

# END REPORT

REWATT / GARBAG / KEVYT

# SODYCO

Social Dynamic Cohesion

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INCLUDING SOCIAL COHESION IN PRODUCT DESIGN IO3029

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## 1. INTRODUCTION

This report has been made by five students of industrial design in Delft. The course is named “Including social cohesion in product design”, which had as main learning question: “Can industrial designers design products/services that effectively enhance aspects of social cohesion?”.

The social cohesion has always been an important fact to take into account while a product is being designed; there are real cases of products that have brought societies to anti-social situations despite improving their life quality considerably. Specially in the poorest areas of the world, where fighting to survive is the daily life of its inhabitants. Most often the sense of community is the only thing the inhabitants of a slum have, but everybody still looks for its own benefit, to be the one who manage to feed its family no matter how. This results in huge piles of garbage, robberies and murders. We hope to decrease these amounts of events with helping them and showing them how to get out of the troubles by introducing projects like these. It may sound strange to pretend gathering and creating community feeling in one of these areas as a way of improving the quality life of the dwellers, and even more to do that designing a product. However, if the own inhabitants are the designers, and they are producing something for their own benefit but also for the community, it is easier and quicker to see how the social cohesion grows in the slum working all together.

In this course we have had three projects. The first project was about pedal powered led lighting , the second was about a garbage collecting system and the third about furniture production. Through multiple steps we have created three systems. The first provides light to a community in the slum to avoid to problems of their common kerosene lamps. Our business, SODYCO, pretends to replace them with LED lamps that work with rechargeable batteries; these batteries would be recharged by the owners using the power of a pedal stool. The second gives a solution to the garbage problem in the slums by introducing a sort of game and the third project resulted in a mobile bench, named “Kevyt” and is designed on a multi-task piece of furniture.

In all the cases we first started to create scenarios to get efficient amount of ideas from which we could start generating the main guideline for the system. We also did a small research of the current situation of the setting in slums so that we would have a clear idea how to proceed. After the scenario making we made matrixes through which we had the final scenario which we modified to fit slum environment.

The project we are presenting is the clear example of how the social cohesion in product design can change the life of the inhabitants of a slum. As a group of Social Entrepreneurs we set our business on it trying to make this a better world.



## 2. IDENTIFICATION

### FIRST REPORT



## 2.1.1 CASE ANALYSIS

### TECHNOLOGY

In this concept everything is about adapting to the environment. All the materials used in frame are easy to use as a part of the concept and can be found from various different locations which make manufacturing and transporting to the slum workshops possible. Those materials are hard wood, steel and leather and some soft materials in their different forms. The specifications of the material can be identified more accurately when the place is known. The materials used in frame, the wheels, pedals, electrical charger and the batteries have to be transported to the slum environment for the manufacturing and assembly.

### ERGONOMICS

Because of the assumption that the charging event is daily and common event machine has to be ergonomic. That is made with comfortable seat which is filled with foam or some other soft material. The frame of the pedal box is also adjustable so that people from different age group or gender can use the pedal box more easily. The hand bar is also for having a better feeling when you're charging a battery.

### USAGE

Customization is one of the important factors in the concept. The pedal box is adjustable so it's easy solutions for different sort of people. The people can also paint it in a color which they like so using it can be very personal thing to use the pedal box. Also few different basic color possibilities are offered. The size and the adjustability and the material allow pedal boxes to be used in several contexts in a slum. In a specific area near vocal points in a community were there's a lot of people or individual home use also. Also they factor of crimes has been taken in been thought because you can easily get a lock to the pedal box or replace the materials if there has been some damage done to them.



Old woman working the land at the slum

The slum that we are referring to is integrated by 40 families of near 6 members each one, which made the slum to be similar to a community more than to an area of the big city. Apart of that families there're also homeless people that sleep where they can, maybe sometimes in half-collapsed shelters, or in dark and calm corners of the alleys.

Then there're people that sleep where they work, the responsible of the workshops, the one of the radio and media centre. It is easier for them and also better, because usually these buildings are built with more resistant materials and with a stronger structure, as they are thought to be relevant and remaining at the slum.

In conclusion the slum is inhabited for near 270 people, the most of them women. It has an explanation that the female sex is the dominant of the slum: Most part of the male population usually emigrates, first to the city and to other cities, and then also to different countries, trying to find a better lifestyle. Many of them never come back to the slum despite not having found a really better place to get established.

Another reason is the huge mortality of the slum concentrated in the male sex. A part of the average high mortality, men usually are more involved in fights and violence between gangs, and risky or illegal activities that might end up with deaths.

The old people (that means more than 50 years old) are not a very representative percentage of the population. They don't work actively in the workshops or the media centre so they don't generate money and they usually live with their son or daughter family. It is very difficult to find eldest people still healthy to have a normal active life, usually they get ill very easily and the poor hygienic conditions doesn't help to recover from the illness. The common age range of death is between 55 and 60 years old for men and from 60 to 65 for women.



Children and Social Entrepreneurs in a Kenya slum

Children represents near the 20% of the dwellers, considering childhood until 10 years old. Most of them are in the slum's school until they're 8, and then join their fathers at the workshops or in the worst cases they join gangs and go to the city to earn money in not a very legal way. Anyway this slum is considered one of the most developed of the area, surely because of the economical invest in technology to be self-sufficient with the energy, and also, and specially for that, because of the great cooperation and cohesion between the dwellers. They are a community gathered to improve their place.

## ELEMENTS

### School

The school is pretty big in comparison with the community. This is because there are also children from the rest of the slum on the school. In total there are 90 children in the school, which are divided in two classes, one for the smaller and one for the older children.

The school gets its money from the authorities and the children do not have to pay any school money. This way all children of the slum can go to school and learn. The level of the teaching however is poor. Mostly they do only have a couple of books to share with the whole class and also paper and pencils to write are scarce. Compared to the surrounding communities however

they are lucky to have a school.

The school is not obligatory for the children, so parents can their child at home they can. Luckily nowadays most parents understand the importance of education and send their children to school. Since five years also girls are allowed to go to school, but they are still a minority. Usually the children go to school till the age of eleven. Afterwards they have to go find work.

### Fabric atelier

In the atelier fabric they make fabrics for the community. The wool the men bring from the countryside is woven by the women into fabric which is sold in the slum.

The atelier is housed in a small place in the centre of the village in the same block as the workshop wood and the workshop steel. Once in a while they sell the fabrics at the market. However the atelier does not have that much work, so usually this happens only once a month. It also occurs often that the women have nothing to do.

## Steel Workshop

It is a very similar building to the fabric atelier, as both of them (and also within the wood workshop) are placed in the same area and block of buildings. The difference is just the maintenance of the structures, that in the case of the steel workshop, is the worst of all three buildings. This is because of the everyday aggression of the steel against the poor wood or also steel structures; the process of manufacturing this kind of material implies high temperatures, heavy materials being carried up and down and its impact over the walls and other elements. All the workers of the steel workshop are men, and in a minor percentage, children older than 10 in that are in charge of the less aggressive tasks.



Children from a slum working in a wood workshop

## Wood Workshop

The third building of the block is not very different to the other two. It has got basically the same iron corrugated roof and wood and steel structures. It used to be the most crowded of the three, because a part of the official workers, many other people were allowed to go there and repair their own things (as chairs, structures for the house, tables...) Nowadays they're also allowed to do that but in a more restrictive way, because the responsible found that many people there distracted the workers and they were not productive. Also children older than 10 join the workshop as second hand workers in a major percentage than in the steel one (usually the mothers prefer having their children working with wood to avoid deep wounds and other dangers)

### Block of houses

The block of houses are in total the largest construction of the slum, but also the worst-quality one. There are 5 different blocks of 8 houses distributed around the slum, but 4 of them quite near to each other, all of them with similar kind of houses. It consists of mud, wood, corrugated iron sheets and very often

no additional floor. The houses inside are usually so small that it is possible to just match two different rooms: one for cooking and living, and another for sleeping, of course all the members of the family together. There're not toilets anywhere, what contributes to engrave the bad hygienic situation and the prominent stinky environment.



### Community Centre

This is the biggest building of the slum. Symbol of the cooperation and the importance of the community for the dwellers, it is made of better materials (even that it's not more than thicker iron, better carved wood etc) and it is place in the centre of the slum. In the community centre take place many meeting to inform, discuss or present novelties, or also take important decisions for the future of the slam. Moreover, recently, with the Social Entrepreneurs Bussiness installed at the slum, many different activities for children and old people are beginning to take place in there. Sometimes is difficult to gather all the inhabitants because the work at the city at different hours, but the ones that are more actively in the slum-life, are very interested and proud of having this kind of community centre.

### Supermarket

It is strategically situated near 3 of the block of houses, but more with a easy-location than with a commercial intention. It is the only supermarket of the slum and although it is a very poor country and even more a slum, it is very well fitted out with the necessary aliments to survive and some other more European/American commercial ones. It's quite common to see the responsible giving free products that are out of date but still healthy to eat to homeless of very poor families.

### Waterbassin

One of the oldest installations of the slum, but recently modified and improved with the Social entrepreneurs activities, including the pedal box energy. The waterbassin was actually just a well made of stones and with a wood structure to fit the bucket and the rope to fill it. When the slum grew and became more crowded they needed to supplant the well for a waterbassin, that also allowed the inhabitants to have more activity with it and improve their hygienic habits.

### Media/radio/printing centre

This building is placed near the Community Centre and also close to the blocks of houses. Its placement is quite strategic so that the dwellers are able to pass and listen to the radio, watch TV or use the computer or the fax in every moment. It is one of the newest constructions, and it has been modified and renewed a couple of times in the lasts years because of the growing necessity of communication of the dwellers.

At the beginning it was one of the smallest and less important places of the slum, just with a fax, an old typing machine and a small radio station, but in a meeting at the community centre they decided to give the centre the necessary importance, that was much more of what it seemed to have.

They made it higher and wider, and a big satellite was placed

there; they bought a couple of TVs, renewed the radio station and add a couple of computers and the printing centre. The local bank and the Social Entrepreneurs have had a lot to do in all that.

#### Local authority/ bank

It is placed wall to wall with the SEDG centre. It already existed when the centre was built but their activity has grown up incredibly since it has settled there. Is one of the better conserved buildings because of its stone walls and the current inversion in their own building to fit better with the SEDG centre. The local authority and the bank are placed in the same building and separated just by a wall, as if they were simply different offices of the same business because many time ago there was no bank neither a police station. Both “necessities” came together when the city major decided to control to slum and place there a representation of his government, and moreover he decided to bring a bank to the slum so try to implant to importance of saving money into the dwellers. Despite it was a very difficult goal to manage, when the salary of the workshops grew a little bit and the feeling of community and the aim of improvement became stronger in the slum, the bank began to have also an important role.

#### ENVIRONMENT

The slum is located in Kenya and inhabitants many Christians and some Muslims. There is a tropical climate and a big variety of animals and much green because of it is near the equator. There is a high humidity and it rains very often. If it rains, most often these are torrential rains, which turn the none paved roads into mud pools. Just like every slum, this slum has a high concentration of social problems such as crime, drug addiction, alcoholism, high rates of mental illness, and suicide. Many slum dwellers employ themselves in the informal economy. This can include street vending, drug dealing, domestic work, and prostitution. Some people even recycle trash of different kinds (from household garbage to electronics) for a living - selling either the odd usable goods or stripping broken goods for parts or raw materials.

The Blocks are pure in arrear; the houses are made of wood, corrugated iron and plastics, all materials what have been found on the streets. But there is a small supermarket, some workshops for wood, metal and fabric, as well as a community centre a school where many children from also around can get some lessons and a waterbassin and a recharge centre. There is a new group of social entrepreneurs and there are some local authorities and a media building, whit a printer, television and radio.

The children grow up in an insufferable situation and there are a lot of social problems, but the inhabitants of the village have a strong bond and they are willing to fight for a better future for their kids.

## INFRASTRUCTURE

The slum consists of a few brick buildings surrounded by houses, built with wood and corrugated iron. There is one road that starts at the supermarket, passes the community centre, the local authority and leaves the village near the waterbassin at the eastside. This road is at the very most accessible with a small car. The rest of the village is not drivable and sometimes you can not even pass when you are walking. The buildings have been built that close to each other that a person can pass, but a handcart can not. This means that merchandizing is not an option, so as picking up garbage, which causes places in the village to smell disgusting. This is a heating place for diseases also. So many people live in very narrow alleys that do not allow vehicles (like ambulances and fire trucks) to pass. The lack of services such as routine garbage collection allows rubbish to accumulate in huge quantities. The lack of infrastructure is caused by the informal nature of settlement and no planning for the poor by government officials. Another result of the narrow passages is that police has no view of what happens on the streets, so that crime can do whatever it wants.

The broad road in the centre of the village consists bricks and the small alleys only sand, downtrodden paths, which does not give any resistant's when the land shall be flooded.

North of the village a big river is situated, which gives the opportunity to wash your body, but it is too poisoned to drink

from it. Off course the river is an important piece of infrastructure, because it is actually the only way to leave the place. So it is important for traveling, but also for trading and cooling.



