, etc. Of course, a posterior survey conducted in the households will help you specify the socio-economic data about the district, but it is interesting to have a first idea of the district's profile in order to start thinking about the nature of the project. A chiefly important question brings about the presence or not of a community or an associative structure, its precedence and foundations – religious belief, common microcredit fund, geographical origin, etc.?

- related to the habitat: it is interesting to have some information about the type of construction (concrete, wood, palm leaves, bamboo, etc.), the size of the dwelling places, the status of the inhabitants (tenants or owners), the possible access to services, the presence or not of toilets, etc. These data can already allow you to understand the space constraints of the inhabitants, their lack of equipment and their domestic practices.

- political: a few pieces of information about the possible conflicts within a district (competition for power, periods of tension due to religious feasts or elections, etc.) will be useful to determine and preclude any potential political obstruction points.

- related to other development and/or sanitation actions in the district:
  - are there projects already in progress in this district? If it is the case, you have to contact all the actors of this project to get information about their action and give them the objectives of the project. This will allow a coordination of the actions of each organization and avoid any negative interaction with other interveners (private companies, NGOs, municipality);
  - have there been other projects in this district in the past? If it is the case, they normally have left marks in the mentalities and local customs: at best, the community structures and/or the local management structures are still in place. If these are efficient and sustainable, it can be wise to include them in the new project in order not to create another community, credit or management structure that would be based on another type of approach. This could disturb the population, which could show mistrust to this novel and unusual management.

Most of the inhabitants of the *Udham Singh Park* slum work in one of the factories of the Wazirpur Industrial Area: this is an important common point to be taken into consideration.

Pondering about the impacts of these different domains on the project is a good way to take into consideration the constraints the project will be facing in the future. Figure 5 briefly summarizes the objectives of the various meetings the project leader should go through.

Action	**Meeting local authorities**		

Exchange of information

Purpose	**Warrant the project's sustainability** by complying with the general policy (sanitation, land, distribution of institutional responsibilities, etc.).	**Choice of the intervention district** according to local priorities **Presentation of the project to the authorities.**	**Collection of information on the target district** Technical, demographic and geographical information.

—·—·—·—·—·—·—·—·—·—·—·—·—·—·—·—·—

Action	**Meeting other interveners on the field (NGOs, organizations, etc.)**		

Exchange of information

Purpose	**Collection of complementary information** Local population, competition for power, existing efficient services, etc.	**Collection of information on the existing sanitation projects.**	**Information about the development projects in progress in the target district** **Coordination, information.**

Figure 5: Pre-project local meetings.

I. B- The actors of the project

The success of a project depends, above anything else, on the actors concerned. They can be of different natures and act according to their individual interests and constraints. One of the current problems is the competition between the modes of intervention[13]: each actor wants to intervene directly on the population level.

- ✓ The NGOs, reacting to the absence of intervention from part of the public authorities, deal directly with the populations and set up social and/or infrastructure projects.
- ✓ Municipalities most of the time set up limited projects because they lack means – on the other hand, these projects often have a high visibility, preferentially before the elections.
- ✓ The companies in the water and sanitation industry increasingly intervene directly on their "users". These companies can sometimes implement specific systems for the poor population to access basic services.

If everyone directly and unilaterally acts on the poor populations, the modes of intervention begin competing instead of completing each other and making their action durable. It is then necessary to integrate one's project into a cooperation process with the other actors, by involving them according to their role and responsibilities.

There are numerous actors concerned, to a variable extent, in a project. This chapter will try to read the *modus operandi* of each of them. Then it will offer a few reflection leads taken from examples of actors' interactions in development projects.

I. B- 1- The actors in a development project

Among the actors, the inhabitants – and their representative –, the municipality and the NGOs deserve to be treated first and accurately analyzed since they are often at the core of the projects. Subsequently, a paragraph will focus on the other actors: the private companies, the government, the development agencies and the donors[14]. The aim of this part of the report is to understand the interests and constraints of each actor taking part in a project.

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[13] Congress Report « Des initiatives locales aux plans de ville. Changer d'échelle pour une gestion concertée de l'environnement urbain » in Bamako (Mali), 1998.
[14] The relationships with the donors are important but will not be detailed in this document as the latter focuses on the field approach.

<u>I. B- 1- a) The inhabitants and their representative</u>

Of course, all the inhabitants of the district will not be able to take part in the setting up of the project: this task will mainly be attributed to their representatives or leaders. But before focusing on them, it can be useful to have an idea of the population benefiting from the project. Here follow a few very general facts on the poor districts of developing countries that will have to be kept in mind:

- The inhabitants of poor districts often choose the place where they live according to their activity. So, taxi drivers and street vendors will choose dwellings located near the inner city where the economic activity is important. A survey[15] outlined the connexions between slum dwelling and employment: the poorer can accept worse living conditions to get a better location.

- The households manage their budget on a day-to-day basis, or at best on a week-to-week basis. This explains the insolvency of some microcredit programmes or loans which repayments are paid monthly – sums are too important to be repaid in once: the poorer appeal to local lenders who accept daily repayments, but whose rates are very high[16].

- The households' health care expenditure is very high and not regular [17]: physical examinations and medicinal products are the first motives for loans in most of the visited districts. Improving sanitation allows the prevention of these diseases and therefore money can be invested in other sectors.

- The inhabitants of slums do not naturally develop solidarity among themselves because they are particularly poor. If there is any solidarity, it is limited to the family circle – it might extend to distant family. In a district with no community structure, the head of household devotes all his time to the survival of his family. This point is very important: many donors and international NGOs base their intervention in countries according to the success of community projects. We have to be aware that the feeling of community is not always systematic or customary. Convincing the inhabitants and organizing them into a community is a process requiring time and human capabilities.
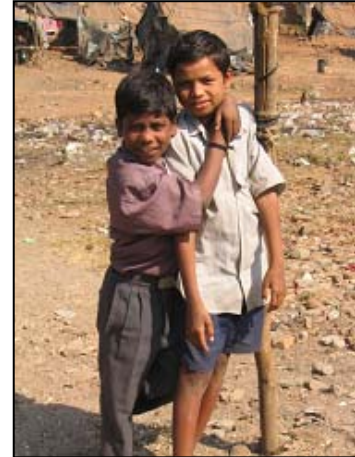
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[15] B. H. S. Khemro (2002).
[16] M. Domingo et al. (2004).
[17] P. Fallavier (2003).

Children of slums in Phnom Penh (Cambodia).

Children of slums in Bombay (India).

- In the poor districts, children under 18 account for a 50 % of the inhabitants and it is advisable to make them participate in the project, as they will be the ones responsible for the district in the future. It is also a question of building infrastructures adapted to children: for example, in Viyamshela Gymkhana slum in Bangalore (India), NGO SPARC designed children-friendly latrines with narrower holes which look less scary to children afraid to "fall in the hole" – it happens! They are also decorated with drawings and children games to attract the younger ones[18].

- Sanitation and hygiene are gender issues: in most developing countries, women are responsible for the domestic chores, the household cleanness and the education of the children on that matter. It is vital to integrate this particularity to the project setting up process and suggest specific actions targeting women on the subjects of cleanness education and of involvement in the cleanness of the district. In New Delhi (India), in the district of *Udham Singh Park*, the district sanitation comity is composed of eight persons, including seven women. Project leader Darshan Mehra[19] declares that the success of a project greatly relies on the growing involvement and influence of the women in these issues.

- The inhabitants of these poor districts pick up and collect recyclable or reusable wastes, in order to sell them and complement their income. Some of them even exclusively make their living out of this household waste business, as shown in box 7.

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[18] S. Barlett (1999).
[19] Organization JEET, New Delhi (India).

- The inhabitants are not always aware of the actual constraints (technical, financial and other) in the implementation of a sustainable project. Consequently, the solution they might offer is not necessarily the most appropriate. Thus, the inhabitants of a district aided by NGO URC in Phnom Penh (Cambodia) asked for the path passing between the houses to be covered in concrete so that rainwater could flow outwards – the engineers of the project had proposed a central gutter but it seemed dangerous for the children of the district. Today, the flow of the water brings out flood problems in the gardens along the path and inhabitants are complaining…

In order to set up a project in a poor district, specificities, constraints, limits and strengths of the future beneficiaries have to be taken into account all through the design and implementation phases.

Composting and waste segregation in the CSARO waste pickers cooperative in Phnom Penh (Cambodia, see box 7).

> Box 7: The waste pickers: inhabitants of the poor urban districts at the core of the waste issue
>
> In all the big cities of developing countries, some very poor households live on the waste of their fellow citizens. Every day, they pick up reusable waste: plastic or glass bottles, cans, cardboard, plastic materials, metal, chicken bones, etc. They pick them up going from door to door, in the streets, in the garbage cans and containers or in the garbage dumps. At the end of the day, they sell what they collected to small waste "dealers".
>
> Retrieving or picking up reusable waste is rarely a choice. Family are forced to appeal to it in order to survive and waste picking is a toilsome task: for example, in Phnom Penh (Cambodia), waste pickers walk from 7 to 16 hours a day and carry picked up waste in bags, over more than 10 km. In Hanoi (Vietnam), a waste picker bag weights around 35 kg.
>
> Waste pickers hold a very low position in the social ladder, on the one hand because of a lack of legal recognition, and on the other hand because of the nature of their work. However, their socio-economic and environmental value is considerable. In New Delhi (India), they pick up 10 to 15 % of the garbage generated every day by the city: the municipality then can save an estimated 25 % of its garbage collection budget. In Hanoi (Vietnam), they pick up 20 to 25 % of the generated garbage! Accordingly, they have a real economic function.
>
> On that account, they play an important role in the district and they can be associated with projects related to the cleanness of the district: pre-collection, composting, waste segregation, etc. Organizing them and including them to the project in their district can contribute to integrate them and improve their living and working conditions. It is one of the objectives of the Cambodian NGO CSARO (Community Sanitation And Recycling Organization) in Phnom Penh: this NGO organized 26 waste pickers in a cooperative that manages household waste collection from door to door for 6,000 households. They perform a waste segregation and a valorization (cleaning and composting) of the recyclable waste in order to increase their selling price. Finally, they have been trained for composting and they can sell the compost of organic waste in the city. This initiative gives them the opportunity to have a decent monthly wage and to benefit from a kind of social security.

In order for a project to be designed and carried out, the inhabitants have to be represented by a leader (see box 8). This leader can be a volunteer or designated by the community. He plays an important role for the project leader, so it is preferable to closely examine his profile by wondering a few simple things to understand what brought this leader to his current position.

- ✓ Where does the legitimacy of the leader come from? Was he elected? Designated? Is he religious? Recognized? Does he live in the district and in which conditions?
- ✓ How long has he been here? What is the actual connexion between him and the community?
- ✓ What are his aspirations and intentions? Are they political?
- ✓ What are his personal interests? A better quality of life? Money?

- ✓ Does he inspire confidence? To assess the confidence inspired by the leader, it can be good to go in the district and observe his relationships with all the inhabitants – not only his close friends. The point here is to prevent any theft problem in the community funds.
- ✓ What are the leader's faculties? Did he go to school? What language(s) can he speak? Is he able to express clear demands? If you determine his potential lacks, you can remedy them – training, assistance of a young auxiliary, etc. – and ensure a better quality of the project: the leader will be better prepared to express demands and defend the inhabitants and their rights.

Box 8: The *portero* of *Villa Besada* In Buenos Aires (Argentina)

The leader represents the access point to the district and its inhabitants. In some *villas* (slums) of Buenos Aires, you cannot enter the precinct of the district unless you are accompanied or authorized by the *portero* (informal leader of the district, recognised by all the inhabitants), otherwise your security is at risk!

The *portero* of *Villa Besada* is mainly responsible for the important works that have been carried out in his district (see box 36). He has been in the slum since it was created and he obviously has some political aspirations: as a matter of fact, he is at present one of the coordinators of a neighbourhood commission for a large zone of Buenos Aires including several millions of inhabitants...

He managed to establish a dialogue between the inhabitants of the district. He even claims he can make two opposing neighbours communicate, simply by nominating a third neighbour as a mediator, in order to ensure the progress of the community's projects.

The leader is a preferential interlocutor and a fundamental actor in the project. His adhesion to the project is essential.

I. B- 1- b) The municipality

The emergence and implementation of decentralization[20] in developing countries have put municipalities, and more generally local authorities, in the hot seat of local development.

Unlike developed countries, which sometimes have experienced decentralization for centuries, developing countries more often than not know it since a few years only. So this process can occasionally encounter malfunctions: in theory, the law substantially defines transfers of competences but those are very rarely followed by the adequate financial transfers and by the necessary human and material resources.

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[20] See footnote 8.

However, among all the actors, the elected municipality remains the closest to the population and on that account, the better informed about the citizens' needs. So, it is the more appropriate entity for the provision of basic services. In fact, even if the decentralization process is not optimal or not yet finalized, the municipality is the key actor in urban services: therefore, it has to be integrated, as far as possible, to every phase of the project.

As for urban sanitation, the roles and responsibilities of each actor are seldom clearly defined. As a consequence, the municipality often ends up being in charge of a relatively important part of urban sanitation, generally including solid waste collection and part of liquid waste management. The confusion in the distribution of responsibilities is often used as an excuse to account for the general passivity.

Solid waste and liquid waste management are almost systematically treated separately, which multiplies the number of local interlocutors.

As a first step, you have to determine how the studied city is organized, since every pattern has its qualities and drawbacks:

- First scenario: the municipality is organized in field offices for each district and their supervisors – elected or designated – are responsible for all the municipality functions[21]: administrative responsibility, charge collection, urban services, etc. In this case, it will be easier to adopt an integrated approach of sanitation issues. But not much time is dedicated to sanitation and the competences in this domain are very low. This scenario was observed in Antananarivo (Madagascar), where the *fokontany*[22] is the closest local entity for the population. Consequently, the inhabitants, depending on the *fokontany* to obtain their administrative papers, have to pay their charges.