Slum near the river. Houses and lifestyle

## 2.1.2 3D SCENARIO BUILDING

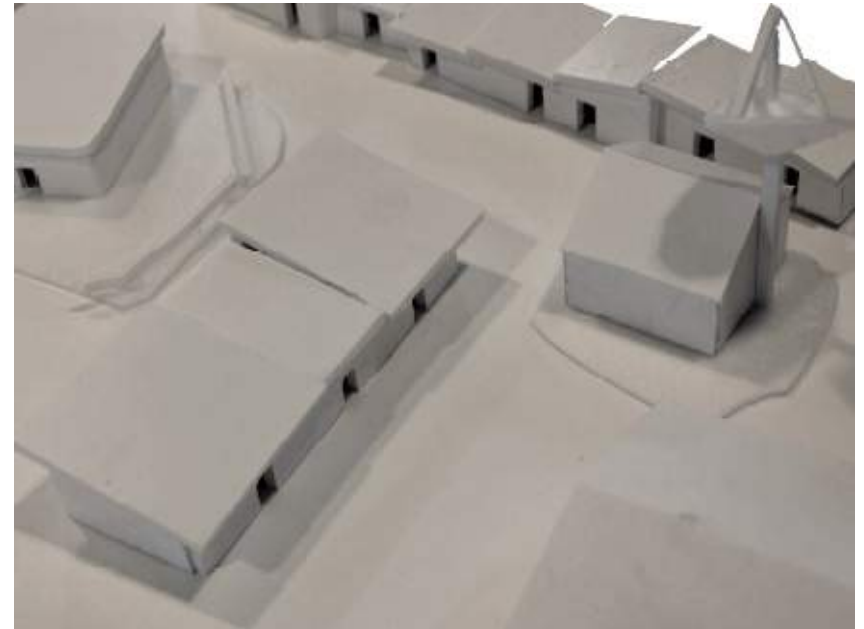
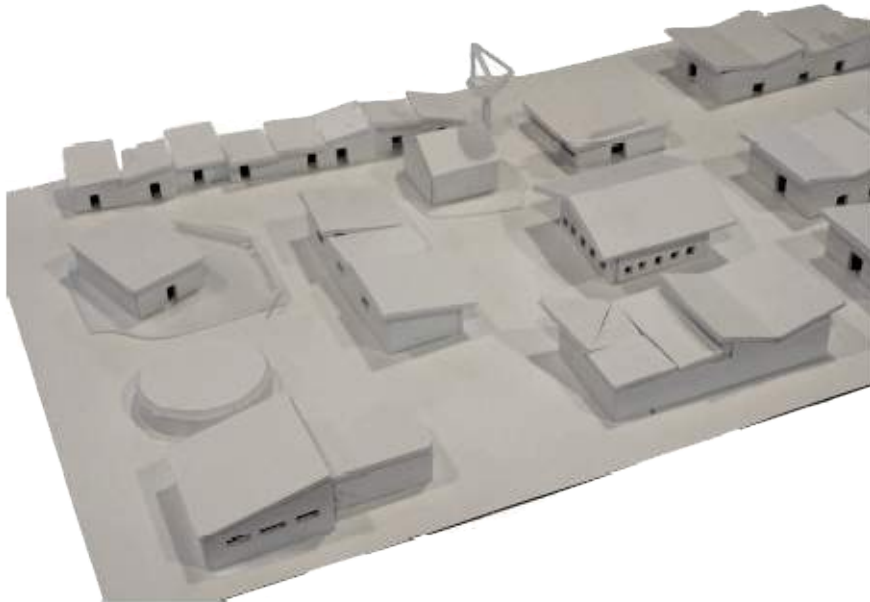
### MOTIVATION MODELING

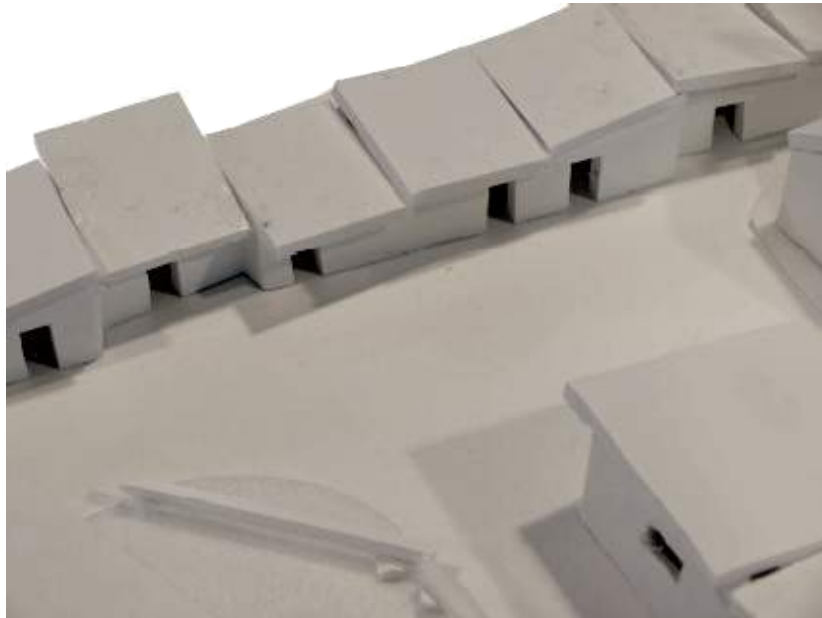
We wanted to give a clear image of the slum, but we didn't want to build a ghetto-like scale model with brown cardboard, sandy roads and sheets of corrugated iron for the roofs, because we saw that everybody built it that way. We wanted a plain slum with a clear division of buildings. Every block has about the same look as the other blocks, so that we made clear that these buildings have the same purpose. We thought about the specific aspects of each building to clarify what building has to be the school and what building has to be the block of houses. That's the reason we have chosen for the white cardboard and the white houses, which have been made with a 1:100 scale. To make clear what the contractual relations are, we placed 1:90 scaled puppets. That means that the puppets are a little too big, but it can give a good idea of the contractual relations.

The specific aspects of the buildings can be found at - for example - the school, which has a fence that encloses the building, or a satellite which stands near the media building. The special buildings like the Community Centre and the Authority or bank buildings have been made very tight. But the blocks of houses and the workshops have been tried to give a more slum-like look by adding some differences in the roofs. Also in the more important buildings there have been placed more windows and doors than in - for example - the blocks of houses, which only have eight doors.

### EXPECTATIONS

Our expectations of the 3d model are that we have a good idea of what we are doing and that we can have a better discussion, because there is something tangible to talk about. You can literally see in what way you have to move from one building to another, so that it may help us to write our scenarios. It may not give the right impression of the ambient in the ghetto, because it is very clean, but this element will be imagined by the group members. We also expect that this 3d model can give a good expression of what we stand for to the other students.





## 2.1.3 MISSION STATEMENT

For defining the mission statement of SODYCO, 5 questions can be used to get a complete and structured definition.

### 1. WHAT IS THE PREFERRED FINAL RESULT?

The preferred final result is creating a community integrated system (CIPS) which will stimulate social cohesion as we defined it, in the community by implementing 3 design cases in a community with own culture, sociality and habits. These CIP's should amplify social cohesion or emphasize the existing social cohesion, because the dwellers of the slums have to collaborate and this will give a sense of belonging to the dwellers.

### 2. HOW THE SUCCESS OF SOLUTION IS GOING TO BE MEASURED?

The success of the solution is going to be measured by the amount of social cohesion among the members of the community. When the amount of social cohesion is the same or increased, the preferred final goal is achieved.

### 3. WHAT IS THE MAIN GOAL AND WHAT ARE THE SECONDARY GOALS?

Creating a community integrated system which will stimulate social cohesion in the concerning community.

- A cheap as possible CIPS
- A sustainable as possible CIPS
- An efficient as possible CIPS

- Maximal cooperation with community members during and after the project
- Maximal integration of the system in the community
- Stimulating face to face contact among community members
- Creating sense of belonging among the community members

### 4. WHAT ARE THE LONG TERM GOALS AND WHAT ARE THE SHORT TERM GOALS?

Short term

a flexible and successful integration process of the CIPS in the community

Long term

Maintenance of the amount of social cohesion in the community after the implementation of the CIPS so that the amount of social cohesion keeps preserved.

### 5. WHAT IS THE TARGET GROUP AND WHAT DO THEY WANT?

Community members with ages above 4 years who live in a slum.

- minimal disrupting of their culture
- minimal disrupting of their lifestyles
- minimal costs

## 2.1.4 GROUP DYNAMICS

Overall our group did well with the project. We had clear task divisions from the beginning although we didn't have any leader.

As equals we started to go through the tasks and the interests which everyone had towards the project. One of the first tasks which we had was the making of the mock up and that was very social and easy going moment when the group members got to know each other better while doing something useful and tell their own ideas freely.

After mock-up we started divided into smaller groups. This division was the best way to manage all the tasks in the project. After the tasks were done we also evaluated them together so that we didn't miss anything which others find valuable information. Not to mention the important social wisdom how to be constructive during argumentation that these sorts of situations require from each team member.

The most difficult part was probably to figure out which of the scenarios were the best and most efficient ones because there are many things that you can base your ideas on. Also the amount off the scenarios was a thing that had a fraction momentum. But we also arrive to an agreement with these scenarios so that everybody could have an opinion about the matters that had been discussed. That doesn't work always and demands real consensus about the equal roles in the group. Sort of like a small democracy.

When the democracy in the group works that well and every

member will receive positive feeling about the work that they are doing. The evaluation of the material that the group and each member produces gets easier and more constructive. That fore the group also produces more and more better material. Our group was also international which made few communicational and cultural situations tricky. With pinpointing them and with open conversations they were handled well.

In many ways we achieved many goals that many group without a leader couldn't achieve. With different personalities this sort of models of group work could have caused more than friction between group members. But the real feeling of equableness and feeling of valuable individual work made this team work well.



## 2. IDENTIFICATION

### SECOND REPORT



### 2.2.1 CURRENT SITUATION

The current situation of the garbage collecting in the slums encounter many problems. For example in Nairobi's fetid slum the people are throwing garbage to the nature. It has a great effect on the local environment and the food chain.

One solution offered currently is garbage burning which is developed by Kenyan architect Jim Archer and brass foundry worker Francis Gwehonah. But this solution has not become common and everyday solutions. But also the improvement has taken place. The biggest supermarket chain in Kenya has agreed to fund 20 more slum cookers and the product itself is developing constantly.

The lack of public services is irrefutably one of the pick problems in these areas. People don't have any other possibility to deal with everyday rubbish so they just throw it away. Need of these sort of services is undoubtedly great. Even the everyday life is a struggle for people in the slums so providing public services not only would reduce the amount of garbage in the nature but would create jobs for the people living there.

Also the awareness of the public about the dangers what the garbage's in the nature cause should be raised. Although suffering is everyday life in those circumstances it would push people to think what they're doing and raise the speed of positive development. It's also pretty easy to address these

problems but those countries where slums are born usually have had a big history of poverty, imperialistic exploitation and wars. So the problems and the attitudes from the history should also be considered in the local context.

## 2.2.2 MISSION STATEMENT

For defining the mission statement of SODYCO, five questions can be used to get a complete and structured definition.

### 1. WHAT IS THE PREFERRED FINAL RESULT?

We want to create a garbage collection system for a community in the slum which works also perfectly up scaled to the whole slum and others in the world.

With this system we want to increase the social cohesion and use it as the tool to make the system to work perfectly: If the dwellers feel as a community and their work is for the improvement of the life quality of the community, it is easier to launch a good garbage collection system.

With this system we also want to achieve a cleaner slum that avoids or makes more difficult to spread diseases, and to make the dwellers aware of the importance of hygienic habits indoors and outdoors.

### 2. HOW THE SUCCESS OF SOLUTION IS GOING TO BE MEASURED?

The success of the solution is going to be measured basically by the level of the cleanliness of the streets in the slum. If there is no garbage piling up in the streets it would be an undeniable sign that the system is working. The social cohesion, which is always one of the goals of Sodyco, will be another input to measure the success

### 3. WHICH IS THE MAIN GOAL AND WHICH ARE THE SECONDARY GOALS?

The main goal is to create a sustainable garbage collection system which guarantees the cleanliness of the slum using as a tool the social cohesion among the dwellers.

The secondary goals are related to the way to achieve our main goal:

- To take the maximum profit of all the available garbage.
- To reduce the level of pollution.
- To make the system sustainable also in a long term.
- To show the system as a suggestion, not as an obligation.
- To involve as much as possible all the dwellers.
- To offer alternative ways to improve the life on the inhabitants.

#### 4. WHICH ARE THE SHORT TERM GOALS AND WHICH THE LONG TERM ONES?

##### Short term

A quickly integration of the system in the daily life of the inhabitants.

The collective awareness of the importance of cleanliness in the slum.

The successful production of bags to commercialize both in the slum and western countries.

The feeling of improvement in the life quality of the dwellers because of the system and the bags production.

##### Long term

The maintenance of the system (taking into account also de back-up plan) for a long time.

The natural acting of collecting and separating the garbage of the dwellers after the setting of the system.

The enrichment of the inhabitants and in consequence of the slum with the production of bags.

Up scale the system to other slums and keep on with the production of bags for western countries.

#### 5. WHICH IS THE TARGET GROUP AND WHAT DO THEY WANT?

All the dwellers (except babies) can take part of the system because everybody can leave their garbage at the containers. For the race the target group is from children older than 6-7 years old, until men around 40 (basically all the inhabitants can join the race but this is probably the target group which is going to join it).

Their interests are:

- The minimal disrupting of their culture.
- The maximal efficiency of the system for their effort.
- The minimal cost for the service.
- To foresee the success of the system from the beginning.



## 2. IDENTIFICATION

### THIRD REPORT



## 2.3.1 CURRENT SITUATION

### HOW ABOUT THE FURNITURE IN THE SLUMS?

Before designing the mobile furniture a research about the current situation in a slum was done. We tried to get a clear image of the usage and kind of furniture in slums at the moment, especially in slums in Kenya, where our slum is situated. It is difficult to find good information about furniture in slums, so most information is based on pictures we found.



In our study it became clear the people in slums have only basic furniture. They use all kind of stuff to sit on and lot of the furniture is recycled from dumping grounds. The people use blocks of wood or crates to sit on or they simply sit on the ground. Also the standard beds are really simple: They use thin mattresses or airbeds combined with blankets and fabric sheets. Most dwellers also have real furniture, since they usually collect many things from nearby dumping grounds. On pictures you see a lot of used furniture; probably every household will have some.



On pictures you can also see the houses of the slum are really small. Some houses are judged from the outside not bigger than six square meters, where probably sometimes four or more persons live. Because of this it is impossible to have a lot of furniture for the dwellers, since they do not have a lot of space.



Another factor which needs to be taken into account is the fact people do not have a lot of time to sit down. The whole day long the people are or working or trying to make money another way. Every day the people struggle to survive. Because of this they will not have a lot of time to sit down or use furniture. Only while preparing dinner or having dinner the slum's people will have time to sit down and maybe as well in the evening. Because the days begin early for the slum dwellers they will probably go to bed early. This is the kind of furniture they use most: Their beds.



The people in slums often live their lives outside. The cooking is done more or less outside and also many people just hang around at the streets. Because of this they do not need a lot of furniture to sit down. Here is where the possibilities of a mobile furniture design become interesting. If people could just take their own furniture with them and place it anywhere in the slum they could use it where and where they want. Another opportunity might be the possibility to combine a bench with a bed.

### 2.3.2 3D SCENARIO BUILDING

Again we build a 3D scenario, but this time digitally. Here you can see some impressions of the slum. We also made a movie through the slum using the programs sketchup and google earth. On the next page you can see an overview of the slum.





### 2.3.3 MISSION STATEMENT

The following structure will give a complete version of the SODYCO mission statement.

#### 1. WHAT IS THE PREFERRED FINAL RESULT?

The final result which SODYCO wants to achieve is creating a complete implementation of the bench system in the slum. This means that on a certain moment every household will have one, or maybe even more than one, bench in its property. People will have the ability now to do not everything on the ground but to have a more clean way of sitting.

The open air cinema should also be visited by as much inhabitants as possible bringing their bought bench to sit on during the movie. Here and also in daily life the sharing of the bench with other people should also be present. Concerning the manufacturing the preferred final result is that every workshop will get specialized in making one part of the bench and that these parts are correctly assembled in the wood workshop so it can be sold at the supermarket. SODYCO's goal is to include every inhabitant in the bench system and to provide and to preserve and provide social cohesion among the people in the slum. On the long term the system should scale up by involving slums in the surroundings with the manufacturing of the benches.

#### 2. HOW THE SUCCESS OF SOLUTION IS GOING TO BE MEASURED?

One way of knowing how well the implementation is going, is by looking at the amount of sold benches at the supermarket. When it seems that there is not much interest among the inhabitants, the amount of sells will be low. Also in Holland at the Bijenkorf the interests to buy the benches can be low which will cause a small number of sells. The supermarket owner and the Bijenkorf in Holland should communicate with the workshops how much benches should be made every week so there will not be a overload of benches and no material will be wasted.

#### 3. WHAT IS THE MAIN GOAL AND WHICH ARE THE SECONDARY GOALS?

As also briefly described in point 1, the goal of SODYCO is to preserve and provide social cohesion in the slum by implementing a mutual expedient in from the bench, the Kevyt. The secondary goals which will make this main goal happen in a most successful way are the following:

- Involving as much as slum inhabitants by gaining interest and stimulating them to take responsibility for specific rolls in this system

- To create an ability for the dwellers to have a proper expedient to sit on instead of on garbage or dirty ground
- Creating an ability to earn money and have work and to work on a better future set up by themselves.
- To show the system as a suggestion, not as an obligation
- To capture the culture and traditions as much as possible of the inhabitants

#### 4. WHICH ARE THE SHORT TERM GOALS AND WHICH THE LONG TERM ONES?

##### Short term

- A quickly integration of the system in the daily life of the inhabitants.
- Making the people use and enjoy the Kevyts in their daily life and make them being in conscious of the essence of the system.
- The successful production of Kevyt bench to commercialize both in the slum and western countries.
- The feeling of improvement in the life quality of the dwell-ers because of the system and bench production.

##### Long term

- The maintenance of the system for a long time.
- The continue production of the benches in the workplaces and a good and corporative attitude among each other.
- The enrichment of the inhabitants and in consequence of the

slum with the production and sell of the benches.

- Up scale the system to other slums and keep on with the production of benches.

#### 5. WHICH IS THE TARGET GROUP AND WHAT DO THEY WANT?

The Kevyt bench can reach everybody in the slum. Because it is a product used at the open air cinema which is mend for every family in its total in the slum, inhabitants of all ages are expected there. The cinema is seen as a family activity.

Their interests are:

- The minimal disrupting of their culture.
- The maximal efficiency of the system for their effort.
- The minimal cost for the service.
- To foresee the success of the system from the beginning.

### 3. INTEGRATION

#### FIRST REPORT



### 3.1.1 SCENARIO MATRIX

#### ELEMENTS

Before thinking about the scenarios we defined the elements to write about. We chose to take the same elements as are in the 3D scenario. We decided to leave out the Social Entrepreneurial Design Group, because we will be part of the pedal box project anyway.

The elements we have chosen are:

House blocks	Atelier fabric
Supermarket	School
Community centre	Local authority/bank
Workshop wood	Media/printing/radio
Workshop steel	Water basin

#### SCENARIOS

For the generation of scenarios we divided the fields of opportunity among the group members. Since we found ten fields each member had to take care of two of them. We wrote four scenarios per element, so every team member wrote eight in total. This way we would get varied scenarios.

Hester House blocks and Workshop wood  
Joël Supermarket and Community centre  
Kristan Atelier fabric and School  
Robert Workshop steel and Water basin  
Marzia Local authority/bank and Media/printing/radio

#### SCENARIO SELECTION

We ended up with 40 scenarios, which is way too much to make a matrix of. For this reason we decided to do a first selection on these scenarios. We judged all the scenarios on four criteria, which are listed and explain below. We more or less made a Harris profile. However we found out it is really difficult to give a clear score on each criterion, so we decided to not fill in a Harris profile. Also a Harris profile of 40 scenarios would not be really clear.

We decided to judge the scenarios subjectively with the criteria below. We did this as a group and this way we where to discuss each criterion for each scenario. It also made really clear which scenarios we found most interesting and which were of less important. Ultimately we ended up with 26 scenarios. These scenarios will be used to create a scenario matrix.

We used the following criteria:

- CIPS potential
- Social cohesion
- Reality
- Uniqueness

##### 1. CIPS potential

The first criterion is the potential of our CIPS (Community Integrated Product System), in this case the pedal box, in the scenario. How successful would the CIPS be when introduced in the way described in the scenario? Of course it is difficult to judge this since we cannot foresee how the CIPS would work out. However we

think there some scenarios where the CIPS placement is not ideal and therefore we think the potential of the CIPS is lower.

## 2. Social cohesion

Furthermore we judged the scenarios on the social cohesion they generate. Each scenario creates an amount on social cohesion and we wanted to choose the ones with the most cohesion. When we analyzed the scenarios it became clear that also the social cohesion depends a lot on the location where the pedal box is located.

## 3. Reality

How real is the scenario? Does it reflect the real world? For the third criterion we judged the scenarios on reality. We did this using our own knowledge about slums. In the beginning of the project and for the setting we looked up some characteristics of slums. We judged the scenarios on this criterion because we think it is important the scenarios reflect the real world. It turned out that most scenarios did.

## 4. Uniqueness:

The latest criterion was the uniqueness of the scenarios: How unique is the scenario and does it have interesting elements? If a scenario is more or less the same as others it does not make sense to use both and then one has to be rejected. While we feared different group members would come up with the same idea it appeared most similar scenarios were written by the same person.

## CLUSTERING

We ended up with the 26 scenarios listed below. These are still many scenarios but we still wanted to keep a lot of different directions and elements for our final scenario. In fact in the selection we basically kicked out the scenarios which were not interesting enough to investigate further. The scenarios down here are clustered in the different elements we used. We also did this using notepads. (See picture on next page) We also found other similarities between the scenarios like the attention for criminality for example. In the end however we thought the clustering in elements is the most clearest.

## MATRIX

We now wanted to make a matrix of the founded scenarios to see how we could combine the different scenarios. We first started to do this with all the scenarios in one matrix. (See picture of the page before) This turned out to be way too much work and not really clear, so after a while we decided to make the matrix differently.



First failed try to make a matrix

We opted to make a matrix of the different elements we had chosen. This way we could compare the scenarios of one element with the other and this way see if it was possible to combine these scenarios. Of course this is a less direct comparison than all the scenarios against each other but we considered this way more efficient.

In the matrix the orange notepads indicate that combining the scenarios is clearly impossible, the yellow ones indicate that it could be a combination but not a really good one and the green ones indicate a good combination. The result of the analysis done with the matrix is eight good combinations of scenarios. Each combination will be briefly described right here.

## POSSIBLE COMBINATIONS

### Community centre with supermarket

The idea of the scenarios of the community centre and the supermarket is the same. Both are big places where a lot of people come together. Because of that both could be a good place to place the pedal boxes. In the beginning maybe only one of the two will have pedal boxes, but probably later both will have them.

### Community Centre and school

The community centre and school form a good combination. The community is a good place to place the pedal boxes and the kids at the school can paint or decorate them. Also the children could be made enthusiastic for the pedal boxes by visiting and trying those once. This way probably also the parents of the children will become enthusiastic. The supermarket and the school are less likely to combine, since the supermarket is commercially and the school is not.

### School and workshop wood

The school could be combined with the workshop wood. The children could help or decorate the pedal boxes which are made in the workshop wood. This would be a really exciting experience for the children of the school.

### Houses (House blocks) and Media/radio

The scenario for the house blocks is comparable with the ones for the Media/Radio. In the scenarios the even distribution of wealth and helping each other is very important.

### Houses (House blocks) and Local authority/bank

Also this combination is quite obvious. Because house blocks or even houses want to have their own LED-lamp the bank can give financial support to do so. Also for a pedal box at home the bank could give a loan.

### Workshop wood, workshop steel and atelier fabric

The latest three green combinations are quite obvious. In various scenarios the workshops and the atelier are producing parts or the whole pedal box. Combining this would make a better pedal box, because they can combine their strength. Also the pedal box could be made out of wood and steel and be assembled by one of both workshops. Together they should produce the pedal boxes. Only in the atelier scenarios are pedal boxes in the atelier, but we considered this would not be a good idea.

## FINAL SCENARIO

Based on these positive combinations we began making a final scenario. We picked the useful elements out of the positive combinations we found. Firstly we will describe the setting of the community and then the scenario will follow.

## SETTING

### Location pedal box

Firstly and most important we had to choose a location of the pedal boxes. Based on the scenarios about the community centre and the super market we decided it should be in the supermarket. We chose for the supermarket because the community centre already is a meeting point for social activities; maybe the pedal boxes would have a negative effect on this sociality. We want to make the super market a social point like that as well. We want people to come together in the shop to go pedaling together. Maybe in the future even some drinks are offered there.

Another reason for this location is that people who go shopping can also go charge their battery at the same time. This way they do not have to go to another building in another part of the community. Furthermore also the pedal boxes will be safe inside the supermarket and the manager can have a look at them. A minor thing is that the supermarket is closed during

nighttime, so then it will not be possible to recharge your batteries. The openings hours of the shop are really long so this will not be a problem. Maybe someone will have a key of the supermarket as well, to make sure they can always reach the pedal boxes.

The supermarket in our setting has enough room available for the pedal boxes. Already a couple of years ago a new building for the supermarket was built and the owner has plenty room now. Because of the little customers and the small assortment he does not need that much room and for this reason it was possible to situate the pedal boxes in the front of the shop.

### Manufacturing pedal boxes

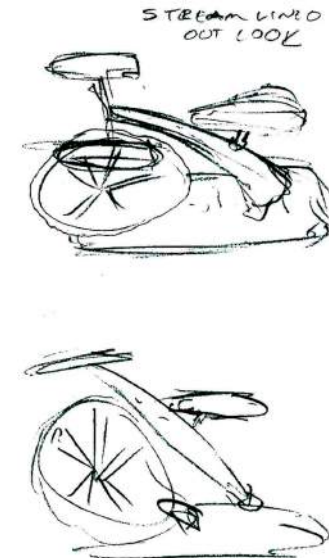
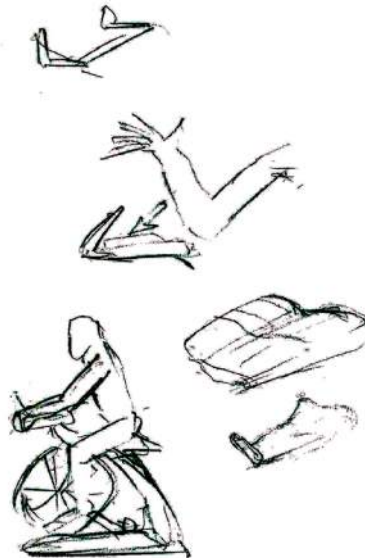
The manufacturing of the pedal boxes is arranged locally. Like the combination of the different workshops and atelier already showed they should be combined to produce the pedal box. The workshop wood and metal will make the frame and the mechanics and the atelier fabric can take care for the coating of the seats and the handlebars. Working together as a team also brings challenges of course. For this reason the three companies must select one of them to be responsible towards the SEDG. The materials will be bought and brought to the community with help and cooperation of the SEDG and the authorities.