- Second scenario: the municipality is organized in several services (solid waste, education, health services, etc.). Each of them has a representative field office in the different districts. In this case, there will often be two offices – or more – in charge of the different aspects of sanitation. These offices do not always agree on the distribution of roles and responsibilities and this might give rise to conflicts or to a lack of cooperation. This scenario was observed in New Delhi (India) where the Delhi Water Board (DWB) – in charge of the drinking water supply – is responsible for the wastewater sewage network and the drains, while the Municipal Corporation of Delhi (MCD) supervises solid waste management and street

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[21] Except when some services are constituted as independent agencies.
[22] Municipality's deconcentrated office administrating the district.

cleaning. Nevertheless, in the district of *Udham Singh Park*, the favoured partner in terms of sanitation is the MCD, which contributed to the construction of secondary drains in the narrower streets of the district.

In these two scenarios, local structures are often strongly subject to the central authority, on budget grounds as well as decision grounds.

Once you have identified the local structure(s) in charge of sanitation, you should go through a few interrogations about your interlocutors within the structure:

▪ Was the office supervisor elected or designated? In Antananarivo (Madagascar), the president of the *fokontany* was elected. Therefore, he lives in the district and he is close to his fellow citizens and neighbours. He is working to improve his district and he is often involved in the implementation of projects. In New Delhi (India), the members of the deconcentrated offices of the MCD (Municipal Corporation New Delhi) are designated. In this case, the involvement in the project depends on the good will of the supervisor.

▪ Will there be municipal or local elections during the implementation of the project? This question is relevant because of, on the one hand, the will of the local representative to renew his term of office – and therefore, his motivation to improve the living conditions of his electors in order to obtain their votes – and on the other hand, the hazard that represents a change of the local office representative as such a change will be likely to weaken or slow down the project since the whole process will have to be resumed with the new elected team!

▪ Is the representative of the office willing to get involved in the project? This question is, most of the time, vital to the success of a project: the involvement of municipal and local representatives is necessary in order to set up a sustainable project. If the local representative shows reluctance to get involved in spite of the arguments for the improvement of the district's living conditions, there are several ways to convince him:
  o You can put forward the advantages of such a project for the municipality: consolidation of the municipal human capacities, recognition from the population, etc.
  o The community of inhabitants can pressure the local office by demonstrating their motivation and dissatisfaction. For instance, a delegation of inhabitants in the slum of *Udham Singh Park* in New Delhi (India) managed to involve the local responsible for cleanness, hitherto reluctant, by demonstrating in his office.

o In the case of a local representative totally impervious to the demands of the inhabitants and the arguments of the project leader, it is possible to refer to one of his supervisors, potentially less indifferent. An example of this case is described in box 9.

Box 9: Developing several arguments to convince the Vietnamese authorities in Hanoi (Vietnam)

In Hanoi, Danish NGO OVE pressured via higher authorities – through a ministry and the People's Committee of Hanoi – to unblock a conflicting situation in a field office. This attitude can be controversial, however it led to the success of a quality project. It also shows the advantage of meeting all the actors involved, at every level.

During this project, in order to convince the municipality – which was afraid that the amount of garbage to collect would increase – to accept waste segregation, OVE financed a technical study conducted by recognized specialists to determine the impact of the waste segregation on the district. The study showed that the amount of household waste to be collected would not change and the municipality accepted to involve in this new project.

Nevertheless, it is sometimes easy to understand the municipalities' reluctance to get involved for some districts, in particular when their agents' security is not warranted, as it is the case in some slums of Buenos Aires (Argentina).

I. B- 1- c) The Non Governmental Organizations (NGOs)

Questioning about the NGOs

Nowadays, most of the development projects involve Non Governmental Organizations, either as operators or as project leaders. Their status and independence confer them an interesting freedom of action. Knowing an NGO means first going through the following questioning:

- Its nature: the essential question is to know what is the own purpose of the NGO – social work, building of infrastructures, human rights, religious cause, etc. According to the purpose of the organization, it will have different priorities. A certain number of questions can be asked: what is the type of social expertise it uses – identification of demands, surveys, participatory approach, etc.? Is it close to the inhabitants? Etc.

- Its origin: is it a local or an international NGO? International NGOs have generally stronger financial supports and a larger knowledge of techniques and projects. A local NGO, closer to the field, generally knows better the inhabitants, their concerns and their way of living. A

combination of the two types of actor can be very interesting – though it is out of the question for the international NGO to command the local NGO in exchange for financing.

- Its steadiness on the field: was the NGO created long ago? How long has it been present on the field in this country or in this city? For example, in Cambodia, the instability of the government made most of the NGOs go away, very few remained. World Vision International stayed there and thus it has a good image and a good knowledge of the countries' issues.

- Its financial stability: inquiring the mode of funding of an organization – variety of donors, subsidies allocated to operating costs… – can give you a specific idea of the true level of independence of the actor. For instance, the organization Assistance for Human Development (*Assistance au Développement Humain* or *ADH*) in Antananarivo (Madagascar) isolates the financing of its operating costs from the financing of its development projects – costs covered by donors.

- Its reliability: being certain of the good faith of the local partner implies a thorough investigation. Indeed, there are sometimes fake NGOs created in order to misappropriate development funds, organizations which do not intend to carry out concrete actions. It is then necessary, particularly when you work with small structures, to investigate the true good faith and the legitimacy of the organization.

- The quality of its human resources: when a reliable local NGO is a privileged partner, the question of the quality of its human resources is vital. In Antananarivo (Madagascar), many people graduated a social worker training, so the NGOs can enjoy an adequate labour pool, with a good knowledge of development issues. Similarly, concerning the project of NGO IIED (International Institute for Environment and Development) in the district of San Fernando in Buenos Aires (Argentina), where it has been present for 15 years to improve living conditions, Ana Hardoi[23] notes that the success of a community project requires time and solid human resources. If some members of an involved NGO present lacks on matters linked to the success of the project, they have to be trained on these matters.

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[23] IIED – América Latina, Buenos Aires (Argentina).

Local context of the civil society

Misunderstandings can be avoided when the project leader has an idea of the local context of the civil society, the history of its presence and its importance. In fact, NGOs operate in different conditions according to the context of the country. Here follow a few illustrative examples:

- In Vietnam, the right of association did not exist until July 2003. It was granted then to simplify the creation of new structures intended to complete the established ones – Fatherland Front Organizations for young people, women, veterans, trade associations, etc. The state tightly controls any initiative of organizations and authorizations are necessary in order to carry out any action. In these conditions, there has to be a prior collaboration with public authorities in order to build any project.

- In Cambodia, the disengagement of the state leads the NGOs to set their development projects very freely and the city is mainly developing through projects initiated by NGOs and large multilateral development agencies.

- In Argentina, as the country was traditionally wealthy before the 2001 crisis, international NGOs were absent from the country until very recently. It is only since then that they have come to bring their support.

I. B- 1- d) The other actors involved in a development project

The private concessionary companies

The concessionary company is chosen by public invitation to tender. It has to comply with specifications and to involve in a development strategy, in cooperation with authorities and monitored by a state regulatory organization.

If the concessionary company considers connecting a district to a sanitation network or including it to the garbage collection service, in the framework of the concession contract obligations, then the private company will be part of the district's project. In order to fulfill obligations and take part in projects, the financial aspects are essential:
- ✓ Is the cost of the service implementation affordable by the households?
- ✓ Will the inhabitants be able to pay for the service once it is implemented?

In some of the cases, the concessionary company can develop social projects, as shown in box 10.

Box 10: The "Agua + Trabajo" programme (drinking water and labour) initiated by Aguas Argentinas in Buenos Aires (Argentina)

The "Agua + Trabajo" programme was started in May 2004 in the district of *La Matanza* in Buenos Aires. This project is aiming at connecting 400,000 inhabitants of this underprivileged area to a water network. The inhabitants carry out the manual labour – trenches, pipe laying, etc. Most of the time unemployed or benefiting from social aids, they have gathered into 89 cooperatives of 16 persons. Apart from connecting the district to a drinking water network, this project gives the inhabitants of the 68 districts of *La Matanza* a one-month training on network laying, in order for them to get a job and a salary.

This system is efficient with water networks – relying on pressure and thus, not depending on the declivity of the pipes – but its success is much more precarious with wastewater disposal networks – relying on gravity and requiring a very accurate gradient on the whole length of the work so that the wastewater can be correctly drained.

The multinationals' capacity to invest is clearly higher than the other actors: in Santiago de Chile (Chile), in 4 years, Aguas Andinas built two wastewater treatment plants. La Farfana's plant cost $350 millions and is one of the five biggest plants in the world. Today, almost 72 % of city's wastewater is treated – compared with 3 % in 2001. However, the return on investment depends on the inhabitants' ability to pay.

La Farfana's wastewater treatment plant in Santiago de Chile (Chile).

The small private contractors

The small private contractors, such as latrine constructors or pit and latrine emptying operators can be key actors if the project includes an "infrastructures" part. They can also be chosen by invitation to tender, according to the scale of the project. Besides, these contractors can consider the project as a way to conquer new markets – target districts and neighbouring districts – and thus grow in size.

The state

Sanitation remains a responsibility of the state, be it on hygiene, health or public works grounds. The state notably conducts sanitation policies, create standards and implement monitoring organizations. It can be good to read the associated documents in order to have an idea of the government's political choices and priorities and thus determine the correspondence of the project with the orientation of these documents.

In some countries, the state itself conducts large sanitation development programmes. This is the case of the programme Chile Barrio in Chile, which purpose is to eradicate poverty through an integrated approach consisting in housing and urban services – like sanitation – improvement, adult training and integration to the district's dynamic. In Argentina, several sanitation programmes were set with an integrated approach of the same type: the PROMEBA programme (Poor Districts Improvement Programme), the PROMEVI programme (Living Conditions Improvement Programme), etc.

The development agencies and the donors[24]

These agencies often have precious human resources. One of their purposes is to promote experience and knowledge. This way, a project leader will be able to obtain key information on the target district, on the achievements and nonachievements of similar projects. The role of the donors is most of all to provide countries and municipalities with the extensive funds necessary to implement action plans on the city's scale.

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[24] See footnote 14.

I. B- 2. The interactions between actors

In general, a project on the field involves:

- ✓ the inhabitants, organized into a social structure most commonly called the community and represented by one or several leaders according to the size of the project,
- ✓ the municipality through its field offices and its representatives in charge of sanitation,
- ✓ one or several NGOs.

        Besides, other actors can often play an essential role: concessionary company setting a social project, state intervening in the framework of a national programme, etc.

        There is not just one type of organization, numerous combinations are possible. The three examples developed here under show the different systems of actors.

Box 12: The participatory management system of Aguas Argentinas in the slums of Buenos Aires (Argentina) – Coordination between four different actors

In order to connect the *villas* (poor districts, slums) of its concession at affordable prices for the inhabitants, the private company Aguas Argentinas developed the participatory management systems. Four actors participate in the implementation of the water and/or sanitation network of the *villas*:

- ✓ the municipality runs the project, helps the inhabitants by elaborating work schedules and provides the necessary tools;
- ✓ the Tripartite Entity of Sanitation Works and Services (ETOSS) helps coordinating the actors;
- ✓ the inhabitants participate as the labour force for the installation of the network in their district – digging trenches, laying pipes;
- ✓ Aguas Argentinas is in charge of checking on the technical feasibility of the project, deals with the management, the investments and the technical training of the inhabitants and provides the pipes.

This way, the inhabitants of the *Villa Besada* could connect themselves to the wastewater disposal networks of the city (see box 33), thanks to the coordination of these four actors.

The project resulted in Aguas Argentinas providing the service to its customers in accordance with the concession contract of Buenos Aires. In exchange, the inhabitants pay their drinking water and sanitation bills.

Box 13: The pre-collection project initiated by ADH and Enda Tiers-Monde in the district of Faami in Antananarivo (Madagascar)

      The NGO Enda-Tiers Monde, which objective is to protect the environment in developing countries, initiated a project in 2001 in two poor urban districts of Antananarivo. There was a double objective to this project: implementing a viable collection system and heightening the population's awareness of cleanness and hygiene problems linked to garbage. This NGO's ideology is based on a strong involvement of the inhabitants.

      To implement the project on a social point of view, Enda-Tiers Monde concluded a partnership with a local organization, ADH (Assistance for Human Development). ADH conducted surveys on the inhabitants to get their opinion on what would be, according to them, the best pre-collection system. The solution was chosen according to the results of the surveys and in coordination with the *fokontany* (municipality's field office). It was then implemented and monitored.

      This project coordinates Enda-TM, as project leader, ADH, as local partner and social project supervisor, the *fokontany,* dealing with the charge collection and the project's monitoring, the waste collectors of the district paid by the *fokontany* and the inhabitants who are both beneficiaries and customers.

      Following the departure of Enda-TM, ADH still deals with the social management of the project and monitors its financial management under the responsibility of the *fokontany.* In the end, the municipality's deconcentrated office will be the only one in charge of the household waste pre-collection.

ADH's facilitator and three collectors of the district of Faami in Antananarivo (Madagascar).

Box 14: Handicap International's project of latrine construction in Antananarivo (Madagascar)

Handicap International (HI) takes part in sanitation projects in Antananarivo's slums. In the year 2000, the NGO responded to the cholera epidemic in three districts of this zone by initiating a project to build elevated latrines – the ground water being less than one metre deep, digging pits is impossible – for groups of 4 or 5 families.

In this case, HI recruited a specific team of Malagasy social workers with some experience in development projects and with a good knowledge of their country. This team was able to maintain strong relationships with the inhabitants concerned by the project who were chosen in accordance with the *fokontany* – according to priorities, motivation, etc.

The private companies in charge of building the latrines were chosen by invitation to tender – two companies were selected. Once the latrine is built, the inhabitants are linked to HI by written contract specifying that the use of the latrine is subject to a good maintenance. HI can thus decide to close the latrine if it considers the cleanness and maintenance – for which the inhabitants were trained – insufficient.

This project coordinates an international solidarity NGO, as project leader and local partner – the Malagasy team –, the inhabitants, by groups of 4 or 5 families – linked to the NGO by contract –, the two chosen private companies and the *fokontany*, helping to chose the high-priority families.

According to the contract concluded with the families, HI is in charge of controlling the cleanness of the latrines. Once this regular control proves that the latrines are well maintained, HI will leave the district and the inhabitants will be the only ones responsible for the management of their latrines.

So, many scenarios can be contemplated, the thing is to determine the optimal structure according to the local context and the capacities of each actor. More specifically, the success of a scenario is very much depending on:

- a clear distribution of the roles and responsibilities of each participant in the project: there must be a balance between the tasks and obligations of the different actors according to their responsibilities, their good will and their capacities.

- the establishment of a strong and close relationship with the inhabitants. If the project leader does not come from the city – or even the district –, it is necessary to integrate local interveners to the team – recruiting within the team or the local NGO contracted – in order to dispose of a better knowledge of the living conditions and create an efficient communicative atmosphere with the inhabitants.

Besides, when the roles are distributed among the actors, the project leader has to have (already) a clear idea of the scenario that will perdure when he will be leaving. Indeed, in order to

reach sustainability with the implemented solution, the scenario has to be operational when the project leader – who is nothing else but the embodiment of the local dynamics aiming at the improvement of the situation – leaves the district. The infrastructures and/or the service implemented are then becoming the responsibility of the only client[25], being the municipality or the inhabitants. This post-project situation has to be thought through before the setting up of the project (see part II on this matter) but the project leader must also keep it in mind during the distribution of the responsibilities among the different actors. Boxes 12 and 14 give examples of final situations, after the project leader's departure.

Inhabitants of a district of Hanoi (Vietnam) building a drain one year after the end of a development project.

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[25] The client is any natural or legal person for whom a project is carried out, and who is the final owner.

I. C- The Sanitation Demand: Identification and Social Marketing

Identifying the demand of the inhabitants of a district first requires a specific survey on the needs and constraints of the households. With the data collected, the inhabitants and their representatives can discuss their priorities for the district. Sanitation is often part of these priorities, but most of the times, other concerns – drinking water, electricity, etc. – come first. What then? If sanitation is not the first priority of the inhabitants, though still being one of their concerns, the project leader can implement social marketing: he will bring up the inhabitants' demand by offering them an improvement project. The purpose here is not to impose a sanitation project but insist on the advantages of a better sanitation for every one.

I. C- 1. Identification of the sanitation demand

This step mainly consists in conducting a survey with the inhabitants of the district in order to better:
- ✓ define their economic and social status,
- ✓ know their first-priority needs,
- ✓ familiarize with the types of dwellings of the district,
- ✓ understand the reasons of their presence in this district and their mobility,
- ✓ record the existing sanitation equipments and the local customs (bins, toilets, bucket, etc.),
- ✓ assess their willingness to pay for a better sanitation.

In the ideal situation, locals will conduct this survey. They will go from door to door to collect the information and, if possible, they will be equipped with specific tools. Aiming at a better comprehension, these tools are increasingly numerous in some countries (such as India, as shown in box 15) and they are adapted to the local conditions, the languages and the idioms. They can sometimes be found in the large resource centres of the social society.

In New Delhi, the National Institute of Urban Affairs (NIUA) implemented an information system about the slums in order to create a geographical diagram of the individual and collective equipment for sanitation: the CBIS or Community Based Information System. This diagram is an important basic tool for planning projects of living conditions improvement through the provision of urban services.

The diagram was created based on door-to-door surveys on the inhabitants of the district. In order to facilitate the communication with the inhabitants and the collection of information, the PLA tools (Participatory Learning and Action) were used. For example, the chapatti analysis – in India, chapattis are flat round biscuits that can have different sizes and that are eaten at every meal – was used to classify the needs and problems by order of priority: the surveyed inhabitants put objects representing an action or a concern – a glass of water represents defecation in the open air since water is used to clean oneself afterwards – on chapattis of different sizes, in order to show the relative importance they granted to the subject.

The NIUA makes these participatory tools available to project leaders on its website (www.niua.org) in order to help them identify the demands of the populations.

Along with the information collected during these surveys, an inventory of the communal equipment such as standpipes, schools, public toilets, markets, playgrounds, illegal dumps, etc. is carried out.

The total amount of information collected can offer a first diagnosis on the district. Then, public meetings have to be organized to discuss with the inhabitants about their needs and create a space for dialogue. This phase can last for a long time. It took almost one year to the Danish organization OVE to go from the dialogue phase to the action phase in Hanoi (Vietnam) [26].

At this stage, creating relationships between the inhabitants, grouping and structuring them in "communities" under the authority of an opinion leader will be positive factors for the future implementation of the project. The inhabitants have to feel secure and free to express their opinion. The importance of participation (see box 26) is emphasized by many NGOs.

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[26] It cannot be denied that Vietnamese organizations are tightly framed.

I. C- 2. Impact of the local cultural aspects

Often underestimated or disregarded, the cultural aspects can sometimes provoke irreversible obstructions. Two types of cultural factors can impact sanitation development projects: the aspects specific to the culture or the history of a country and the aspects linked to the people's representation of liquid and solid waste.

Cultures, traditions and historical contexts

Firmly rooted in the local mentalities and often of different origins, the customs are determinant for the project:

- For example, traditions and religions play a fundamental role in the vision people have of themselves, particularly when they are poor. So, in India, the ancestral cast system has, still today – though it was legally abolished –, a paramount role in the organization of the society. This system goes along with a kind of fatalism, which results in a general acceptance of poverty. This does not mean that the inhabitants of poor districts are not willing to improve their living conditions but only that, in some cases, they need an external stimulus to give them the necessary willpower to change things…

- The national history and the recent political governments more than often leave important marks on the customs: the natural discipline and individualism of the Chilean were consolidated by 17 years of military dictatorship during the government of Pinochet. Nowadays, all Chilean accept to pay for their basic services.

- Recent economic crises often affect the inhabitants' willingness to pay. For example, the Argentinean – particularly the young ones who mainly experienced the economic crisis – "lost the habit" to pay their bills following the generalized bankruptcy, which considerably impoverished them. In spite of the general pauperization, the Argentinean keep thinking of their country as a rich country and they sometimes try to apply solutions not corresponding any more to their current standard of living. For example, the PROMEBA programme for the improvement of poor districts only develops costly technological solutions (networks) affecting a very small part of the population. If the same budget were allocated to low-cost techniques[27], the affected population would certainly be much larger.

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[27] About the low-cost techniques, see paragraph II.A-1-a) *Solutions adapted to local financial means*.

- The social context of the country can also influence the inhabitants' will to change things. For example, North Vietnamese usually wait for the government – supposed to deal with every aspect concerning sanitation for instance – to take action, without ever trying to solve their problems themselves.

In order to better understand the inhabitants of the target districts, traditional culture, beliefs, recent history and economic and social crises have to be identified before being integrated to the design of the project.

People's representation of waste

Solid and liquid waste – in particular excreta – are regarded differently according to the countries and the beliefs and this can strongly affect sanitation projects. As shown in the examples here under, cultural particularities related to garbage can act as a brake on the project (see box 16) but can also constitute a powerful lever serving its accomplishment (see box 17).

Box 16: Example of cultural brake on a sanitation project in Antananarivo (Madagascar)

Following the year 2000 cholera epidemics in Antananarivo's slums, NGO Handicap International carried out a program of latrines building. This program was responding to a real and spontaneous demand of the inhabitants, who had made the link between defecation in the open air and the epidemics. After two years, the success rate of the operation – latrines used and correctly maintained – had reached 80 %.

The remaining 20 % can notably be explained by obstructions stemming from local beliefs, as, for example, a family refusing to use the latrine because the storage of the excretes is a form of disrespect to the ancestors. Indeed, for many Malagasies, one cannot directly defecate on the ground, as it is the ancestors' resting place. So people often defecate in the rice fields full of water. This obstruction was not identified in the beginning phase of the project setting up and the latrine remains unused and not maintained.

Box 17: Diwali – Hindu New Year's feast – a lever for sanitation in the district of *Udham Singh Park* in New Delhi (India)

In New Delhi, in the district of *Udham Singh Park*, the Hindu New Year's feast (Diwali) was used as a lever to carry out a project. The objective was to improve the health conditions in the district: building drains, claiming the cleaning of the streets to the municipality's field office, but also regular cleaning of the district by the inhabitants.

Traditionally, for Diwali, Indian households clean inside their house to attract the gods of happiness and wealth. In the framework of this festival, the project's facilitators then organized a sanitation week consisting in a large cleaning operation of the district and common areas, in parallel with the cleaning of the houses. Their main argument was the "enlargement" of the cleaning from the houses to the streets.

In order to maintain the spirit of festivity, the groups were going around the district chanting cleanness and films were screened. Many elements related to the festival thus enabled the integration of this cleaning operation to the customs as well as its transformation into a joyful event.

I. C- 3. Social marketing

Urban sanitation, though it represents important stakes, is not always considered as a priority by the inhabitants of poor urban districts. Survival for them is first of all drinking, eating, housing and dressing. Living in decent hygiene conditions is very often only a secondary concern. However, urban sanitation of poor districts represents a major stake in health, environmental, social, economic and commercial terms.

If sanitation is not the first priority displayed by the inhabitants, is it a sufficient reason for doing nothing about it? The demand for urban sanitation can be aroused within the inhabitants of the target district. To this end, different levers can be used to enhance the value of the sanitation infrastructure:

▪ You can present the sanitation equipment as an acquisition befitting a certain social category. Focusing on the arguments of the health risks of a bad sanitation on the family and on the children has not proven efficient[28]. Today, one can note that levers such as honour or social recognition in the neighbourhood are more efficient to prompt the families to invest, financially and/or physically, in their sanitation. Examples of these sociologic arguments, used in Madagascar, are given in box 27.

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[28] Most of the times, these arguments related to health and hygiene are only convincing when the unhabitants have witnessed epidemics and have made the link between diseases and bad health practices – defecation in the open air, lack of hygiene, dangerous waste piling up, etc.

- It is possible to make sanitation an attractive product instead of a need. In fact, poor city dwellers sometimes own a TV or a cell phone in spite of the fact that these equipments are not vital to their family.

- A buyer-seller type of marketing approach can be interesting in the case of basic sanitation equipment. This strategy was used by Sulabh International in India and made this NGO very successful in the domain of latrines building (see box 18).

Box 18: The sanitation marketing strategy implemented by NGO Sulabh International in India

Since 1970, NGO Sulabh International has been fighting against manual scavenging, a widespread practice in India: some of the untouchables have to empty pits and latrines manually and then carry the excreta in buckets. In order to abolish this practice, Dr Pathak, the founder of the organization, is promoting double-pit latrines that can be emptied safely when the sludge is dry.

The organization led a large campaign to equip several regions with latrines. 1.2 million toilets and more than 5,500 public toilets facilities were built.

Sulabh International owes its incredible expansion to a convincing marketing approach. The organization approaches the families by offering them not only the building of toilets and latrines but also a pack of upstream services – identification of their needs in order to choose the more adequate technical solution, according to their financial means, and connection with a funding system – and downstream services – two-years guarantee and first emptying for free.

Sulabh's marketing approach to promote sanitation proved efficient but is not adapted to the poorer districts in which the inhabitants share a paying public toilets facility (cf. Pierre Paquiet et al. (1992).). This strategy is mainly efficient for personal latrines.

When there is a lack of demand or in order to strengthen the existing demand, the project leader can lead a valuation campaign for the sanitation infrastructure so that it becomes an attractive product, necessary for health reasons as well as social reasons. In an ideal situation, this campaign will be led on a door-to-door basis by local mediators.

**NGO Sulabh International's public toilets and showers facility in the city
centre of New Delhi (India).**

Once the different aspects of the pre-project information collection have been reviewed, the
different actors of the project will have to meet and fix common objectives according to the
priorities of the inhabitants and the technical, financial, material and human constraints of each and
every one. This is the occasion to discuss this initial clearing step in order to set up a structured
project by taking into account the numerous needs and constraints and thus bring adequate
solutions.

The objects of the second part of this document are the design and concrete
implementation of the project.

Part II.

Setting up and

Implementing

a Sanitation

Project

II. Setting up and Implementing a Sanitation Project

II. A. Setting up a Sanitation Project

A sanitation project relies on the choice of an **adequate technical solution** requiring the implementation of a number of infrastructures for the collection, disposal, treatment and storage of the solid and/or liquid waste representing health dangers for the inhabitants of a district. However, in a poor district of a developing city, the sanitation project cannot be limited to infrastructures. Indeed, for the project to be effective and for the infrastructures to perdure, a **social support** of the inhabitants is necessary: awareness, education and information are all necessary to the efficiency and sustainability of a project. The **financial arrangement** – preferably with the inhabitants' and the local authorities' participation and/or management – will then allow identifying viable funding processes for the development of the project. In order to coordinate these different aspects, establishing a **general strategy** is a requisite: it will clearly define the distribution of the roles and responsibilities and correctly plan the actions of the project.

These four aspects – technical, social, financial and strategic – of a development project have to be tackled and coordinated by the different actors on the field in order to result in an efficient **implementation**. These different aspects will be treated in the following part of the document. A concrete example describing each of these four aspects of a project is given in box 19.

ADH's project – district of Faami in Antananarivo (Madagascar): Antona and his dustbins (see box 19).

Box 19: The different aspects of a waste collection project: ADH organization (Assistance for Human Development) in the district of Faami in Antananarivo (Madagascar)

Initiated by ENDA TM Indian Ocean and run by ADH, this pilot project for waste collection in a poor district of Antananarivo is particularly simple on the technical point of view: every morning, five collectors distribute around fifty metallic dustbins in the streets of the district for the inhabitants to put their garbage in. At 10 a.m. and 5 p.m., the collectors empty these dustbins into the skip located at the end of the main street by the SAMVA (Autonomous Company for the Maintenance of the City of Antananarivo) and then store them away until the next day.

In order to implement the waste collection system, the social support of the project consisted in giving information on the advantages of the project and arousing awareness about the problems linked to cleanness. One of the objectives was to convince the inhabitants to put their garbage in the intermediate dustbins. The social support resulted in the agreement of the inhabitants and their willingness to pay a charge on a regular basis. Now, ADH's social animators regularly come and visit the district with the collectors and the person in charge from the *fokontany* (municipality's field office) to monitor the progress of the dustbins collection, the charge collection and the remuneration of the five collectors.

The *fokontany* is mainly responsible for the financial management of the project. It is in charge of collecting a monthly charge of 1000 FMG ($0.1) per household, distributed as follow: 100 FMG ($0.01) for the charge collectors and 900 FMG ($0.09) for the waste collectors who receive a 150 000 FMG ($15) monthly wage. The rest of the money is allocated to the maintenance of the equipment.

In this project, the distribution of roles and responsibilities and the setting up of the project were managed by Enda. Enda chose local NGO ADH to manage the implementation, notably for the social aspect, which was particularly developed for this project.