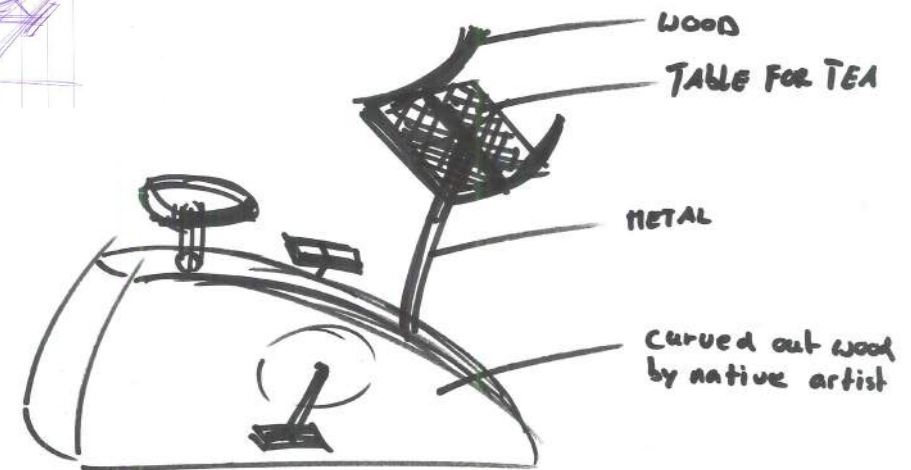
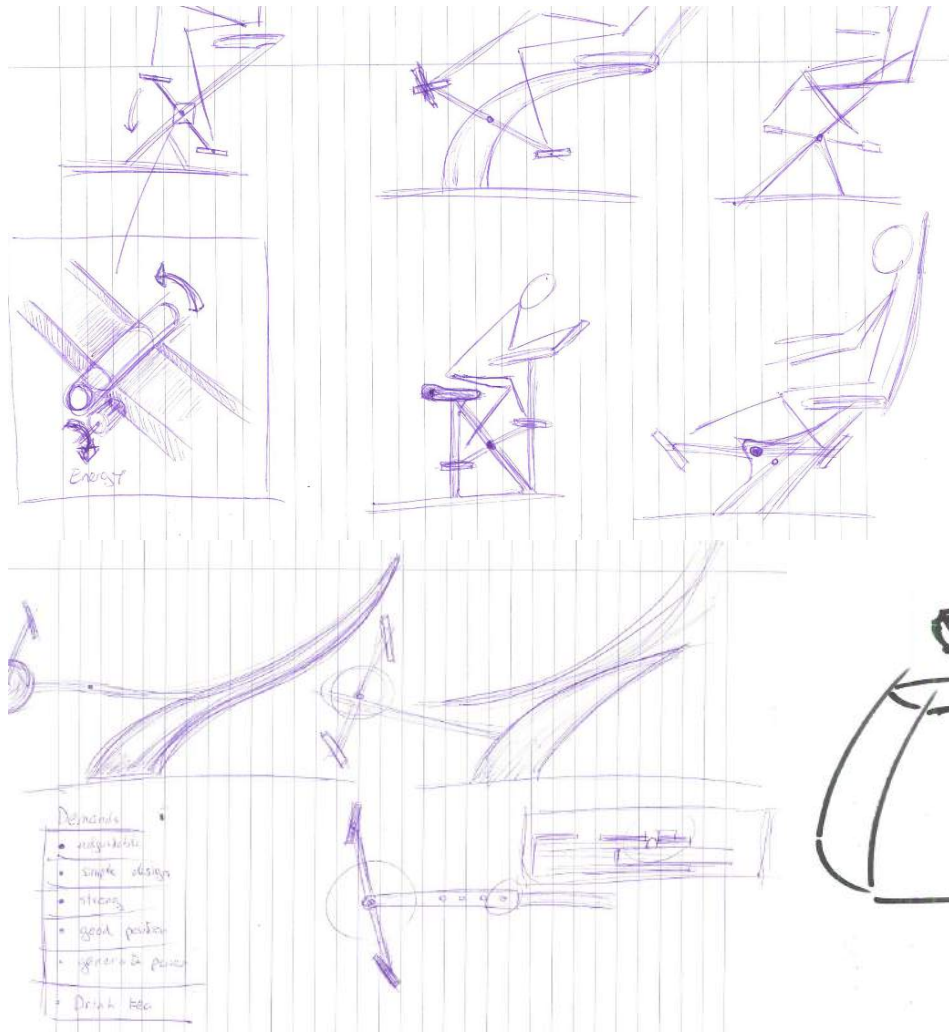
### Diverse

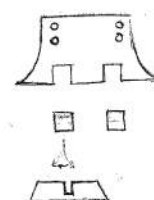
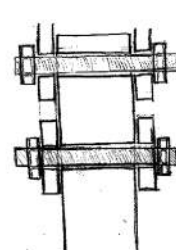
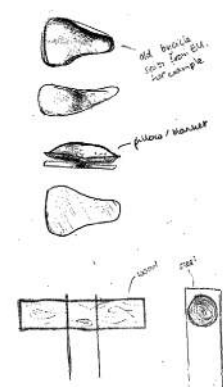
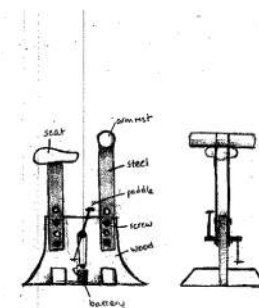
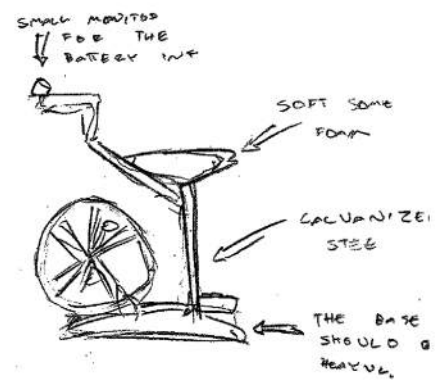
Also the school will have a role in the pedal box project. 2 Year ago the project started and the children were allowed to paint the first three pedal boxes. Since then it is tradition the children paint the new pedal boxes. Also the children are sometimes allowed to try the pedal boxes. Sometimes they make trips to the pedal boxes and then they can use them. Normally the pedal stools are forbidden for children below nine, so there is always a big excitement when they are going to visit them. Also the local artists are involved in the pedal box project. They did paint the room in the supermarket and they also exhibit their work down there. Also the wooden parts of the paddle box are decorated with beautiful shapes and patterns introduced in the wood by cutting. With this look the paddle box is maximal integrated in the culture of the community. The rest of the community is more or less the same as in our earlier setting. Only minor things have changed.

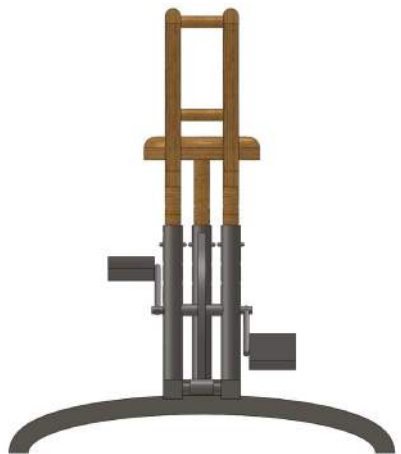
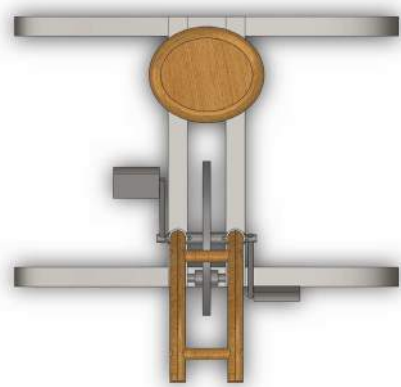
### 3.1.2 CONCEPT DESIGNS

The concepts in which the CIPS is going to be based are the following ones: It's made of steel, it is adjustable and also comfortably made of wood in the parts in direct contact with the user. The wood can and also be esthetically carved with representative symbols of the culture of the slum. It is important to have the base of steel to have a more stable product, and also the adjustable parts to avoid a quick worn out. To add more social cohesion and make the slum feel knitted in one cause, the pedal box can be painted by children at the school.











### 3.1.3 FINAL CONCEPT

With the same bases as the beginning, the final concept basically divert on the shape and some ergonomic aspects.

The materials are mainly steel and hard wood. From steel we manufacture the lower parts of the frame and wood we use in the adjustable structure in the back and for the mainframe of the bench which is furnished with local soft material and leather. The bar upon the wheel and the pedals are made from steel and the part for the hands from wood. These materials are easy to manufacture with very basic machinery (such as bending, welding and basic machining) and are also possible to find from the local environment. The recharging mechanism consists of the charger which is attached to the wheel and the battery placement under the bench. Those parts should be manufactured elsewhere and transported to the slum.

#### ROUGH MATERIAL APPROXIMATION (€)

5€	1 wheel
5€	2 paddles
4€	2 bearings for the mechanism
50€	1charging mechanism with all the devices
8,6€	0.5m3 (birch) hard wood, The best profiles to manufacture are long kinds.
7€	4m 10mm steel pipe,
3€	0.2cm3 foam or some soft material
7€	50 cm of 10cm2 steel, rectangular profile.
6€	Few ½ " bolts and nuts for them.
Estimated total + Charging mechanism: 100€	



\*Price information can change due to the usage of local materials and chances of general value of materials. These prices are taken from various different locations worldwide.

### 3.1.4 SUBSCENARIO MATRIX

Once the design for the pedal stool is completely determined it is necessary to create a scenario for it. Based on the matrix analysis, the subscenarios for the pedal stool are the supermarket, the school and the block of houses, in which the community effort for improving their life style will be seen.



Sub scenario1: Pedal stools at the supermarket. Installation there to make easy the dwellers getting use to the power system.





Sub scenario 2: Pedal stools at the school, where children will paint and decorate them, so the social cohesion increases.



Sub scenario3: Pedal stools at the block of houses, where everybody will enjoy the benefits of the pedal stool power system.

### 3.1.5 FINAL SCENARIO

Basu lives together with his wife Lewa and four children in a little slum house in Nairobi. He has got two sons, a girl twin and he works in the workshop steel. As he did more often this week he gets up really early. Because he is really busy at the workshop he needs to be there on time. Since they live at the edge of the community it takes some minutes walking towards the workshops. On his way he greets his neighbors and he also meets his friend Kabili. After a short chat they continue their way and at half past seven he arrives in the workshop.

His colleague Senwe already has started working. They greet each other and also Basu starts working quickly. Today is an important day: If everything goes alright they will deliver two



pedal boxes. Basu and Senwe are each working on one. According to the original schedule the new pedal boxes had to be ready already ten days ago. However there was a problem with the workshop wood. They needed to have the wooden parts of the pedal box to finish the pedal stools but they still did not bring them. Basu's boss, Levi had been very angry with the boss of the workshop and the man promised two days ago to deliver the needed parts today.

At one o'clock the needed parts finally arrive and they can finish the assembly of the pedal stools. First these are decorated with cutting patterns and figures in the wood and at two o'clock the stools are ready, just on time for the painting. The painting will be done at the school of the community, which is tradition with new pedal stools. The school has arranged some paint and when Basu and Wenwe arrive they hardly have to do anything. The children know how to handle with the painting of the pedal boxes.

Around five o'clock they go to the supermarket for the official introduction of the two new pedal stools. Here the head of the village gives a speech and thanks everyone who worked on the project. Basu feels really proud of being part of the new technology in his community. As an opening two muscular men do a competition on the pedal boxes. While seeing this Basu hopes his wife will charge the battery of their LED-lamp since they ran out of power yesterday and this morning he forgot.