II. A- 1- Choice of the technical solution

Numerous technical solutions that were implemented around the world are described in this document. They are developed in boxes giving concrete examples observed on the field. You can find a list of the contents of these boxes in box 20.

As mentioned in the "Preamble on sanitation", the project leader had better apprehend the sanitation of a district as a whole grouping solid waste, excreta, wastewater and rainwater. However, on a strictly technical point of view, these different problems require different solutions: each health danger gives rise to a distinct technical solution.

Besides, there can be two radically different technical approaches of sanitation. The first one is the network approach aiming at treating the problem (wastewater and/or rainwater) on the scale of the district and requiring more important financial and technical resources. The second one is the individual (or autonomous) approach bringing a solution on the scale of the household (open pit, latrines, etc.). This distinction has to be kept in mind in order to choose the more adequate technical solution.

The chosen technical solution has to be adapted to the current and future needs and constraints of the district and its inhabitants.

II. A- 1- a) Identification of a technical solution adapted to the current needs and constraints

The technical solution to be implemented has to be carefully chosen to fit at best the local environment. In order to do this choice, one has to take into account:
    ✓ the variety of the health problems encountered;
    ✓ the physical layout of the district;
    ✓ the judicial aspects related to the land;
    ✓ the local context;
    ✓ the local financial means;

Every one of these aspects is developed here after.

Solutions adapted to the variety of the health problems encountered

To respect a global approach including the different aspects of sanitation – household waste, household wastewater, disposal of excreta, rainwater management – the project will comprise several different technical solutions treating the health risk as a whole (see box 21).

Box 21: Warding off health dangers in poor districts: the project of the French Association of Volunteers of Progress (AFVP) on main road 1 (RN1) in the south-west of Antananarivo (Madagascar)

Following the renovation works on Main Road 1, the AFVP chose to improve nine districts located around the road. These "lower districts" are situated in the easily flooded valley of Antananarivo. Initiated in 2003, the project covers several points specified notably from the results of a survey on the population and the local authorities:
- ✓ refurbishment or construction of standpipes in order to improve the drinking water supply and the draining of close stagnant waters;
- ✓ construction of public toilets facilities (latrines, showers) and wash-houses;
- ✓ implementation of a cleaning system of the district and an improved household waste collection system – awareness strengthening of the inhabitants, increase of the number of garbage bins, pre-collection system.

This approach tackles at the same time several aspects of sanitation and cleanness – in this case, water management, waste management, construction of latrines and showers – with the purpose to improve the hygiene conditions of the nine districts concerned. This way, it offers a global response to all the encountered problems.

Solutions adapted to the physical layout of the district

Many aspects related to topography, existing infrastructures and urban pressure have to be taken into account to determine the more adequate technical solution for the physical layout concerned. The following questions have to be thought through:

- What are the geographical layout and the topography of the land? Here under, a few key points:
    - ✓ the depth of the ground water (possible pollution conveyed by wastewater or leachates, possible saturation of the water table triggering more frequent floods, etc.);
    - ✓ the slope and local gradient;
    - ✓ the possible gradient for wastewater and rainwater draining networks (problems of drainage by gravity flow is the gradient is low, etc.);
    - ✓ the flood liability of the zone under study;
    - ✓ the access to drinking water (availability and flowrate).

- What are the existing health infrastructures? Among others, the following will have to be analyzed:
  - ✓ the dimensions and dilapidation of the existing natural or technical sanitation means (waste stabilization ponds, state of municipal garbage dumps, length and saturation state of the networks, public or private toilets, etc.);
  - ✓ the maintenance carried out on these infrastructures;
  - ✓ the nature of the water disposal network: combined[29] or separated;
  - ✓ the connection possibilities (network already saturated, pirate connections, etc.);
  - ✓ the equipment used by the municipal and/or private cleanness and sanitation services (skips, dump trucks, etc.).

- Is the urban pressure[30] high in the target district? In urban zones, a high housing density can provoke obstructions in the project.
  - ✓ Urban pressure does not always enable the implementation of a technical solution. Identifying a parcel of land to build infrastructures like public toilets can be complicated when free lots are lacking. And in the slums, some streets are so narrow that they are impassable for dump trucks or waste collection carts.
  - ✓ The urban land pressure also often reduces the efficiency of the existing means, as shown in box 22.

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[29] In a combined network, wastewater and rainwater are disposed of through the same pipe.
[30] Urban pressure can stem from different phenomena: demographic increase (several generations share the family land to build their houses, which increases the housing density), topographical constraints (for example, steep slopes or easily flooded zones which will obstruct the expansion of the city and lead the population to live in a limited area), political constraints (in Hanoi, Vietnam, the government had imposed the geographical limits of the city until year 2000, entailing an important density increase in the already existing districts) and economic constraints (the appeal of economic activities affect the choice of the housing place and generate compact urban poles).

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Box 22: Filling of the lakes in Hanoi (Vietnam)

In Hanoi, the open channels – for the disposal of wastewater and rainwater – and the natural lakes – allowing a natural waste stabilization reducing the pollution of the waters drained from the city – are progressively filled by the inhabitants who throw their household and construction waste away in the lakes and channels in order to gain building lands on the waters. In 1990, the city of Hanoi had 40 lakes of a total surface area of 8 km square. In 2000, only 20 were remaining for a total surface area of 6 km^2. The surface of the biggest lake of the city (Ho Tay) went down 4 km^2 from 1995 to 2000.

In order to restrain this filling process, which causes dangerous floods in the city – because of lesser drainage of the channels and reduction of the role of the lakes' surge tanks – and pollutes the downstream waters – as they are saturated with polluted waters, the lakes no longer play their role of waste stabilization pond –, the municipality and its development partner – among which the Japan International Cooperation Agency (JICA) – decided to concrete the channels' and lakes' banks in order to definitely set their limits.

Similar works are under study in Phnom Penh (Cambodia).

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Before   **After**

Concreting of the channels' banks in the city of Hanoi (Vietnam).

Solutions adapted to the judicial aspects related to the land

The pursued technical solution must correspond to the judicial status of the district: so, if the district is legal, the inhabitants are entitled to a certain number of basic services provided by the municipality. This will be detailed in the paragraph II.A-3.b) *Local taxation*. If the district does not exist legally, a certain number of questions will have to be thought through, in particular about the estimated lifetime of the technical solution. As mentioned in the paragraph I.A-1.b) *Land constraints for a project leader*, when the inhabitants are threatened with eviction, neither them nor

the project leader are willing to invest in a definitive and costly solution. Therefore, the status of the district directly affects the choice of the technical solution – building of permanent or temporary infrastructures for example.

The implementation of infrastructures requires the use of public or private lands – permanent use to build premises or latrines for example, or temporary use to dig a trench or install pipes for a sewer network. From this, will arise numerous problems related to title deeds and joint possession. For instance, the Malagasy land legislation often imposes large delays on the beginning of the projects' works, as it was the case for the AFVP's project about the construction of sanitary infrastructures (see box 5) around Main Road 1 in Antananarivo (Madagascar).

Solutions adapted to the local context

In order to be better adapted to the local particularities, the technical solution should a priori be found in the existing local solutions, which proved themselves efficient in the same conditions. This is better than "importing" a solution – particularly one adapted to developed countries or one relying on a new technology. The local, or even regional, experiences resulted in technical solutions that can turn out being the best for the project leader.

However, sometimes, some qualified participants are able to adapt an "imported" solution to the local context. This way, the Chilean Environmental Association (AEPA) in Santiago de Chile (Chile) is well acquainted with the South American economic and technical context and has acquired enough experience in European environmental technologies to help an operator coming from a developed country to implement its savoir-faire in a country of Latin America.

The *Santiago Poniente* landfill site was built by a multinational company subsequently to the common invitation to tender of several municipalities in the city of Santiago de Chile (Chile). Its creation resulted from the adaptation of European techniques to local standards. In this landfill site, one ton of garbage is charged 5 dollars to the collection companies of the city of Santiago de Chile.

Solutions adapted to the local financial means

Provided the limited local financial means, the project leader might have to consider low-cost technical solutions. These solutions should not jeopardize the consistency and sustainability of the sanitation project and should be affordable for the concerned population. The two following boxes give examples of low-cost solutions.

Box 23: Sulabh International's ventilated double-pit latrines (India)

Sulabh International designed a large range of ventilated double-pit latrines at different possible prices so that they can be afforded by a large part of the Indian population. The construction of these latrines cost from US$30 to 200, according to the material used (brick, clay, wood, etc.), the size of the pit and the comfort required.

As for the technical point of view, the excreta are disposed of in one of the two pits. After several years, when the first pit is full, the excreta are disposed of in the second pit. While the second pit is being used, the excreta piled up in the first pit are drying naturally and in the end, they are taken out manually without any danger for the person doing so. The owner of the latrine can do this operation and the resulting compost can be used for agriculture. The other advantage of these latrines is that they require very little water: only two litres are used for each flush.

Excreta that have dried in a ventilated double-pit latrine in New Delhi (India).

II. A- 1- b) Specifications warranting the sustainability of the technical solution

To choose the technical solution, the project leader also has to take into account factors related to the future utilization of this solution: mechanical strength of the equipment, maintenance or urban growth, for example.

Mechanical strength of the equipment

The chosen solution has to be sustainable on the technical point of view: the equipment has to be resistant and adapted to the climatic conditions (temperature, humidity, etc.) in order to be more weather tolerant and thus present an acceptable lifetime. The project leader has to find a compromise between the expected lifetime of the equipment and the installation costs that can be afforded by the inhabitants of the district: the use of low-cost techniques must not jeopardize the sustainability of the chosen solution.

Maintenance and futures repairs

A very important aspect to be taken into account during the decision-making process for the technical solution is the post-project management of the equipment by the inhabitants or by the designated manager. The posterior maintenance and future necessary repairs of the installations must be thought through (see box 25): are the tools, the spare parts, the savoir-faire and the skilled

work force available in the vicinity of the district – or even the region or the country? Is their cost affordable?

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Box 25: Emptying the septic tanks in Hanoi (Vietnam)

The septic tanks of some districts of the city of Hanoi (Vietnam) were built in the late 1970's and never had any maintenance since their construction. Today, most of them are overflowed, faulty or constitute an important health and environmental danger. The inhabitants are regularly complaining about the smell nuisances.

The technical services of the city are theoretically responsible for the sewage of these tanks but the lack of means does not allow them to empty every septic tank in the city. Private septic tanks emptying companies have started offering their services but the inhabitants are not all yet willing to pay for this service formerly free of charge.

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Taking into account the population growth

A sanitation project has to take into account the demographic increase, be it natural – in this case, check the municipality's projections – or migratory. The increase linked to the arrival of new migrants can be important in a district where the living conditions are improving visibly – family ingathering or new migrants attracted by the existing "comfort" in this district in particular.

It is necessary for the sustainability of the project to anticipate the number of future users, using projections of urban growth. Considering the mistakes detected in the official projections, it is better to envisage an additional margin.

II. A- 2- Social support of the population

Box 26: Participation of the inhabitants in a development project

Nowadays, the organization of the inhabitants of a district in communities and their participation in the different phases of a development project are often brought forward as aspects essential to the success of a project and the sustainability of the implemented solution. However, contrarily to what is commonly assumed by many organizations, these two notions of community and participation are rarely inborn in poor urban districts of developing countries. The participation of the inhabitants must therefore be encouraged and developed by the project leader: this is the object of the present part (II.A-2).

Participation is a crosswise notion related to numerous aspects of the project that are tackled in this document. Indeed, there can be many ways for the inhabitants to take part in the project:
- ✓ they can take part in the design of the project: with their claims, their description of the main local sanitation issues, their ideas about possible technical solutions, they can contribute to the examination of the many directions the project can take (see paragraph I.C-1.);
- ✓ they can physically work in with the construction of sanitation infrastructures and the regular cleaning of the district (waste collection): see paragraph II.A-4. a);
- ✓ they can bring their financial support for a part of the construction costs for example and/or contribute to the operational costs of a sanitation or cleanness service (see part II.A-3. b)).

The objective of this participation of the inhabitants is double. On the project's point of view, the involvement of the population during the different phases will make the inhabitants feel they own the project and then they will feel responsible for the maintenance of the infrastructures and the efficiency of the service (see part II.A-2. c)). On the more general point of view of the fight against poverty in the district concerned, the social cohesion created by the community dynamic will allow the poorer – often rejected by society – to get some kind of social recognition and be able to voice their opinion on urban development matters which concern them. This aspect is presented in part II.A-2. b).

When it is effective, the participation of the inhabitants is a very efficient tool for the project leader. However, its implementation is synonymous with numerous challenges: it requires a lot of time as well as an appropriate part of the budget.

II. A- 2- a) The social support in the project

In order to get an optimal level of participation from the inhabitants – to reach a higher sustainability, among other reasons – and make them better understand the project, it is strongly advised to dedicate an important part of the project to the social aspect – which can account for the

major part of the budget. The objectives of this "social arrangement" are described in the following paragraphs.

Arousing awareness of the existing sanitary problems

Very often, the populations concerned by a sanitation project are not aware of the health dangers surrounding them. Along with the social marketing mentioned above (Part I.C-3.), arousing awareness consists in making the inhabitants realize that their environment and customs are giving rise to problems and convincing them to change them.

Unfortunately, arguments about health and hygiene are hardly efficient. Except when the population has already been confronted to cholera epidemics for example, and has made the link between defecation and disease, these arguments about hygiene are not sufficient and have to be combined to other kinds of arguments. You can use cultural, financial or sociological arguments to bring the inhabitants to change their health behaviours. The Famonjena organization conducted studies on the subject in Antananarivo (Madagascar) that are described in box 27.

Box 27: A few arguments developed by organization Famonjena in order to change mentalities about hygiene and sanitation in Madagascar…

According to organization Famonjena, it can be interesting to use the pride of the Malagasy to convey messages on the social status and cause a commotion in the mentalities. For example, when the children say that 'people defecating in the open air are savages', the impact on adults is considerable. Likewise, one can use the fact that the Malagasy often want to prove that their life standards are higher than the others'. For example, a small contest of interior decoration of the houses was implemented by organization Famonjena in a rehabilitation village and all the families engaged in a race for interior furniture. The same process is envisaged for building latrines.

In some rehabilitation districts where poor populations live, another initiative consisted in making folk music bands – composed of young members of the community – stand out and convey messages about sanitation in their songs – as well as about other awareness programs on Aids and illiteracy alleviation.

Awareness and education of the population and of local authorities

- Awareness for whom?

  o The inhabitants of the district: they are not always aware of the possible solutions or the appropriate health behaviours. The children are preferential targets of awareness programmes, particularly at school, because they can relay the information to their families. Besides, they will be responsible for the community in the future. The women, in charge of the household's hygiene, are also key targets of awareness   programmes.

  o The local authorities: in spite of a general position holding sanitation as a priority, the local and governmental authorities are not always aware of the real consequences of a bad sanitation. A relevant example of awareness on sanitation adapted to the authorities is the document "Sanitation, the challenge" edited by Water Aid in Madagascar for Malagasy decision makers. It describes the noxious consequences of the lack of sanitation, particularly on the economic and financial points of view. This document enhances the fact that, every year, "Madagascar could lose more than 5 millions working days due to a bad sanitation" and that "direct economic losses resulting from these same diseases could amount to a 93 % of the Health Ministry expenditure and 300 times the public expenditure dedicated to sanitation"… This initiative managed to make several Malagasy politicians feel concerned.

- Awareness – How to ?

  o Awareness actions can be manifold: sanitation festivals, demonstrations, cleaning campaigns, film screenings, plays, religious feasts, etc. For example, the cleaning campaigns associated to religious feasts in the slum of *Udham Singh Park* (New Delhi, India) – described in box 17 – use many kinds of actions: huge public gatherings, circulation of slogans, educational games for the younger, creation of an information centre (about sanitation, among others) for the community, etc. Of course, these actions have to be as adapted as possible to the target population on the cultural, religious and educational (illiteracy) perspectives.

  o It is possible to use already existing information and education channels: radio, television, schools, clubs, etc. For example, Danish NGO OVE conveyed awareness messages on sanitation through the loudspeakers used for the

propaganda of the People's Committee in the city of Hanoi (Vietnam). They diffuse information several times a day in the streets of the district.

o A door-to-door action on the field carried out by social attendants is desirable to keep the inhabitants informed and promote an example-based education: when a health problem is visible – household waste dumped directly in front of a house, for example – a social attendant can explain to the family what to do. Box 28 gives an example of this kind of education brought to the population by the "Mobile Outreach Team" of NGO CSARO in Phnom Penh (Cambodia).

o For this awareness to be sustainable and efficient, an interesting idea is to train social attendants – also called facilitators or mediators – within the very community, in particular among the youth that was born and grew up in the district. This is the approach chosen by Mr. Darshan Mehra (Organization Jeet) in New Delhi (India) and by the AFVP (French Association of Volunteers of Progress) in Antananarivo (Madagascar).

A local way to inform and arouse awareness in the inhabitants: the loudspeakers of the People's Committee in Hanoi (Vietnam).

These awareness social programmes are not only initiated by NGOs: private concessionary companies can also appeal to it as shown with the partnership between Aguas Andinas and organization "Casa de la Paz" in Santiago de Chile (Chile) – see box 29.

This action for awareness and education on sanitation can be combined with the awareness to other problems and concerns of the inhabitants: assistance to cope with administrative responsibilities, awareness of possible social aids the inhabitants can be entitled to, etc. As a matter of fact, the inhabitants are barely informed on these kinds of procedures, even though they are concerned by them. A typical example is the "Jefes y Jefas" programme which gives rights to any Argentinean unemployed head of household to a 150 pesos income in exchange for a few hours of community service: a lot a people think they are not entitled to it, so they do not ask for it. The social attendants of the state programme PROMEBA (Poor Districts Improvement Programme) advertise it to the population during their interventions.

Informing the inhabitants to make them take part in the project

To participate in the project, the inhabitants first have to be informed about the project and its objectives. They can be gathered and a space for a free and open dialogue can be created. These meetings give the opportunity to the inhabitants to express what they expect from the project and actively take part in its design for the results to be adapted to their needs.

These meetings are also a way to motivate the inhabitants so that they believe in this project, in which they are the first concerned. In particular, they are a way to give them hope (back), by putting the emphasis on what the project is going to bring to them, be it on the sanitation point of view or on the living quality point of view. For example, one can emphasize the fact that the installation of infrastructures can begin a formalization process of the district which could, on the long term, open the way to legalization.

To conclude, these information meetings about the project are the opportunity to introduce to the inhabitants, as soon as the beginning of the project, the matters related to the post-project management: payment of the service, maintenance of the infrastructures, repairs, etc. Here, the purpose is to prepare the success of the post-project phase.

Information meeting of the inhabitants of a district in Phnom Penh (Cambodia) initiated by NGO URC.

II. A- 2- b) Social strengthening

Mutual aid between neighbours is just as unnatural in underprivileged districts as it is in well-off districts. Solidarity between the poor is nothing natural: on the contrary, day-to-day survival problems added to contradictory personal interests reduce the time they can dedicate to

community activities. Furthermore, there are not necessarily more connections between neighbours of a poor district: even if the initial choice of the dwelling district is based on a common regional origin of the immigrants, on their nationality or their religion, the relationships progressively fade out in a big city. Finally, some aggravating factors sometimes tend to weaken already existing links. For example, the racket imposed by the Phnom Penh police on some slums of the city totally destroyed the dialogue between the inhabitants who do not even answer when someone knocks at their door, afraid as they are of another racket. In the same manner, a prior negative experience on the community point of view – such as a leader disappearing with the saving funds of the community – can have damaging effects on the mutual aid willingness of the local population. For all these reasons, the past mistakes of NGOs have to be avoided as they might have been caused by the assumption that community spirit appears spontaneously in slums.

So, a development project can lead to some kind of internal social strengthening – within the underprivileged communities – by building up cohesion and involvement in the community activities. Here, the community leader plays a vital role and is an important figure in the local cohesion and the community's dynamic. Box 36 gives the example of the leader of *Villa Besada* in Buenos Aires (Argentina) who found the way to motivate the community to get asphalted streets, electricity, water supply and a sewer system consecutively.

The objective of such an initiative is also to create external social strengthening so that the community can voice its opinion in the debate on its own sanitation. Apart from creating a social relationship between neighbours and strengthening the community cohesion – these two factors will enable the community to speak unitedly and in a representative manner so that it can better be heard –, it will call forth or restore the dialogue, most of the time broken off[31], between the underprivileged population and the local authorities. The idea is to lay stress on the inhabitants' rights and insist on their motivation in order to convince the authorities that their technical investment will not be useless – see box 36 about the communities' motivation to obtain basic services.

These two aspects of social strengthening – internal and external – are summarized in the following figure.

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[31] The inhabitants are very often distrustful of politicians who take no interest in them and who they consider as corrupted.

Figure 6: Internal and external strengthening
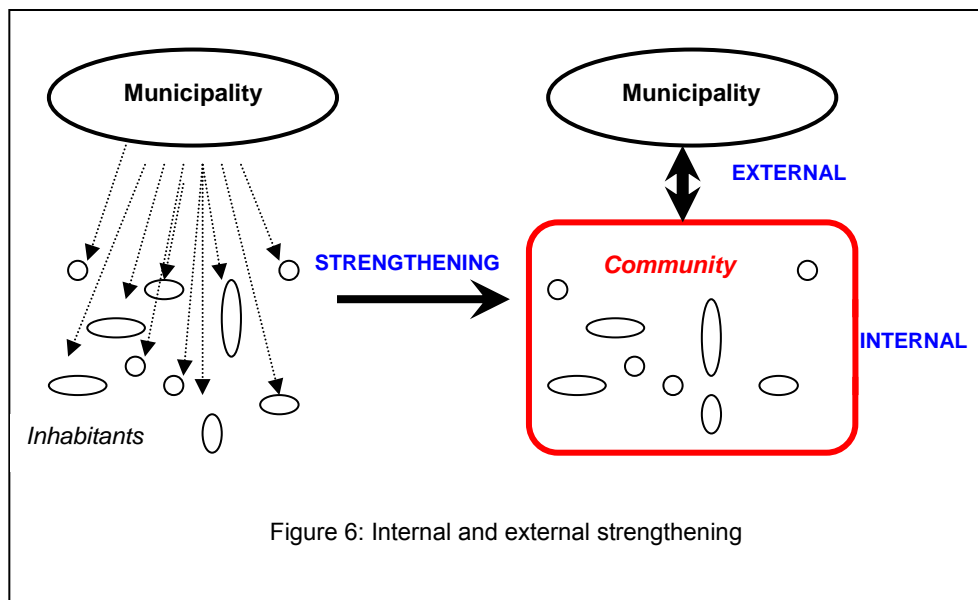
II. A- 2- c) The appropriation of the project and the infrastructures by the inhabitants

The infrastructures that are built without associating the local population in any kind of way are very numerous and they often do not last very long. For example, in New Delhi (India), several public toilets facilities – paying toilets and showers – were built and managed without the participation of the inhabitants and they were finally abandoned within a few months or a few years. In order for the project not to be considered by the inhabitants as "the NGO's latrines" or the "municipality's drain", they have to be involved financially and physically and appropriate the project and its infrastructures (see box 26).

This appropriation is most of the time combined to an appropriation of the rehabilitated public spaces and deteriorated spaces.

The common area: a territory to be appropriated

The poor populations of developing countries very rarely appropriate a public space for the use of the community. Very often, any free space is used for commercial purposes (stallholders using the space during the day, etc.) or as an unauthorized garbage dump, entailing a further degradation of the urban environment and the local health conditions.

It is important to help the inhabitants realize their interest in the use of these public spaces and in their maintenance. This is what NGO OVE did in Hanoi (Vietnam) in the district of *Thanh Xuan Bac* (see box 30).

The improvement of the cleanness – and therefore hygiene – of a community that appropriated these common areas is always noticeable, may this appropriation be wanted and conscious or not. For example, in Phnom Penh (Cambodia), the difference is very distinguishable between the unpaved residential streets – i.e. the majority of the city's streets – where the garbage is piling up because no skip is provided and where rubble levels the road, and the streets the local communities have made paved and which are always perfectly clean.

Box 30: Common areas of the district of *Thanh Xuan Bac* in Hanoi (Vietnam)

Following the discussions between the inhabitants and Danish NGO OVE, it was decided to improve the environment of a public zone located in the centre of the district and which until then had been used as an unauthorized dumpsite.

The inhabitants of the building next to the dumpsite gathered and accepted to clean it while the municipality provided funds for the waste disposal and lent a skip. Once the area had been clean, a regular maintenance was carried out. But, the main problem was that the numerous stallholders coming from other places to work here were continuing to throw their garbage in the place.

So the inhabitants had to stay alert and the salesmen had to be informed for the district to stay clean and become the public garden it is now. The inhabitants particularly put forward the Vietnamese "citizen responsibility" meaning that everyone has to clean the common areas of his district.

"Healing" a land after having improved its environment

The example of the district of *Thanh Xuan Bac* in Hanoi (Vietnam, see box 30) emphasizes a phase that is necessary after any improvement of a common area: the "healing" of this land. After a cleaning campaign, the disposal of an unauthorized dump or the destruction of insalubrious houses, the new vacant area has to be developed to avoid that it becomes a dump or unauthorized toilets again or that it is invaded by squatters.

An example of this exploitation is given in box 30: the creation of a public garden after the disposal of an unauthorized garbage dump. Another example is the one of the programme PROMEBA in Buenos Aires (Argentina) aiming at "healing" the lands made vacant after some inhabitants of a slum were rehoused: these lands were revalorized and trees were planted to prevent other squats (*asentamientos)* to be created after the project.

II. A- 3- Financial arrangement

The financial arrangement is a key phase in the global setting up of the project. Apart from including the funding of the infrastructures and the social support, it relies on a balance between the financial implications of the different actors.

The involvement of one (or several) donors implies a peculiar relationship between the project leader and the donor, which will not be treated in this document.

In the following part, we will talk about the costs of some essential budget items, the possibility and conditions of a financial participation from the inhabitants and the financial management on the long term in the case of a project for a paying service.

II. A- 3- a) Cost of the implementation of the project

Carrying out a project brings the project leader to make a cost estimation of his different actions. A few observations about budget items in particular have to be taken into account.

- The cost of the technical solution depends on the chosen solution – see observations on low cost in the paragraph II.A-1.a) *Solutions adapted to the local financial means*. The cost of the (post-project) maintenance of the implemented infrastructures has also to be thought through.

- As for the cost of the labour force, the project leader can envisage reductions by involving the inhabitants who can be used as a work force if the technical solution does not require too many skills. Besides, it will allow maintaining an important and long-term motivation from the population responsible for the maintenance – regular waste collection campaign for example.

- The cost of the social support of the population in the project (see paragraph II.A-2.) accounts for a quite important part of the budget. In fact, if the project leader wants the awareness, information and education campaigns to take place in the best conditions and reach a large portion of the population, it is necessary to dispose of enough social animators and preferentially skilled ones. Most of the time, the supervision of the population – and thus of the project's progress on the social point of view – is not sufficient because of a lack of staff: as a matter of fact, it has been noted that project's supervisors are not informed of important movements of the population – leader moving out without giving any

new address, "disappearance" of dozens of rehoused families who preferred to come back to their original district, etc. The animation and the social support are then important items not to be underestimated in the budget as they can account for the major part of it.

▪ The cost of the monitoring and mid-way and post-project assessments: here, the project leader must anticipate on the hypothetical cost of these phases. Evaluating a project will allow to identify mistakes and good practices in the project and participate in the global reflection on solutions for the sanitation of urban poor districts. This topic is tackled in box 35.

II. A- 3- b) Financial participation of the inhabitants

The inhabitants of a city normally pay municipal taxes entitling them to some rights. Most of the time, this is not the case for illegal slums, but if it is, the claim for the inhabitants' rights can be part of the project.

Besides, very often, the inhabitants of a district are willing to pay for their sanitation, even if it is hardly enough to cover the total cost of the project. A distinction can be established between the inhabitants' financial participation to the infrastructures' building and their payment for a service once it is implemented.

Local taxation

Local taxes collected by the municipality have to be taken into account in order to check which services the inhabitants of a district are entitled to and lay stress on these rights if need be: drinking water, sanitation, waste collection, cleaning of the streets, etc. There can be good surprises sometimes, as shown in box 31.