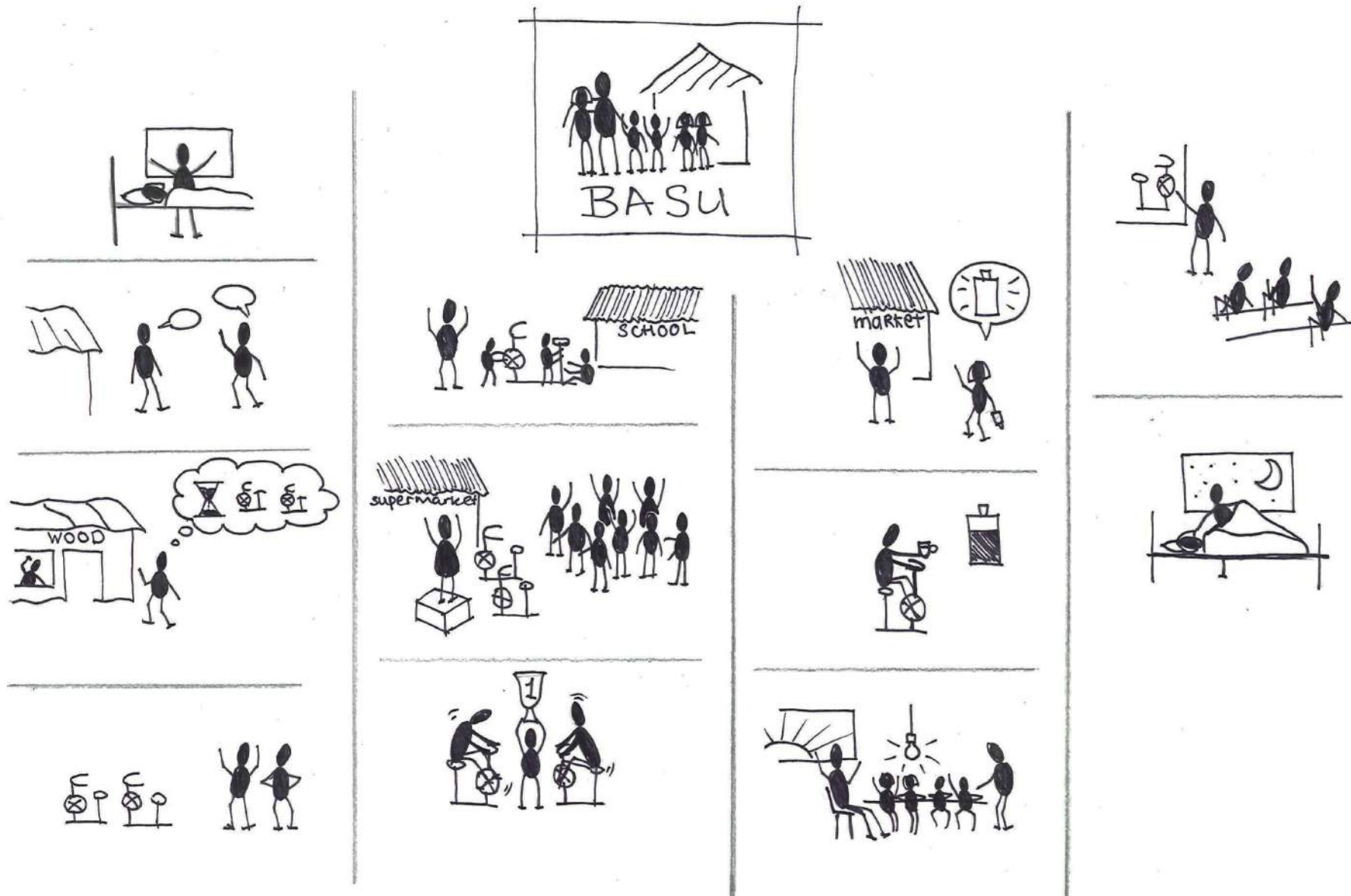
Then he sees his wife arriving at the opening. Quickly he walks

towards her and gives her a big embrace. Then he asks: “Did you bring the battery?” “Oh yes”, she says and she gets the battery out of her handbag and give it to him. Every time he sees the battery he keeps thinking how it is possible such a small thing gives such a lot of energy. Basu meets with two of his friends and they go the charging point to charge their batteries. After only four minutes there is a free space, which is really a big improvement. That is of course because of the new pedal stools, the amount of stools is doubled. While drinking tea Basu slowly charge the battery, now he had got the time.

At six he comes home and around seven they have dinner. Because of the pedal box project Basu also has the money to feed his family and children. Compared with some of their neighbors Basu and his wife have a really good life. After dinner he goes to the community centre to drink something with friends, Lewa was not able to join.

At the community centre he has to tell exactly how they made the pedal stools and everybody is impressed. When he comes home the LED-lamp is turned on and his wife sits in the living room with one of her friends. They have an animated talk and it becomes later and later. When they go to bed it is already 2 o clock in the night. Hapily enough Basu does not need to go to his work, so they can sleep quite long, unless none of their children wakes them.





### 3. INTEGRATION

#### SECOND REPORT



### 3.2.1 SCENARIO MATRIX

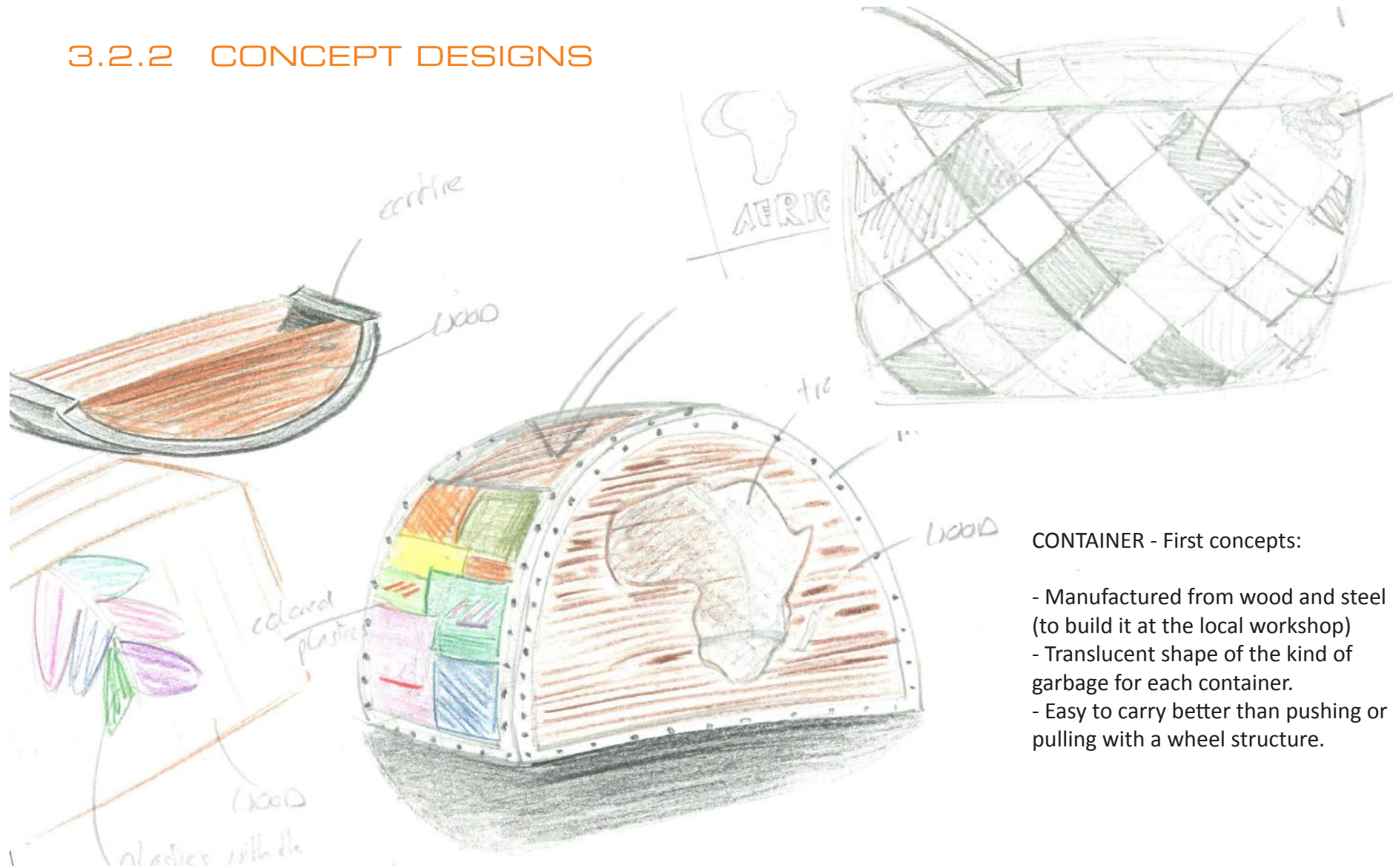
Potential ideas from scenarios	Game	cooker	Water/ trash exchange	Central garbage collection	Bag production of own trash	Garbage week
Game						
Cooker	<b>1</b>					
Water/ trash exchange	<b>2</b>	<b>6</b>				
Central garbage collection	<b>3</b>	<b>7</b>	<b>10</b>			
Bag production of own trash	<b>4</b>	<b>8</b>	<b>11</b>	<b>13</b>		
Garbage week	<b>5</b>	<b>9</b>	<b>12</b>	<b>14</b>	<b>15</b>	
Possible						
Not so sure						
Impossible						

The postprocessing and having design guidelines for the bag are two aspects that are necessary and applicable to all the scenarios and became a requirement for the collecting garbage system. That's why we did not implement those aspects in the matrix.

## FINAL SCENARIO REQUIRMENTS

- There's a game with 3 different containers:  
1 for the cooker, 1 for the bags and another for the rest, as batteries or completely useless and toxic materials.
- The materials for the bags will be decided by SODYCO and with visual icons people in the slum will know what they have to place in the container.
- The cooker should be placed between the workshops and the local authorities and our building.
- The container with the materials for the bags will be brought to the post-processing point in which will be cleaned.
- SODYCO will provide the people of the slum a basic design guideline for the bags, but then they will be able to customize it.