The absence of local taxes – either because of the established tax policy or because the districts are illegal and the inhabitants are exempt from taxes or do not pay them – is an important indicator of the financial means of the municipality. It can give an idea of the quality of the services that the municipality can implement or of the help a project leader can expect from it.

Household waste collection by public company URENCO in Hanoi (Vietnam).

Financial participation of the inhabitants to the infrastructures' building

The majority of the development project brought out the existence of a willingness to pay from the inhabitants. If an infrastructure or a service does not appear as first necessity, this willingness to pay is poor. Then, an adapted social marketing can bring the families to invest a part of their income in a better sanitation.

In the case of infrastructures' building (heavy and one-off investment), the project leader must determine financial solutions allowing the poor and very poor households to pay for their own

sanitation: microcredit programmes[32], loans, job as a workman. Most of the time, additional external funds will be necessary to constitute the entire budget.

The part represented by the population in the total budget of the project can vary according to the type of project - from a small part to the totality of the investments.

So, the financial participation of the inhabitants is considered as always attainable and even presented as a necessary condition. Frequently, community funds are created and inhabitants regularly save their money to invest in an infrastructure project. In Phnom Penh for example, NGO Urban Resource Center (URC) imposes a regular contribution to the fund on the households as a necessary condition to their participation in the development project concerned.

Compulsory financial participation can appear as a segregation factor between poor and very poor people within a slum. If the amount of the participation cannot be afforded by the poorer households, they cannot participate and therefore – in theory – do not have access to the service once it is implemented. The project leader will then have to adapt the participation to the different possible income and investment capacities of the households.

Everyone acknowledges the advantage of the financial participation when it comes to the inhabitants' maintenance and care for the infrastructure once it is built. They take better care of it because it represents their money and not the "government's drain" or the "NGO's latrine". The appropriation of the project and the installations built can be greatly improved when the inhabitants bring their financial participation.

Payment of the service once it is implemented

Once a sanitation service is operational – be it or not linked to an infrastructure –, a payment system has to be implemented for the future users, in order to back the expenses necessary to this service to be operational: wages, necessary maintenance and repairs of the equipment.

To this end, several factors have to be taken into account:

▪ What will be the cost of the service itself? Assessing the cost of the necessary work force, of the maintenance and possible recurring repairs – a private company or any other entity being contracted – is vital.

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[32] A microcredit programme can give the opportunity to destitute people to start a small business generating income. The loan is then paid back with the income of the business.

- What billing system will be used? A formal billing implies a legal status and a judicial recognition of the existence of the dwelling. Several solutions can be considered: billing according to the consumption, regular fixed charge for a service (solid waste collection) or individual right to use an infrastructure (entering fee for the community public toilets).

- What price scale will be fixed? The choice of the price is essential, as it must entail a good fee collection ratio, the success of the use of the service and more importantly its sustainability. It must be assessed correctly according to the target population and its willingness to pay. In the case of a formal service provision, a special social price can be set (see box 32).

- What will be the payment frequency of the charge? It is worth thinking this point through for populations who do not have monthly fixed incomes: indeed, these households manage their budget on a (very) short term – most of the time on a day-to-day basis, at best on a week-to-week basis. A weekly collection can then appear to be better adapted to reach a correct fee collection ratio. It is interesting to note that informal lenders for the poorer families sometimes demand a daily pay-back, at the end of the day, when the members of the family come back home with their daily income. However, the frequency of payment can have an important impact on the cost of the charge collection. A correct balance must be found between the cost of the charge collection – according to its frequency – and the inhabitants' capacity to pay – according to their budget schedule.

A particularly important point is the charge collection:

- Who is responsible for the charge collection? The person in charge of this function has to be trustworthy – possible problems of corruption and misappropriation – and sufficiently recognized and respected by the inhabitants for them to pay their charge totally and in time. Here again, this situation illustrates the advantage of involving the local municipality's office in the process of the project. For example, in the case of the household waste management in the district of Faami in Antananarivo (Madagascar, see box 13), the *fokontany* – municipality's deconcentrated office administrating the district – is responsible for the charge collection. The collection ratio is between 70 and 80 % in this district because the inhabitants, though very poor, want to stay in good terms with the *fokontany*'s officers who they have to appeal to for any administrative responsibility. On the contrary, in Phnom Penh (Cambodia), many community projects were slowed down or abandoned after the community leader disappeared with the funds.

- How will the charges be collected? From door to door? In an accountable office? To get a high collection ratio, the door-to-door collection system is the best adapted but one has to consider its cost: to take the same example of the household waste management in the district of Faami, the charge collectors keep a 10 % of the collected amount. Alternative solutions can also be appealed to. In La Paz (Bolivia), the payment of the water bill is done at the local lottery shops[33]. In Phnom Penh (Cambodia), the waste collection charge is included in the electricity bill. The solution chosen has to be the best adapted to the district concerned.

Box 32: Social charge reduction in Buenos Aires (Argentina) and Santiago de Chile (Chile)

In the context of the participatory management system (Modelo Particpativo de Gestion, MPG, see box 33) in Buenos Aires, Aguas Argentinas implemented a social charge reduction in the districts where the inhabitants acted as the work force for the projects of connection to the network: the inhabitants of these districts pay half price for the draining of wastewater.

In Santiago de Chile, the Chilean government pays a subsidy ("*subsidio*") to households that declare themselves as poor – after having filled the CAS form (questionnaire to determine which are the poorer households in Chile based, among others, on employment, housing and schooling criteria) and undergone a survey at home. This way, the government pays up to half of the first $15m^3$ of a household's drinking water. This amount is directly billed by Aguas Andinas – concessionary company for water and sanitation in Santiago de Chile (Chile) – to the government. As the tax for wastewater is included in the drinking water bill, the government then also pays half of the first $15m^3$ of the wastewater of these households (draining and treatment).

Financial management of the service once it is implemented

The financial management of the service can be entrusted to very different kinds of actors:
- it can be trusted to a reliable person chosen by the actors of the project among the inhabitants. This person will supervise the good working order of the installations as well as the good provision of the service, in exchange for a salary. This activity must be formalized by a written contract – a trusting relationship and an oral engagement are not sufficient.
- it can be trusted to a municipality's field office. This solution is in accordance with decentralization. For example, this case is illustrated by the financial management of the pre-collection by the *fokontany* in the district of Faami in Antananarivo (Madagascar) described in box 13.

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[33] Aquatupenses (2002).

- it can also be trusted to a private administrator. In general, this system turns out more efficient. In Antananarivo (Madagascar), some of the standpipes and public toilets facilities are managed by the organization Sandandrano in several districts in a private way. This organization adopted a private company approach; it also charges water on a liter basis – and not a bucket basis – and uses its standpipes to advertise soaps for example.

Sandandrano's standpipe in Antananarivo (Madagascar).

The choice of the administrator must warrant the sustainability of the service and of the installations. Whatever management mode is chosen, a financial control is necessary to ensure the transparency and efficiency of the service. This control can take different shapes: budgetary control, price control, quality control, etc. The control system has to be specified as soon as the setting up phase of the project. So, the Tripartite Entity of Sanitation Works and Services (ETOSS) in Buenos Aires (Argentina) is part of the implementation of MPG projects described in box 12. On these projects, the ETOSS is controlling that user rights are observed – notably on the financial point of view – and that the environment is respected.

II. A- 4- Coordinating and planning the accomplishment of the project

Once the appropriate technical solutions are identified, the social support needed for the good use and appropriation of these solutions determined and the financial arrangement defined, the project leader can establish a schedule to specify the progress of the project. Then a strategy has to be decided upon as to the organization and logistics of the project.

Responsibility for the infrastructures' building

In the case of a project including infrastructures' building, the responsibility of the implementation can be trusted to:

▪ the municipality, which is a way to involve the municipality in the project. Nevertheless, it is often noted that in developing countries, municipality services do not have quality technical and human resources. In the case of important infrastructure works, the first thing to do is to check that the technical and coordinating skills of the departments concerned are sufficient to carry out the works in good conditions.

▪ a private company: at first sight, it is the more "reasonable" solution in terms of quality, qualification and maintenance. The company can be chosen by invitation to tender or judging by its previous works. It can be linked by contract concerning the maintenance and repairs – at least theoretically. The distinction must be drawn between the service concessionary companies – therefore already linked to the municipality through a concession contract – and the small private technical operators that are contracted on the district's scale. For example, the distribution of the roles described in box 12 for the MPG projects in Buenos Aires (Argentina) implies that the company Aguas Argentinas is responsible for the technical feasibility and the monitoring of the works during the implementation of the sanitation network.

Appointment of the work force

In general, the project supervisor – municipality or private company – provides the work force necessary to the accomplishment of the works. However, the inhabitants can make up a useful work force that will be interesting to reduce the costs of the project.

Making the inhabitants work brings out a certain number of questions:
▪ Are the inhabitants of the district willing to physically take part in the construction of sanitation infrastructures?
▪ Do they have sufficient skills to allow the implementation of the project? Will a specific technical training be enough to palliate possible lacks (see box 33)?
▪ Are they sufficiently available to achieve the implementation in time? Indeed, the installation of sanitation infrastructures can be quite time demanding. It can hardly be combined with a full-time professional activity and even less with the working pace of particularly poor

people who have to guarantee their survival and the one of their family on a day-to-day basis – this situation is very frequent in the districts under study.

Construction of an infrastructure (PROMEBA programme) in the district of *Santa Elena* in Buenos Aires (Argentina).

Box 33: The participatory management system (MPG) of Aguas Argentinas in the slums of Buenos Aires (Argentina) **–** project supervision

The inhabitants of *Villa Besada* in Buenos Aires implemented their drinking water network in the year 2000 and then their wastewater draining network in 2003 according to the participatory management system described in box 12.

They stand out as pioneers in the domain of sewer network. Indeed, the wastewater pipe lying – draining by gravity flow requiring an extremely accurate gradient – is much more technical than the water supply laying – relying on pressure. The very motivated inhabitants of *Villa Besada* were then regularly trained during six months before beginning the works, which lasted five months and involved all the households – including women and children: everyone was responsible for the part of the network located in front of his house. The households which were not able to take part in the works – disability, full time job for some members of the family, etc. – could pay their neighbours to carry out the works on their part of the network.

This district is at the moment the only one to have implemented a sewer network by MPG – even if this system is very promising for drinking water supply.

The cleaning campaigns of the streets described in box 34 give an example of the success of regular physical participation from the inhabitants.

Besides, if the project generates jobs in the district – for a limited or unlimited period – recruitment can be carried out among the inhabitants – unemployed inhabitants for example. This creates an additional positive impact of the project and gives the opportunity to hire people that are conscious of the neighbourhood problems or even to integrate dropouts. In this manner, the collectors recruited in the district of Faami in Antananarivo (Madagascar, see box 19) were unemployed people of the district. This new job had them gain more consideration from the other inhabitants and allowed them to be better integrated.

II. A- 4- b) Planning the accomplishment of the project

The phases described previously – technical choices, social support and financial arrangement – laid stress on a certain number of actions that have to be taken during the project and that require successive or simultaneous organization in the time schedule to be divided between the different actors.

Organization

A project is a sum of actions to be taken with the purpose of improving a district sanitation. A good organization can consist in designating one person in charge of each of these actions, who will have to monitor the progress and organize the implementation of this action. This action will have its own budget and a schedule with precise deadlines.

This can be put on paper under the form of a calendar. This way, the deadlines will be more visible and the good coordination between main actions and minor actions will be easier to monitor.

The following example is a simplified illustration of a few phases of a sanitation project – X being the NGO setting up the project. The action is "construction of a public toilets facility in the district D" by a contracted private company Y. The other action is "implement the management system for the public toilets facility" and Mrs Z is an inhabitant of the district contracted to this end.

Phases of the construction of a public toilets facility in the district D	Responsibility	Deadline	Planning budget
- Acquisition of the land	Municipality	11/21/2000	400 euros
- Write an invitation to tender for the unit according to available technical data	NGO X	Between 11/21/2000 and 12/24/2000	-
Note: the expiration date to answer the invitation to tender is set on 02/15/2001			
- Examine the answers to the invitation to tender and choose the more adapted solution	NGO X	Between 02/15/2001 and 03/01/2001	-
- Build the public toilets facility	Company Y	Between 03/01/2001 and 09/01/2001	3,000 euros
- Check on the sanitary standards of the unit	Sanitary check organization S	Before 10/01/2001	50 euros

Phases of the implementation of a management system for the public toilets facility in the district D	Responsibility	Deadline	Planning budget
Note: The opening date of the public toilets facility is set on 10/01/2001			
- Train Mrs Z to the maintenance of the public toilets facility	NGO X	08/2001	-
- Train Mrs Z to basic management and finance techniques	NGO X	09/2001	-
- Buy initial cleaning equipment	Municipality	10/2001	30 euros
- Door-to-door information of the inhabitants about the construction of the unit, its use and mode of operation (management by Mrs Z, payment mode, etc.)	Local NGO x	Between 03/01/2001 and 10/01/2001	150 euros
- Organize a public meeting for the opening and inform about the mode of operation of the unit	NGO x	On 10/01/2001 (cleanness festivity day)	30 euros (festival)
- Monitoring the progress of the management and maintenance by Mrs Z (12 interventions) and identification of possible obstructions	NGO X	Between 10/01/2001 and 04/01/2002, every two weeks	-
- Assess the good use of the unit and the good management by Mrs Z (on the long term)	NGO X	05/01/2002 and 05/01/2003	-

Table 1: Definition of the responsibilities, budgets and deadlines of a project's minor actions

Date → / Action ↓	Nov. 2000	Dec. 2000	Jan. 2001	Feb. 2001	Mar. 2001	April 2001	May 2001	June 2001	July 2001	Aug. 2001	Sept. 2001	Oct. 2001	April 2002	May 2002	May 2003
Acquisition of the land	▬ (Municipality)														
Writing invitation to tender for the unit		▬ (NGO X)													
Examination of the answers and choice of the more adapted solution				▬ (NGO X)											
Building of the unit					▬▬▬▬▬▬▬ (Company Y)										
Checking the sanitary standards of the unit											▬ (Sanitary check organization S)				
Training of Mrs Z to the maintenance of the unit										▬ (NGO X)					
Training of Mrs Z to basic management and finance techniques											▬ (NGO X)				
Purchase of initial cleaning equipment												▬ (Municipality)			
Information of the inhabitants about the construction of the unit, its use and mode of operation					▬▬▬▬▬▬▬ (NGO x)										
Organization of a public meeting for the opening												▬ (NGO x)			
Monitoring of the good progress of the management and maintenance by Mrs Z													▬▬//▬▬ (NGO X) (every 2 weeks)		
Assessment of the good use of the unit and the good management by Mrs Z (on the long term)													▬ (NGO X)		▬ (NGO X)

Legend: (▬ = Municipality, ▬ = NGO X, ▬ = Company Y, ▬ = NGO x, ▬ = Sanitary check organization S)

Table 2: Calendar of the project's progress

Formalization of the responsibilities' distribution

The role of each intervener on the field has to be accurately defined. A written bilateral agreement – contract concluded with a private company, sanitation management contract concluded between a local authority and the population (for regular and compulsory household collection campaigns by the inhabitants, for example), etc. – can be a good means to give responsibilities to the actors as they are bound by written contract.

The distribution of responsibilities cannot stem from friendly agreements based on mutual trust as it would only rely on the goodwill and energy of a few persons and could disappear with the departure or lack of free time of these very persons. In this manner, the MPG projects in Buenos Aires (Argentina, see box 33) and Handicap International in Antananarivo (Madagascar, see box 14) are relying on written agreements concluded between the different actors. For example, the contract concluded between Handicap International (HI) and the families that were equipped with latrines states that the families are responsible for the cleaning and good maintenance of these toilets. As for HI, they commit to regularly come and check (without prior warning) the cleanness of the latrines and consequently authorize their use or not. The contract does not stipulate how the families have to keep the toilets clean, as long as they are permanently kept in a correct hygiene state. So, different kinds of management were developed: some families clean the toilets by turns according to a pre-established planning and others pay someone 50,000 FMG (US$5) per month to clean the latrines every morning.

Control of the cleanness of the latrines by an HI member in the presence of one of the owners in Antananarivo (Madagascar).

II. B. Control and Monitoring during the Implementation of the Project

Once the project is initiated, the project leader has to control and monitors the good progress of the interventions of each actor and of the actions mentioned in paragraph II.A-4. These actions must be taken according to the established planning and budget.

II. B. 1- Presence and control

It is worthwhile carrying out a regular control. This can be done by:

- The population: when the inhabitants are present during the works or their implementation, their watchfulness as to the expected achievements can exercise a (positive) pressure on the project supervisor to reach the expected results. Informing the inhabitants regularly is advisable – during local meetings – to keep them posted of the progress of the project. In New Delhi (India), the good knowledge the inhabitants had on the project, their control on the work of the municipal road sweepers and their dialogue with the project leader enabled them to cut short the claims of the sweepers to get a second unfounded wage, as described in box 31.

- An independent control organization: if it is affordable in the framework of the project, it can be worthwhile to have the infrastructures' building controlled by an expert or an independent control organization to check on the technical aspects the inhabitants are not familiar with. Involving the technical services of the municipality in the control of the implementation can be a good means to get the public authorities' commitment. In Buenos Aires (Argentina), the ETOSS – public independent control organization for the drinking water and sanitation concessions – controls, during the implementation of the MPG system (see box 12), the respect of the commitment of each actor – in particular, the respect of users' rights.

- The project leader: indeed, he is in a good position to carry out this control since he is well acquainted with the roles and responsibilities of each actor. In Antananarivo (Madagascar), Handicap International monitored the latrines' building works (see box 14) and, since the commissioning of these latrines, has been controlling them regularly and without prior warning to check that the families using them respect their commitment to clean them.

II. B. 2- Monitoring during the project

The monitoring of a project must take place at different levels of intervention in the project to stay informed of the developments on the field. These developments can be linked to changes exterior to the project or to internal modifications in the community – physical and psychological.

- The changes in the general environment: new interventions in the sector from NGOs or from municipal departments, emergence of new habitations or infrastructures exterior to the project, elections, etc. can create perturbations in the good progress of the project. These new characteristics have to be integrated to the project. To this end, they have to be anticipated as much as possible during the setting up of the project on the one hand and on the other hand, the project leader has to be able to react as fast as possible to adapt the project to the new conditions. During our visit in the district of *Santa Elena* in Buenos Aires (Argentina) in the framework of the PROMEBA programme, the social animators of the programme found a new house that had been recently built in the district. The first thing they did was to meet the newcomers to ask them the reason of their moving into the district.

- The changes within a community of inhabitants can result from a transformation of the disposition of the district – inhabitants leaving or arriving (in particular among the relay persons: leaders, women, facilitators, etc.) – or from changes in the frame of mind of the inhabitants vis-à-vis the project – decrease in participation, low satisfaction, etc. These changes have to be monitored by the project leader who must be able to react to bring the project to fruition in these new conditions. For example, it can be decided to renew the awareness raising process of the project to increase participation. The responsiveness of the project's team to the internal changes in the district and to public opinion – of the inhabitants of the district – is a vital criterion to ensure the project's viability.

New habitation arisen in the course of the PROMEBA project in the district of *Santa Elena* in Buenos Aires (Argentina).

To conduct an efficient monitoring, a mid-way assessment can be carried out. The mid-way assessment process enables the correction of serious defaults obstructing the project. Two types of complementary assessments can be envisaged:

- An external assessment by an independent organization offers objectivity and exterior appraisal that can be interesting to understand the obstructions and achievements of the pending project. The project's team does not necessarily notice these, as they are too much involved in the action. If the assessment is carried out by a private practice, the cost can turn out hardly affordable for a local project with limited financial means. Here, the solution can be to appeal to a local academician working on sanitation. In Antananarivo (Madagascar), the pre-collection project of organization ADH in the districts of Faami (see box19) and Andranomanalina gave rise to a mid-way assessment by a French student (Master Diploma in "Assessment of agricultural, industrial, social and environmental projects"). It came out of this assessment that the project in Faami was sustainable whereas it was not the case for Andranomanalina's project.

- An internal assessment – by the project's team – will offer the opportunity to check that every objective set during the setting up phase has been reached and that the commitments of each actor have been respected in the established deadlines. This way, it can be confirmed that the inhabitants really benefit from the project and are making the infrastructures their own. It can also be used to check on the participation progress of the inhabitants which can give way to possible additional improvements for the district.

The monitoring has to be very carefully carried out. If there is not enough staff or in order to avoid an overload of work for the project's team members, some organizations sometimes trust the inhabitants with a part of this monitoring. For example, twice a year, the inhabitants of New Delhi (India, see box 15) update the geographical, infrastructures and population data in the CBIS[34] software via a municipality's officer.

As illustrated above, the efficient implementation of a project is mainly based on a consistent initial setting up but also relies on a permanent monitoring of the works' progress by the population as well as by the project leader. These concepts of monitoring and control will allow the project to adapt to the possible crises, internal or external to the community.

This monitoring can also be extended after the end of the project's implementation.

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[34] Community Based Information System (NIUA).

II. B. 3- Monitoring on the long term

Once the project has been brought to an end, it can be interesting to conduct a monitoring of the long-term consequences of the sanitary solution implemented in the district – especially with the objective to implement it in another district. This periodical monitoring on the long term – several years if possible – will have to focus on, among others, the following aspects:

- The sustainability of the infrastructures and/or the management system implemented in the course of the project, once the local actors are the only ones in charge. The point here is to locate possible obstruction points which did not appear before, in order to solve them or, in the worst case, not to let them happen again.

- The posterior mobility of the inhabitants: speculation on the dwellings – deliberate or not – to kick out the poorer in favour of wealthier newcomers, excessive mobility of the inhabitants causing a decline in the skills related to the use of the infrastructure (condominium for example), etc. For example, in Phnom Penh (Cambodia), people that are rehoused outside the city following the destruction of their old houses end up living far from the economic activity and turn out selling the parcel of land they were allocated in order to go back to the city. In the end, the beneficiaries of this rehousing policy are the wealthy real estate speculators[35]. These negative consequences should have been anticipated – as far as possible – during the setting up phase of the project.

- The access to property for the inhabitants of an informal district: solving this issue – which is often a priority for the inhabitants – often takes years because of judicial procedures, and, most of the times, it goes beyond the time frame of a sanitation project. Thus, it can be worthwhile, subsequently to the project, to inquire about the progress of the local land situation as well as the possible continuation of the administrative initiatives initiated during the project (see box 6).

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[35] P. Fallavier (2002).

Box 35: The post-project phase

Once the project has been brought to an end, a number of important phases need to be carried out by the project leader. A post-project action that can directly benefit the inhabitants of the district, if they are motivated, can be to help them to keep improving their living conditions in other sectors concerning them: water supply, connexion to an electrical network, paving of the streets, education, etc. Even if the project leader does not intend on keeping working on this district, the point is to connect the inhabitants and/or the local municipality with interveners specialized in the sector of the inhabitants' new priority. Box 36 gives examples of communities that obtained several basic services consecutively.

The other post-project phases are of no concern for the inhabitants and thus will not be detailed in this document. Indeed, the post-project assessments, reproducibility and scaling up studies, circulation of information, etc. are many phases concerning only the aspects of the fund providing and/or the reflection of the development partners in the city or the country concerned about the resolution of sanitation problems.

So, the post-project assessments will be useful to the project's donors and the local development partners in order, notably, to identify obstruction points or good practices. In particular, it can prevent other project leaders to do the same mistakes and, with a comparison of different projects, enable them to adopt the more adapted solutions. In order to simplify their task and give them the opportunity not to "start from scratch" in the future projects, there are numerous tools for the circulation of information – reports, evaluation grids, standard contracts, newsletters, videos, etc. – and numbers of communication channels – resource centres for NGOs, exchange platforms, visits of the district, Internet, etc. These exchanges with the other development local interveners will enable the progress of the global reflection on local sanitation.

Box 36: Examples of poor districts that obtained several basic services: *Villa Besada* (Buenos Aires, Argentina) and a district of *Tuol Svay Prey* (Phnom Penh, Cambodia)

The district of *Villa Besada* in Buenos Aires (Argentina) was created in 1958. Its inhabitants began to gather in 1987 to deal with drinking water problems. By order of priority, the inhabitants wanted to obtain access to property, build a house and have access to basic services. They negotiated the purchase of the nearby playgrounds they divided in parcels of land for each household in order to build permanent houses. This first success gave them some kind of credibility in the municipality's opinion, which decided to asphalt the streets of the district in 1995. As the negotiations with the municipality to get water supply were unsuccessful, the inhabitants of the *Villa Besada* appealed to the concessionary company Aguas Argentinas. This way, they were able to get drinking water in year 2000 and a sewer system in 2003 in the framework of the Participatory Management System (MPG, see box 33). They now consider demanding an extension of the city gas network…

In Phnom Penh (Cambodia), 170 families settled in 1996 on former military grounds in the district of *Tuol Svay Prey*, when the troops stationed there left the place. These families formed a community – at first, to protest against the non-recognition of their squat by the government – then, they conducted improvement projects in their district with different NGOs. Today, they benefit from all the services: toilets, drainage, drinking water, electricity, sewer network and asphalted streets. The community even succeeded in preventing from an eviction by the authorities in 2003 ("fire of undetermined origin"). Thanks to their motivation and actions, the governor later legalized this informal district. The inhabitants now claim individual title deeds in due form and plan on building the first storey of their permanent houses…

Construction of permanent houses after obtaining title deeds in the district of *Villa Besada* in Buenos Aires (Argentina).

Conclusion

"Setting up a sanitation project in urban poor districts in developing countries: a different approach" is a document mainly based on the field approach. The choice of the field approach as well as the relative importance of the issues treated confers a particular profile to this document. We deliberately emphasized some of these aspects to remind and insist on the fact that it is essential to take them into account in the setting up of sanitation projects in order to avoid traditional mistakes.

The majority of the obstructions observed on the field mainly result from a lack of pre-project reflection and an absence of anticipation. These two reasons brought us to particularly insist on the pre-project preparation phase. Furthermore, setting up a sanitation project is a multi-faceted (financial, technical, social) operation: if one of these aspects is neglected – in particular social support of the populations – it is very likely that mistakes and obstructions will arise. One of the conditions for the success of a project is to take into account the education and awareness arousing of the populations. They imperatively have to be supported in the awareness process of the benefits of a good sanitation and receive an education on appropriate individual and communal hygiene methods with a communication adapted to their concerns.

As for the sustainability of the project, the participation of local actors is vital. As they are the final beneficiaries of the project, the inhabitants indispensably have to be involved in the setting up of the project concerning them. In theory, the local authorities – the municipalities in general – are responsible for the sanitation and, in the end, they will be in charge of the local development, which includes sanitation. In a sustainable development perspective, it has to be kept in mind that these local authorities are the future main actors of sanitation and that they have to learn how to conduct these projects and cope with their new responsibilities.

Sanitation is often considered a laborious operation because of the variety of sanitary problems (excreta, wastewater, rainwater and solid waste), which are mistakenly often treated separately. Even if the technical solutions are specific to each component of sanitation, only an integrated action can be efficient for the resolution of the issues as a whole.

Bad sanitation is not synonymous with predestination: we have to fight the common belief of the poor that "they are dirty because they are poor". All of them – at different levels – are concerned by cleanness and there are solutions to solve these sanitation problems at affordable prices: with an authentic political determination, a good setting up and an efficient social support, the living conditions of the poorer can definitely be improved.

Annexes

Annexes

Annex 1: Index of the boxes

Annex 2: Fact sheets of the cities under study

New Delhi (India)

Indicators	Population[36]	9.8 millions (2001)	
	Slums' population[36]	3 millions approx. (2001)	
General context	The outstanding demographic explosion in the city of New Delhi and the lack of response from public authorities to the housing problem brought newcomers to illegally settle on lands that do not belong to them without respecting the established standards. Approximately 1,190 slums have been identified in the urban zone.		
Sanitation and waste management	Since 1998, the entity responsible for drinking water supply and liquid sanitation in the state of New Delhi (including the slums) is the Delhi Jal[37] Board (DJB). The DJB is an autonomous entity and some of its members are elected representatives from local authorities, who directly report to the state of Delhi. The Municipal Corporation of Delhi (MCD) is the municipal structure responsible for most of the urban zone in New Delhi. The MCD is notably in charge of the solid waste management and the cleanness of the streets.		
Sanitation situation	Wastewater and excreta	More than half of the inhabitants of the slums cannot defecate elsewhere but in the open air. The wastewater is thrown directly in the streets or in the open drains.	
	Solid waste	The collection rate is only of 59 % and illegal garbage dumps can be seen in many parts of the city.	
	Drainage	The overall low declivity of the city causes serious consequential floods as well as stagnant water pools that constitute a health danger.	
Outlooks	Since year 2000, the MCD has been designing and implementing policies for the provision of urban services to slums. Land insecurity freezes individual and collective investments for the improvements of living conditions: indeed, the slum-type districts hardly ever have any legal status. Consequently, the municipality sometimes denies the provision of basic services. As for the inhabitants, they refuse to invest in infrastructures' building as they are afraid of eviction, which would make them lose the profit of these investments.		