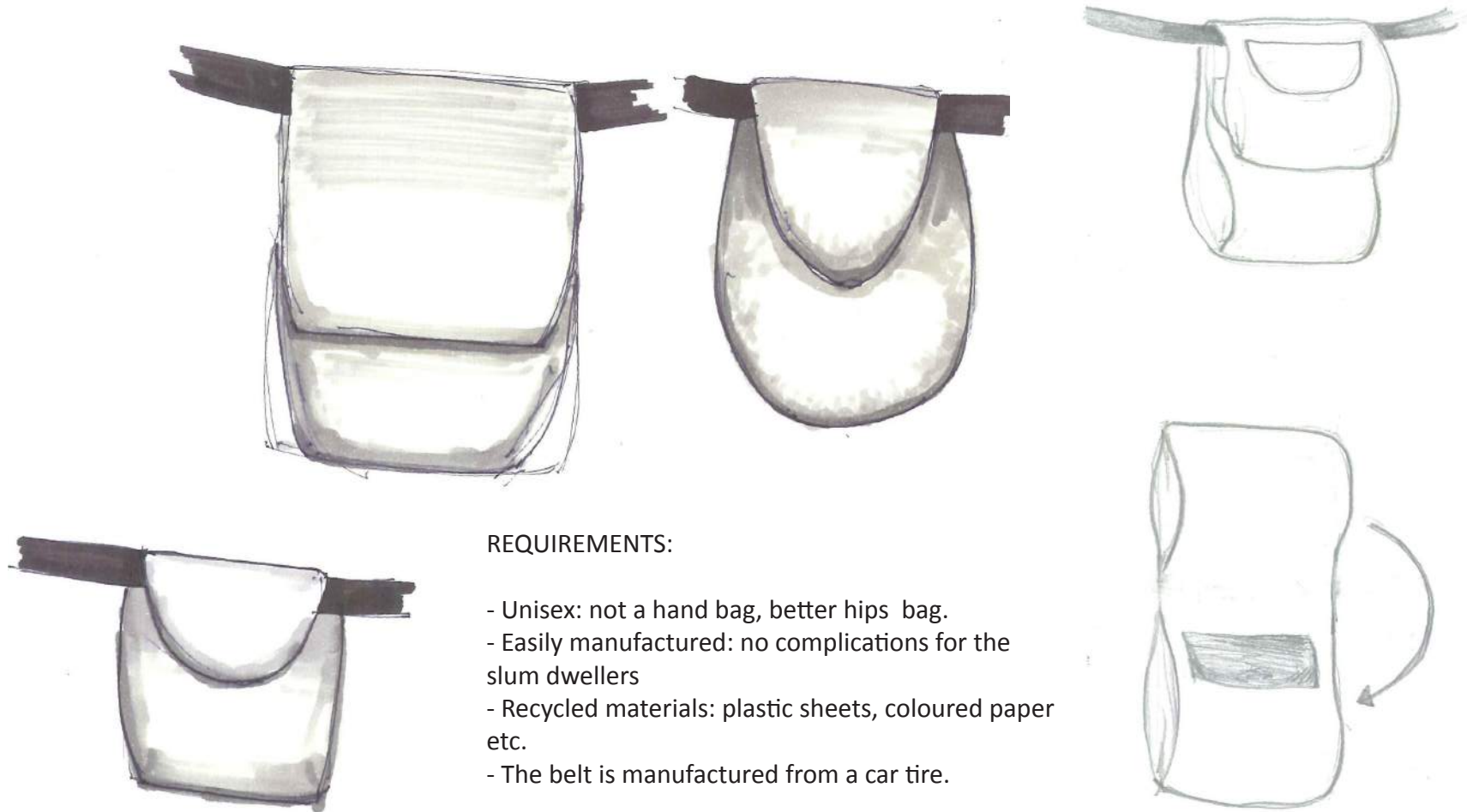
### 3.2.2 CONCEPT DESIGNS

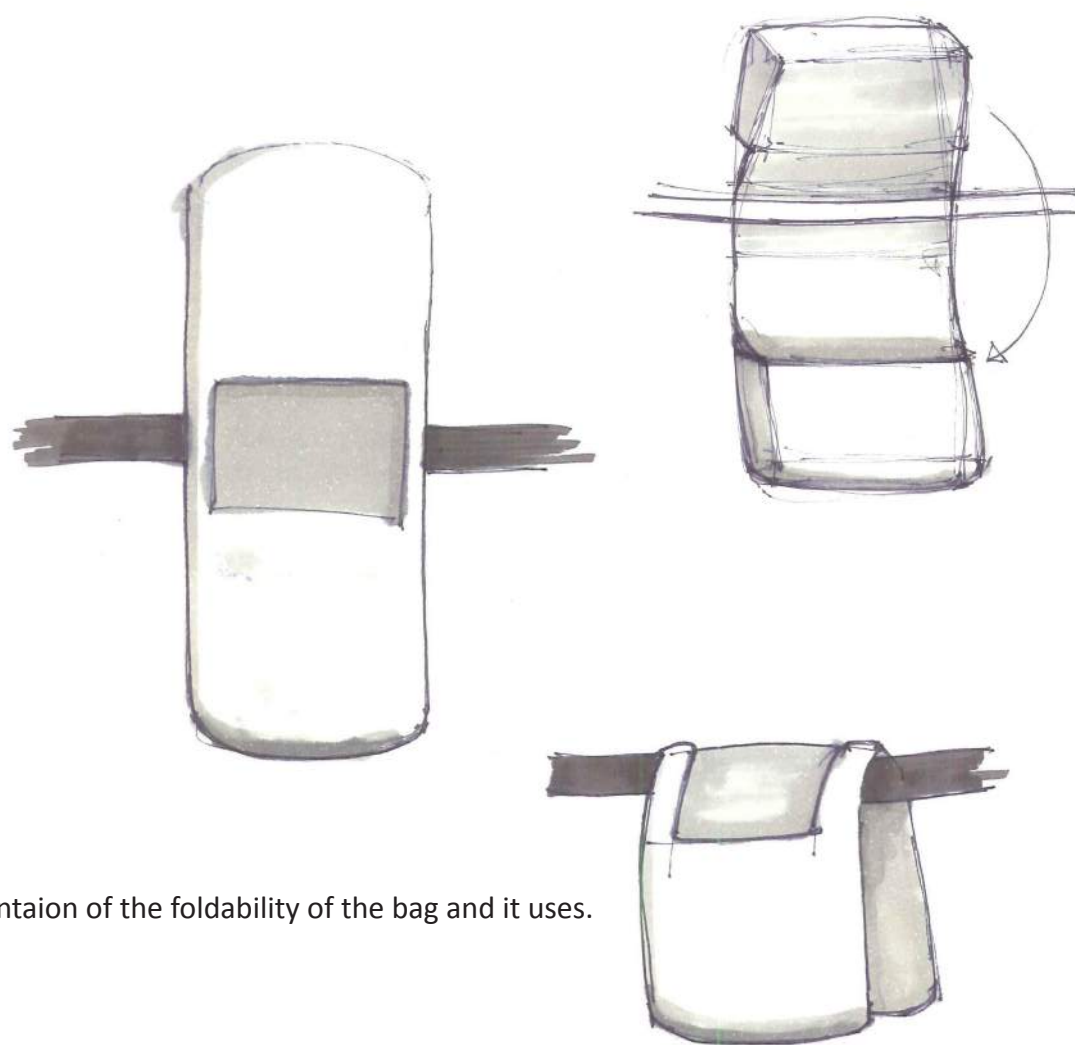


#### CONTAINER - First concepts:

- Manufactured from wood and steel (to build it at the local workshop)
- Translucent shape of the kind of garbage for each container.
- Easy to carry better than pushing or pulling with a wheel structure.

## THE BAG



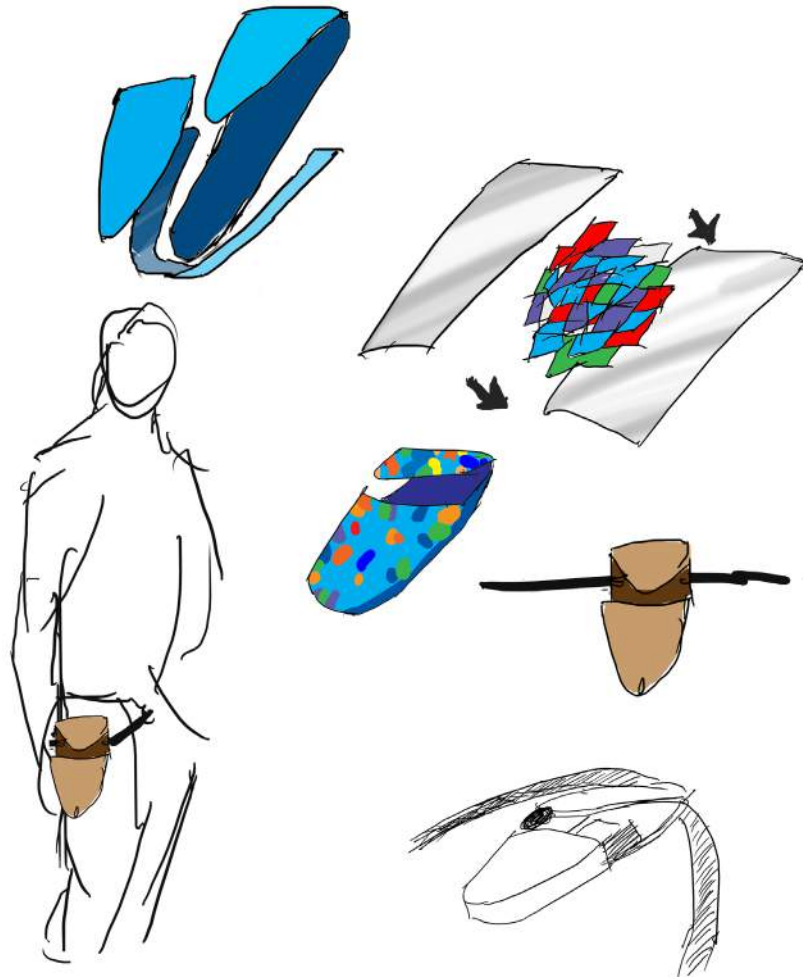


Explantaion of the foldability of the bag and it uses.



An example of a slum woman wearing the bag and carrying garbage bags.

### 3.2.3 FINAL CONCEPT



#### HOW THE BAG IS MADE

It consists of many plastic and paper sheets retails glued between two transparent plastic sheets to guarantee the flexibility but also the strenght.





The final 3d model of the bag in the Netherlands.  
A dutch person comfortably wearing the Garbage.

### 3.2.4 FINAL SCENARIO

Based on the positive combinations in the matrix we began making a final scenario. We picked out the useful ideas and combined them in one final scenario. Firstly we will describe the setting for the scenario and then the final scenario will follow.

#### SETTING

##### *Garbage Collection*

First and most important step for the garbage system is the collection of the garbage. To collect the garbage the garbage races will be organized. Each block of houses will work together as a team to collect their garbage and the five house blocks will race against each other in the garbage races. The garbage races will be organized every Sunday, and will be a social event for the whole communities.

To collect the garbage each house block will get three containers: one for trash for the bags, one for garbage for the cooker, and one for useless waste. During the week the house blocks will collect the garbage in their containers, and in the beginning they will probably also collect garbage on the streets of the slum.

Then at Sunday the garbage races take place. The people will gather in front of the supermarket where the race starts. The finish will be near the community centre where a garbage sorting point is situated. There will be held three different

races: One for the men with the material for the cooker, one for the woman with the bag garbage, and one for the children with the useless garbage. This is done to make sure everyone participates and the containers are divided based on the weight, the children get the lightest container which is probably the useless garbage.

At the garbage sorting point the teams will get garbage coins for the garbage they collected. The winner of every category of the race gets one coin more. The idea of the garbage races is to make the collection of garbage a fun activity which people love to do.

##### *Garbage processing*

As you could also read above the garbage is brought to the garbage point this is a central point next to the community centre where the garbage is collected. Here the garbage races end and the people get the coins for their waste. The gathered waste will be put in three bigger containers. Afterwards there are various parallel processes depending on the kind of waste. The garbage for the cooker will be burned in the cooker right away. Obviously this will not be done in one time but spread during the week. This way the community members can use the cooker during the whole week. To use the cooker the community members will have to pay one garbage coin. The cooker will become a social meeting point for cooking together and for the community dinners. After each garbage race a

community dinner will be organized, where the community members can have dinner together.

The second type of garbage, the materials for the bags will be processed further. At first the employee of the garbage cleaner will look if really all materials are suited for the bags and he will bring the wrong materials to the cooker or useless waste. Afterwards the useful materials are washed in the garbage washer. In this device the garbage is washed with hot water from the cooker and some natural washing powder. Then the materials are hanged out to dry and the water is filtered and used again for the garbage washer.

Third activity at the garbage point has to do with the useless waste. This is first stored in a container at the garbage point and when it is full the garbage is brought to a land dump close to the slum. This is done by the employees of the sorting point. There will be two men working at the sorting point, one controlling the oven and one in charge of the garbage cleaner.

### *Bag making*

The bag making will be situated at the fabric atelier. Best system to let people make bags is to let them make their own bags which they can sell to the bag-making manager who sells them to the “De Bijenkorf”. When you hand in five garbage coins you are allowed to make a bag in the atelier. This way it will be guaranteed there is enough material for the bag making. When you are going to make a bag you can select the materials you

would like to use and then make your own bag. Then when people sell the bags to the manager they get two euro for each bag. Of course the bags have to meet some standards to be approved. For this reason a design guideline will be made for the bag design.

With this method the people will be motivated to hand in their garbage and make bags. Because they can earn money with the bags they will want to make them. Of course the bag making should be a social activity. People should come together to make the bags and the atelier should be a social meeting point in the community.

## FINAL SCENARIO

Omisha and her family are really excited this Sunday afternoon: After the whole week collecting and selecting the right kind of garbage for their house block container it was time for the contest. All the neighbors of the households were preparing everything for the race; it was the first one after the new system for collecting garbage was set. This new system consists of a complex of 3 containers for garbage. The house blocks were told to separate it into the three containers, and then for the garbage race they had to carry the carts of the containers in different teams.

Everybody is excited and the adults are checking only the assigned materials are in the containers, as it is a requirement to participate in the race. At six o'clock in the afternoon, the local authorities and Sodyco members appear at the supermarket where all the teams are ready to begin the race. The race goes from the supermarket to the sorting point

Omisha's father, Chitundu, is the captain of the materials for cooker of the Block 1, and with some men of the block he will take part of the race. Women of the blocks are in charge of the materials for the bags and children of the useless material's cart. The idea was to make three different races: In the first one the men with the carts for the cooker of each block, then the women and finally the children of the five blocks.



All the teams are ready to begin, the start line is crowded and the excitement is touchable. PAM! The sound of a giant drum gives the sign to start, and within the teams and their carts everybody begins to run towards the “Garbage point”, were some members of Sodyco and the employees are waiting for the winners.

The teams have to overcome some obstacles in their way to the goal trying not to loose their materials to reach the sorting point. Chitundu’s team is ahead, but followed very close by the cart of block four. Omisha’s father cheers his team, they only have to overcome the obstacles of the water basin and they would arrive to the goal

Many inhabitants go directly to the sorting point to be in first line at the finish. And the winner is Chitundu’s team! They arrive the first little time ahead of block four.

The race has been very successful and everybody seems to be very happy with the activity. The Sodyco members congratulate the winners and give them bottles of water for their great race.

Now it is the turn of the women’s teams. It is very funny to compare how different they took the competition: although at the beginning they are running, they get tired quite fast and they just decide to keep on walking and chatting, and only run in the end of the race, after the obstacles of the water basin. The winners are the women of the fourth block and they also get some bottles of water as a price.

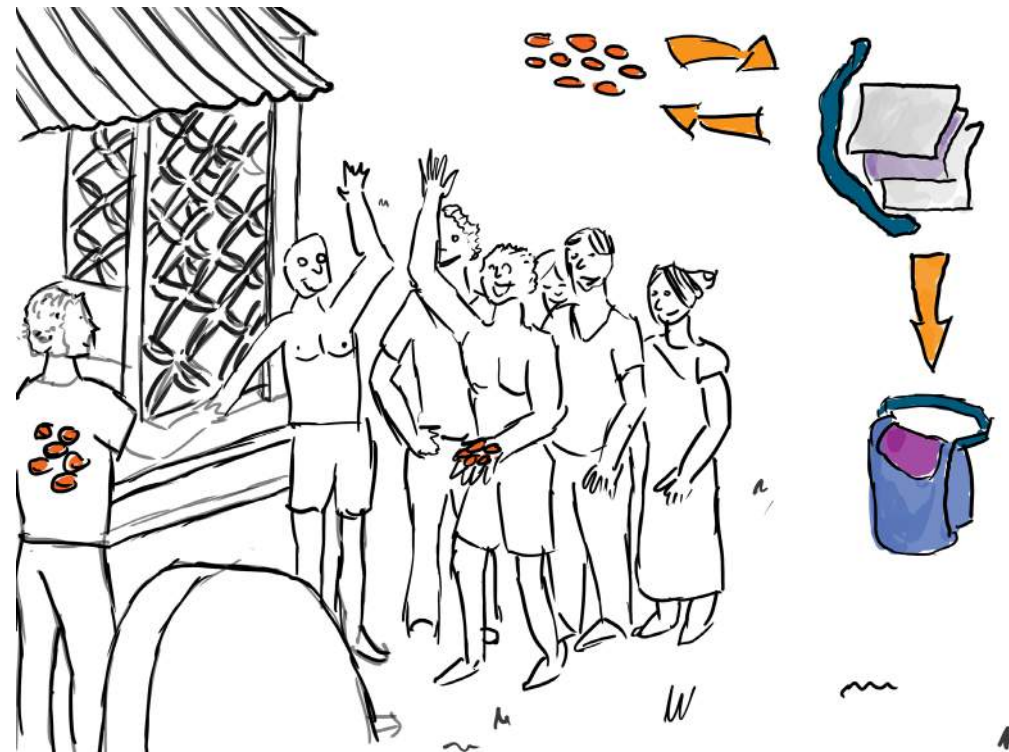


And finally the sweetest race, but also the funniest! The children of the slum are probably the ones most excited and it is difficult to calm them down minutes before the start sign. Everybody cheers up the children, no matter which block they are from.