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[36] Ruet et al. (2002).
[37] "Jal" means "water" in sanscrit.

Hanoi (Vietnam)

Indicators	Population[38]	1.5 millions (2000)	
	Poor population[39]	Unknown	
General context	The People's Committee in Hanoi exerts an important control over all the activities in the city. Until year 2000, the limits of the city were fixed and almost no houses were built. This policy prevented the emergence of new poor slum-type districts, but the demographic pressure triggered a considerable increase in the population density in the constrained urban zone. Since year 2000, the People's Committee has launched a large programme of housing construction in the outskirts of the city, which is expanding at last.		
Sanitation and waste management	The waste collection and the sewage of the septic tanks are operated by the URENCO (Hanoi Urban Environment Company), the city's sanitation department. The wastewater and rainwater draining is taken in charge by the SADCO (Hanoi Sewerage and Drainage Company).		
Sanitation situation	Wastewater and excreta	The houses are equipped with latrines and septic tank toilets, but they have not been maintained properly – if they have been at all – since their construction (more than 50 years ago for most of them), so the pits overflow. The wastewater is flowing South of the city and is rejected in the rice fields without being treated. The lakes in the city centre, used as waste stabilization ponds, are progressively filled by solid waste – and houses are built on the newly created ground – and do not perform their stabilization function as efficiently.	
	Solid waste	A 60 % of the waste is collected by the URENCO. The informal waste pickers collect 10 to 15 % of the total amount of waste produced; this allows a budget saving of almost 20 % for the municipality[40].	
	Drainage	The urban lakes, being filled progressively, absorb the monsoon rainwater less efficiently than they used to. Consequently, the districts in the south of the city, towards which all the urban rainwater and wastewater flow, are frequently flooded.	
Outlooks	The access to housing is complex and expensive due to the geographical limitations of the city before year 2000 but the new housing construction programme aims at facilitating this access. However, the new constructions are still expensive and the poor households cannot afford them. Thus, the families are stacked in very confined spaces, in very precarious hygiene and health conditions. The Vietnamese way of working does not privilege transversality. Therefore, it is very difficult to set up multidisciplinary projects as the offices are deliberately working separately.		

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[38] PNUD (2000) : www.undp.org.
[39] People's Committee data: 2.72 % of poor population. This figure does not reflect reality.
[40] Di Gregorio (1997).

Phnom Penh (Cambodia)

Indicators	Population[41]	1.2 million (2002)	
	Poor population[41]	0.2 million (2002)	
General context	Cambodia had a considerable hard time during the Khmer rouge regime. The city of Phnom Penh was completely emptied and abandoned between 1975 and 1979. The installations then significantly deteriorated. Even if the inhabitants came back to the city in 1979, it is only in 1998 that a consistent municipal policy began being developed. The majority of actions are taken by international solidarity NGOs and development agencies often assisted by local NGOs.		
Sanitation and waste management	Liquid sanitation is the responsibility of Phnom Penh's municipality. The mode of operation of the latter is quite peculiar since the mayor is designated and any decision – including budget – has to be approved by the ministers. The solid waste collection was trusted to the company CINTRI for a period of 48 years. As the inhabitants refuse to pay for this service and the tariff scheme is not appropriately distributed, the company cannot perform this service in good conditions and the service could disappear. Besides, the Japan International Cooperation Agency (JICA) just brought about a strategic plan for solid waste management.		
Sanitation situation	Wastewater and excreta	In slums, only a third of the inhabitants have access to sanitation equipment. The city is constantly under serious threat of disease epidemics due to the faecal peril and the children have disquieting frequent diarrheas.	
	Solid waste	The inhabitants dump their solid waste on the streets' pavement. The waste pile up, representing an important health danger.	
	Drainage	The slums located along the Bassac river are flooded every year and the inhabitants learned to live with it: the beds in the houses are elevated mats so that the stagnant waters do not reach the inhabitants.	
Outlooks	The policy of the public authorities vis-à-vis slums has significantly evolved in the recent years: it went from forced evacuation – army intervention – to destruction of the slums by "fires of undetermined origin" and to rehousing of the populations outside the city. In general, the authorities keep a hostile attitude towards these slums and their inhabitants. This stance of the public authorities vis-à-vis the slums prevent project leaders from safely investing in the infrastructures since these infrastructures can be destroyed at any moment in case of eviction. Besides, the improvement of the life quality in these districts does not solve the density problem and does not bring the inhabitants to respect the housing legal standards. Large infrastructure works – concreting and cleansing of the channels and drains, etc. – were recently begun by JICA. The Japan International Cooperation Agency is also involving in the implementation of a new landfill site.		

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[41] P. Fallavier (2002).

104

Santiago de Chile (Chile)

Indicators	Population[42]	5.4 millions (1999)
	Poor population[43]	0.7 million (destitute: 0.1 million) (1998)
General context	Chile is an ultra-liberal country: the large majority of urban services have been privatized. The sanitation of the city of Santiago de Chile was significantly improved in a few years thanks to different factors: the Chilean population is willing to pay for the urban services, laws are respected, the institutions of the country are stable – and attract large foreign investments – and the concessionary companies are efficiently controlled.	
Sanitation and waste management	The drinking water supply and liquid sanitation services were privatized to the multinational company Aguas Andinas for the whole metropolis of Santiago de Chile. As for the solid waste management, the municipalities of Santiago – individually or by groups – are choose private companies by invitation to tender to manage the waste collection. The landfill sites are built and managed by private companies.	
Sanitation situation	Wastewater and excreta	The company Aguas Andinas largely invested in the construction of wastewater treatment plants and a 72 % of the city's wastewater is now treated. The objective is to reach a 100 % in 2009.
	Solid waste	The municipalities perform the service but its quality can vary according to the financial means of the municipalities. Almost all the waste is put out in sanitary landfill sites.
	Drainage	It only rains 10 days a year in Santiago de Chile. When it happens, some districts of the city can be flooded.
Outlooks	The public authorities are now working on the planning and implementation of environmental standards on the wastewater, more specifically industrial wastewater. A concession of the drainage service is envisaged and an invitation to tender will soon be launched. Although it is among the most inegalitarian countries in the world[43], Chile achieved great improvement on the development point of view in the recent years. The concerns of public authorities are changing and getting closer to the current concerns of developed countries – industrial pollution, social programme to fight against poverty, etc.	

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[42] A. Rodriguez et al. (2000).
[43] RAMSES (2003)

Buenos Aires (Argentina)

Indicators	Population[44] (Metropolitan area of Buenos Aires)	12.4 millions (2000)	
	Poor population[44]	3.3 millions (destitute: 0.9 million) (2000).	
General context	Long years of inappropriate ruling and corruption considerably impoverished Argentina, which used to be a rich country. The 2001 crisis cast a large part of the population into poverty.		
Sanitation and waste management	The government of Buenos Aires is the public structure responsible for the metropolitan area of Buenos Aires. The management of drinking water and wastewater in the urban zone was concessioned to the multinational company Aguas Argentinas. Drainage is a public responsibility. The collection of solid waste is divided in five zones, each being concessioned to a different private company.		
Sanitation situation	Wastewater and excreta	The sanitation network (9,568 km) is more extended than in most developing cities – attesting the past wealth of the city and the investments of Aguas Argentinas in that domain – and covers almost 65 % of the population.	
	Solid waste	A large part of the solid waste is dumped in sanitary landfill sites managed by the CEAMSE (Ecological Coordination of the Metropolitan Area). A certain number of illegal dumps have nevertheless been identified in the South of the city. As the 2001 crisis considerably impoverished numerous Argentinean households, some inhabitants converted themselves into waste pickers to re-use and sell the garbage. They work in the streets and in the dumps.	
Outlooks	The government implemented several programmes to fight against poverty and improve the living conditions of the underprivileged populations: the "Jefes y Jefas de familia" and PROMEBA programmes for example. However, the massive extent of the crisis in terms of poverty extended the problem to a very large range of the population: in 2002, more than 60 % of the Argentinean were considered as poor. Since the crisis, many NGOs have come to bring their support.		

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[44] UN Division Estimate (2000): www.undp.org.

Antananarivo (Madagascar)

Indicators	Population[45]	1.4 million (2004)	
	Poor population[45]	0.4 million (2001)	
General context	Madagascar is among the poorest countries in the world. Its situation as an island does not favour external trade and contributes to its insulation and poverty. Even if the situation in the cities is generally better than in the countryside and even if Antananarivo benefits from a particular position as a capital, the hygiene conditions of underprivileged districts are very worrying. The city of Antananarivo, initially built on the hills, has spread to the surrounding lowland. This topographical particularity reflects the separation between "rich" districts – located on the hills – and "lower districts" – situated in the easily flooded lowland.		
Sanitation and waste management	The Urban Community of Antananarivo is divided according to several administrative scales. The *fokontany* is the deconcentrated office on the scale of the district: it has all the municipal responsibilities concerning the district, including sanitation. The collection and storage of household waste has been the responsibility of a public entity since 1996: the Autonomous Company for the Maintenance of the City of Antananarivo (SAMVA).		
Sanitation situation	Wastewater and excreta	Since the cholera epidemic in the year 2000, public toilets facilities have been built in many districts. The ground water is not very deep in the slums and consequently the existing latrines cannot be safely used as they overflow during the rainy season. New latrines with hermetic elevated pits need to be built.	
	Solid waste	The landfill site is located outside the urban zone, upstream from cultivated rice fields. As it is not complying with environmental and sanitary standards, leachates are flowing directly into the downstream rice fields.	
	Drainage	The slums are flooded every year and the lands used by the inhabitants as playgrounds in the dry season transform into stagnant water pools in the rainy season.	
Outlooks	There seems to be progress in the awareness process concerning the emergency of a better sanitation. On the local point of view, the year 2000 cholera epidemics enabled the inhabitants to make the link between open air defecation – or in non-hygienic conditions – and diseases. On the municipal point of view, the setting up of a strategic plan shows the willingness to invest human resources in this issue. Finally, on the public authority point of view, the document "Sanitation: the challenge" [46], presenting the advantages of a better sanitation in terms of health as well as economy, had an important impact.		

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[45] INSTAT (2004) : www.instat.mg.
[46] Water Aid (2002).

Annex 3: Internet links

New Delhi (India):

NIUA (National Institute of Urban Affairs): www.niua.org;
Toxics Link: www.toxicslink.org;
Sulabh: www.sulabhinternational.org;
French Embassy Economic Mission: www.missioneco.org/India;
CSH (Centre for Human Sciences): www.csh-delhi.com;
MCD (Municipal Corporation of Delhi): www.mcdonline.gov.in;
DJB (Delhi Jal Board or Delhi Water Board): www.delhijalboard.com;
IIT Delhi (Indian Institute of Technology): www.iitd.ernet.in;
WSP (Water and Sanitation Programme): www.wsp.org;

Hanoi (Vietnam):

OVE (The Danish Organization for Renewable Energy in Hanoi): www.greenhanoi.org.vn;
CEETIA (Centre for Environmental Engineering of Towns and Industrial Districts):
www.santrain.com;
ENDA Vietnam: www.endavn.org.vn;
WSP (Water and Sanitation Programme): www.wsp.org;
IMV (Institut des Métiers de la Ville): www.imv-hanoi.com;
French Embassy in Hanoi: www.ambafrance-vn.org;

Phnom Penh (Cambodia):

URC (Urban Resource Center): http://urc.freehomepage.com/URCBG.htm;
CSARO (Community Sanitation And Recycling Organization): www.bigpond.com.kh/users/csaro;
Phnom Penh Municipality: www.phnompenh.gov.kh;
JICA (Japan International Cooperation Agency): www.jica.org.kh;
Handicap International: www.handicap-international.com;

Santiago de Chile (Chile):

Aguas Andinas: www.aguasandinas.cl;

AEPA (Association of Environment Companies and Professionals): www.aepa.cl, www.chileambiental.cl;

Ministry of Housing and Urbanism: www.minvu.cl, www.fsv.cl;

Ministry of Public Works: www.moptt.cl, www.siss.cl;

CONAMA (National Commission for Environment): www.conama.cl;

French Embassy Economic Mission: www.missioneco.org/Chile;

ECLAC (Economic Commission for Latin America and the Caribbean): www.eclac.cl;

Chile Barrio: www.chilebarrio.cl;

SESMA (Servicio de Salud Metropolitano del Ambiente): www.sesma.cl;

Casa de la Paz: www.casapaz.cl;

Pan-American Center for Sanitary Engineering and Environmental Sciences: www.cepis.ops-oms.org;

Buenos Aires (Argentina):

Aguas Argentinas: www.aguasargentinas.com

Buenos Aires City Hall: www.buenosaires.gov.ar

French Embassy Economic Mission: www.dree.org/Argentina

Centro (Social and Environmental Studies): www.riadel.cl/centro

PROMEBA (Poor Districts Improvement Programme): www.promeba.org.ar

IIED – America Latina (International Institute for Environment and Development): www.iied-al.org.ar

CEAMSE (Ecological Coordination of the Metropolitan Area): www.ceamse.gov.ar

ETOSS (Tripartite Entity of Sanitation Works and Services): www.etoss.org.ar

Antananarivo (Madagascar):

French Embassy Economic Mission: www.dree.org/madagascar

Water Aid: www.wateraid.org.uk

World Bank: www.worldbank.org

ENDA Indian Ocean: www.enda.sn/madagasc/madagasc.htm

AFVP (French Association of Volunteers of Progress): www.afvp.org

Handicap International: www.handicap-international.org

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