The winners are the children of the second block who also received some bottles of water. The teams bring their carts to the garbage point, where they take profit of its heat to boil some water and cook together. It is a perfect opportunity to gather and do something together, and a diner is organized by Sodyco.

Later on, after the garbage for the bags is cleaned and re-sorted at the garbage point, the materials are brought to the atelier workshop. Here the community members can make their bags. Omisha's house block has collected enough garbage coins to make a bag and Omisha and her mother are chosen to make the bags.

Together they go the atelier. Here one of the employees explains how the bags should be made and he shows them what materials they can use. Together they select the materials and they set to work. After half a day the bag is finished and they give it to the atelier employees and receive two euro for the bag.



### 3.2.5 THE SYSTEM

#### ‘EARNING COINS FOR TRASH’

In the slum, every week waste will be delivered by the people living there, so continues production of waste takes place. It is important that the waste will not be just thrown out of the window, but gets a proper destination. So the people must in a way be stimulated to go and treat their garbage in a correct way. To create this stimulation among the people, a coin system is thought out.

The system is based on three containers in front of every block of houses, one for the useful trash for the bags, another for the useless one that can be burnt, and a third one for polluting trash.

First of all it is necessary to place a Garbage Point in the slum, in which two different areas will be divided: The Post Processing Point and the Cooker, and there will also three huge containers equal as the ones in front of the houses. What is the mission of these sub areas?

#### *The Post processing Point*

It is where the useful trash for the garbage will be delivered, cleaned and ready to use as material for the bags.

#### *The Cooker*

is where the useless trash that can be burnt without polluting too much the air will be brought. The heat of the cooker will be used to boil water and make it drinkable and offer it in exchange of the garbage to the dwellers.

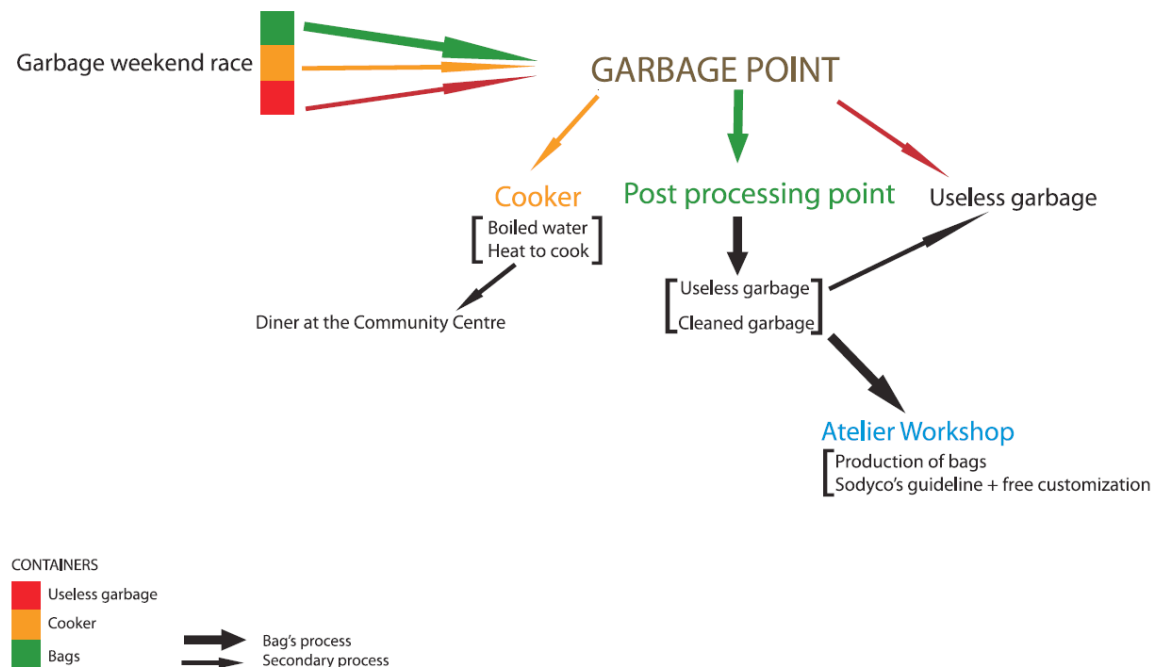
#### *The containers*

will be used as part of a back-up plan that will be explained later.

## THE COIN GAME

During the week different ways of earning the coins exist, but the main idea of the coin system is to have a big game event every weekend during which people can receive them. The whole idea of the coin system is that it will increase the social cohesion among the people living in the slum.

During each weekend, the trash produced during the week is used as play material. The idea is that the garbage is separated in the set of three different containers which will be in front of every house block. So every house block will have stored their own amount of trash at the end of the week. The division of the trash will be between the trash for the cooker, the trash for the post processing point from which bag production at the Atelier Workshop will follow, and useless garbage.



In the weekend the collected and separated trash will be used during a race in which all five house block will be involved and will compete against each other. All three containers have a different sign which makes clear which trash needs to be thrown in which container.

For the race, the containers need to be brought to the community centre where the race will start. From there, each container is carried as fast as possible by the track which will have the Garbage Point as final destination. The division of who will race with which container depends on the different

weights of the containers. The heaviest ones will be done by the men, the lightest ones by the children and the one in between by the women. The people from each house block will race with the containers belonging to their house block. When the teams arrive at the Garbage Point, every body will receive a certain amount of coins, depending on the amount of garbage and how fast you did the race. The fastest teams will receive the highest amount of coins. This will also stimulate the people in the slum to bring as much garbage as possible to the containers every week.

All the trash which is used during the race will from there go to its final use:

- The garbage coming from the bag material container gets to the Post processing point where the garbage is washed and from there brought to the bag atelier (the bag atelier is located at the fabric workshop) There the garbage can be transformed in plastic coated sheets so it is a proper material to make the bags from.

- The garbage for the cooker container will be used at the cooker during which the raised energy is used for a public dinner which everybody can join after the race.

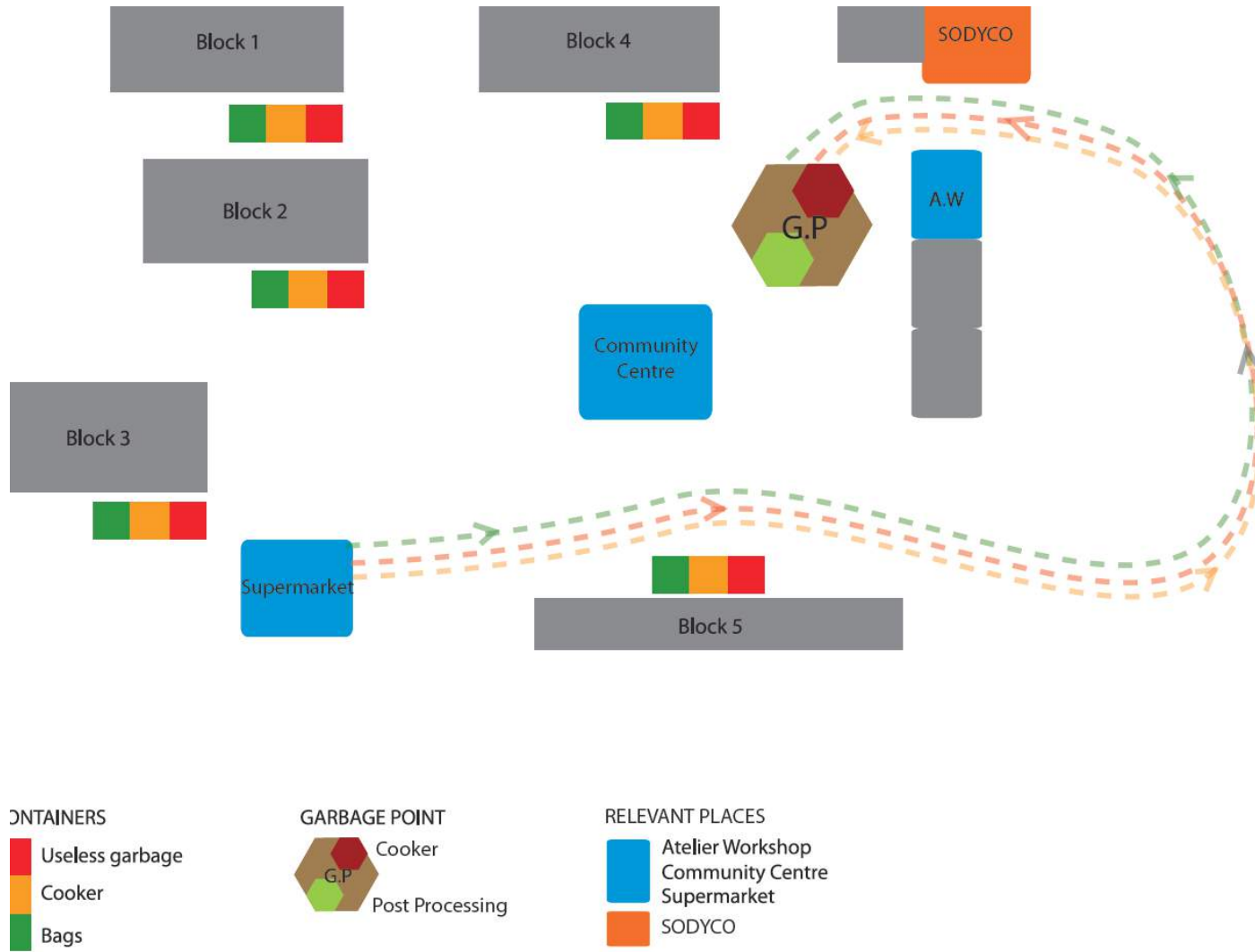
During the implementation of this system in the slum, the coins are divided by members of SODYCO. Then, when the system is working and the coins are



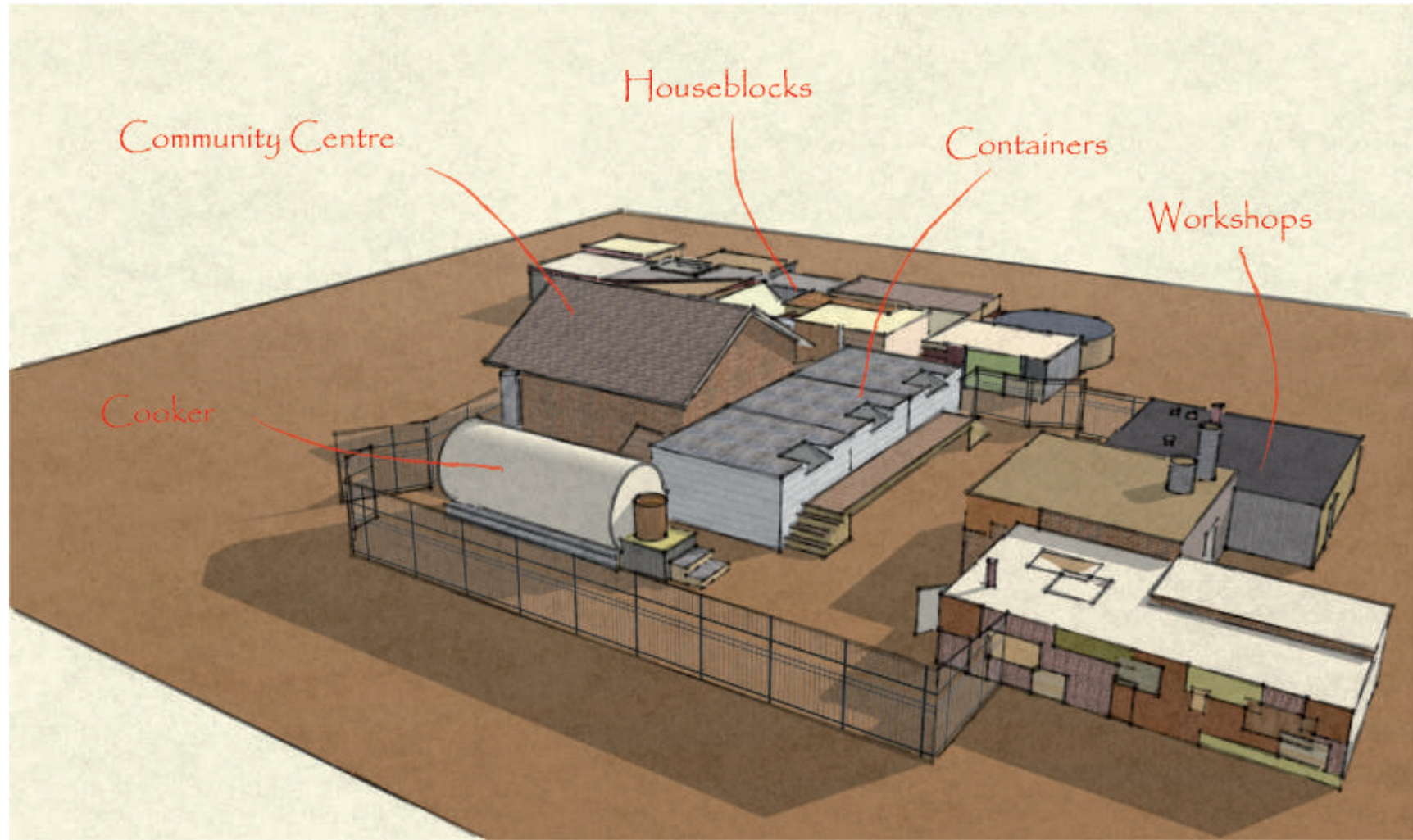
integrated in the slum, the people from the slum working at the Garbage Point will take it over and be responsible. This way the coin system will be independent of SODYCO and fully managed by the people at the Garbage Point. Now, when people have earned 5 coins, they can receive materials in exchange to produce a bag from which the delivered money will be for them.

The creation of the bag can be a corporation between different people in the slum, so they can together invest in the bag material to make a more special or beautiful bag. All the coins which everybody gets when winning the race are thus received back during the coin/material exchange and during the backup plan system. This makes the coin system a closing circle.

## THE GARBAGE RACE SETTING



## VISUAL SETTING OF THE POST PROCESSING POINT





Due to the race, the garbage in the containers (shown at the left) will be brought to the postprocessing point (shown above). At that place the garbage will be cooked, used for the bags, or brought away.

## 3.6 CONCLUSIONS

### WHY WOULD THE SLUM PEOPLE WANT TO TAKE PART OF THE SYSTEM?

Basically they will want to earn coins because when someone has a certain amount of them, he or she is able to acquire materials to make bags from. These bags can be sold in the Netherlands at the Bijenkorf, of which the maker will receive the money. So the coins which will get introduced in the slum will offer people to earn money. In case when people do not want, or are not able to make a bag, a backup plan exists for still being able to earn the coins.

### BACKUP PLAN

In case that there exists no need, stimulation or ability for the bag making, the dwellers can bring their garbage directly to the Garbage Point (there are also three containers there). There the people in charge will give coins in exchange of the amount of garbage that they brought, and the dwellers will be able to use these coins at the cooker, where people can receive drinkable water and where they can use the heat to cook with. The cooker is also located at the Garbage point, so it is very easy to control the exchange of coins for garbage to use the cooker.

### INCREASE OF SOCIAL COHESION IN WHAT WAY?

- The game is playful and has positive influence on people's personal conditions. This has a positive effect on the social cohesive motivation of the people.
- The coin system is as a glue between people. Everybody uses it, together learning how to handle the system, helping each other
- Dinner after the race, so competitive attitude will decrease again during a choosy dinner where everybody is equal again.
- Competition between house blocks and corporation between house block members will increase the amount of social contact among the people in the slum.
- Creativity and the sharing of valuable material (bag material) among slum people will create mutual responsibility.



### 3. INTEGRATION


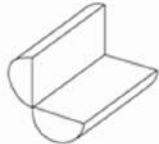

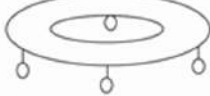




#### THIRD REPORT



### 3.3.1 SCENARIO MATRIX

The matrix show at the “X” edge all the concept that come up with the scenarios, and at the “Y” edge the important concepts to take into account when defining the final concept of the mobile furniture, the goals that it should achieve as good as possible.

- Mobility: Everybody must be able to transport the seat and place it wherever they want.
- Robustness: as a sign of the slum and also to guarantee that the product is going to be durable
- Manufacturing: Is must be easy to manufacture for the people in the slum, so not requiring difficult processes or special machines.
- Costs: It must be cheap for the materials to be able to pay Local artist to decorate it and have a piece of art to be sold at the Bijenkorf
- Social Cohesion: Taking into account how many people can sit and also how it contributes to increase the relationship between the inhabitants

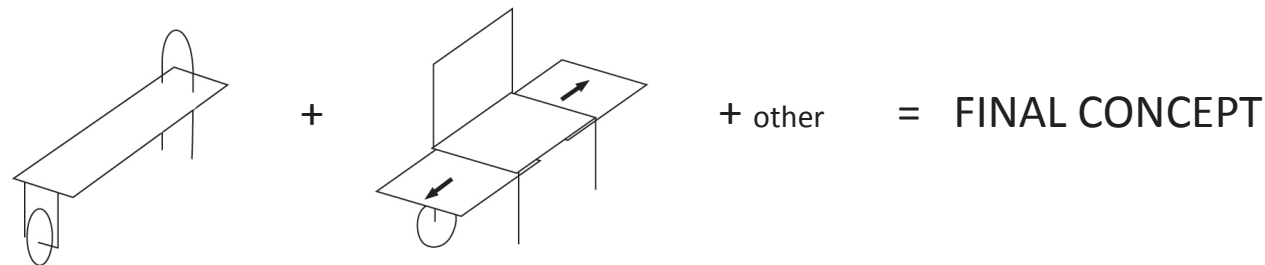
								
Mobility	++	-	++	+	-	+	++	++
Robustness	+	++	--	++	-	-	+	+
Manufacturing	++	-	++	--	+	+	+	-
Costs	+	-	++	--	+	+	+	+
Social Cohesion	++	++	-	++	+	-	++	++
TOTAL	8	1	3	1	1	1	7	5

Other important considerations to define the final concept are the following:

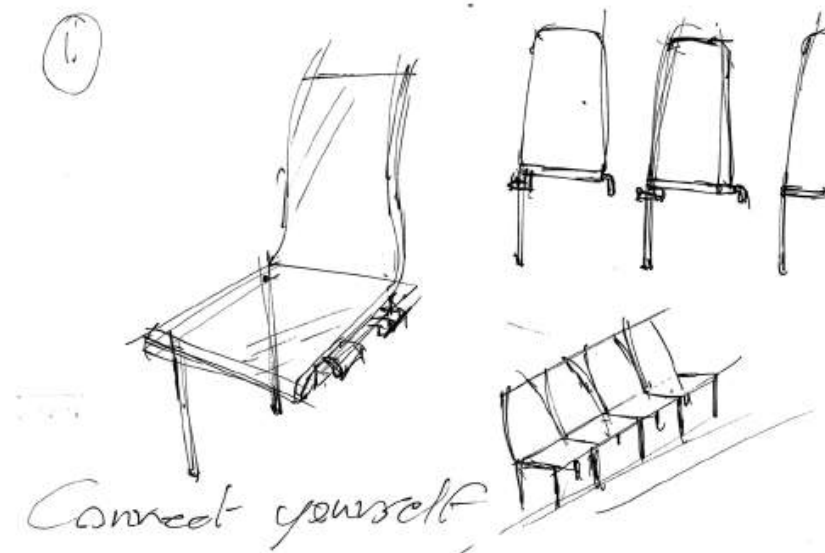
- PERSONAL instead of public: Everybody should be able to buy and enjoy the chair at their home. A public mobile furniture would probably cause troubles because it would be necessary to employ some people and invest money in the maintenance. Also it could incite to vandalism.
- BUILD AT THE COMMUNITY: Use as much as possible the local sources to create an inner flow of money. It must be build at the wood, steel and fabric workshop.
- SOLD AT THE SUPERMARKET: Instead of creating a new shop, it is feasible to assume that the supermarket is now an important and bigger place in the slum due to the previous projects of Sodyco.
- USABLE AT THE OPEN AIR CINEMA AND THE COMMUNITY CENTRE as specific places where the use and advantages of the mobile furniture would be obvious and clear.

#### CONCLUSIONS:

The “winner” concept is the simplest one, which allows transporting the furniture in a very easy way and it is also the cheapest one to produce. Because of its simple structure is also quite robust and the wooden plank allows the local artist to carved it and paint it so finally it also becomes a valuable piece of art to sell at the Bijenkorf for a considerable amount of money. In addition to this basic concept, other ideas from the rest of the designs are also going to be included in the final concept design: It is going to be extendible and in some way it is also going to offer the possibility of cooperating between the dwellers to have an extra seat. The other concept with the highest mark could have been a very good idea for the slum but it is not feasible for the Bijenkorf because it would only consist of selling a piece of fabric and people in the Netherlands don't have the necessary structure at their houses to hang it and use as a seat.

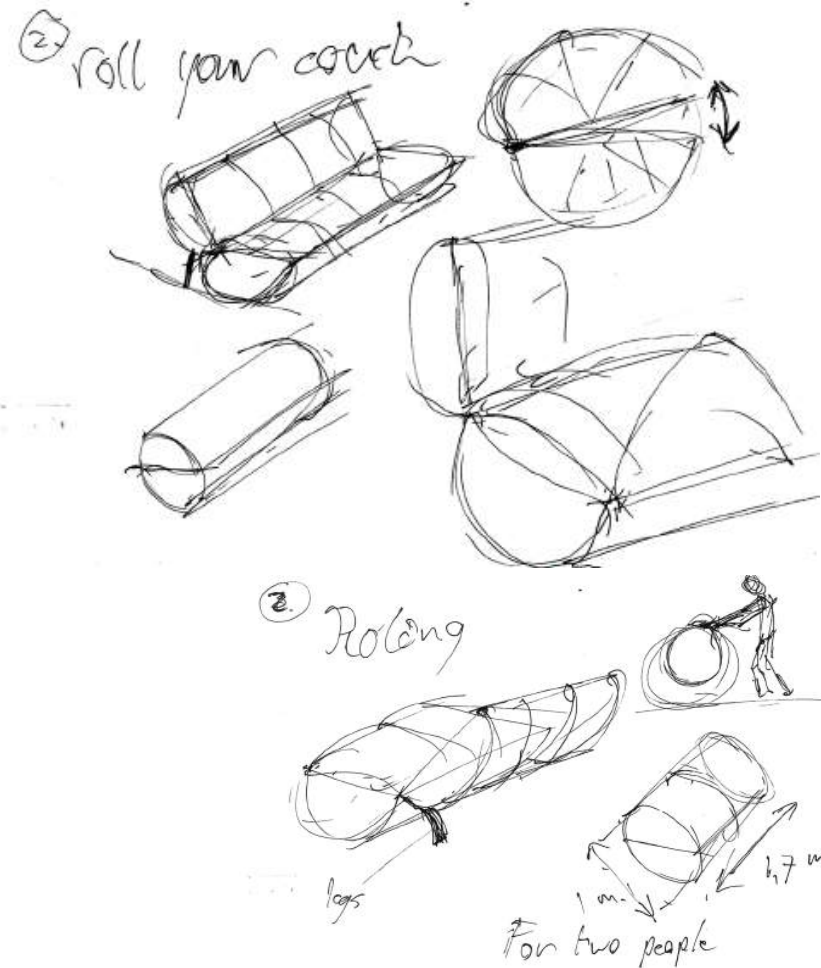


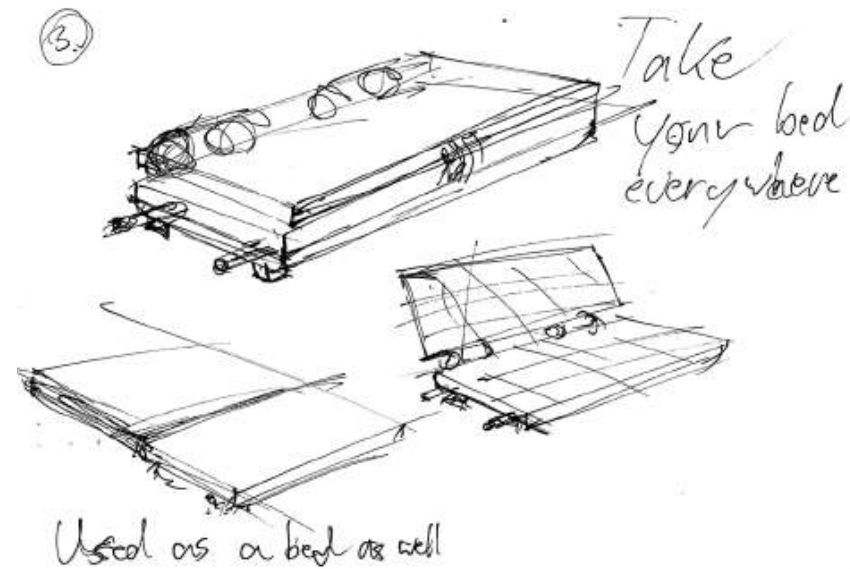
### 3.3.2 CONCEPT DESIGNS



The first sketch is based on the social cohesion in the slum: Dwellers necessary need to collaborate to use this chair as there are only 2 legs on it, they need the 2 other legs of someone else's chair. A weak point is that they won't be able to use it at home.

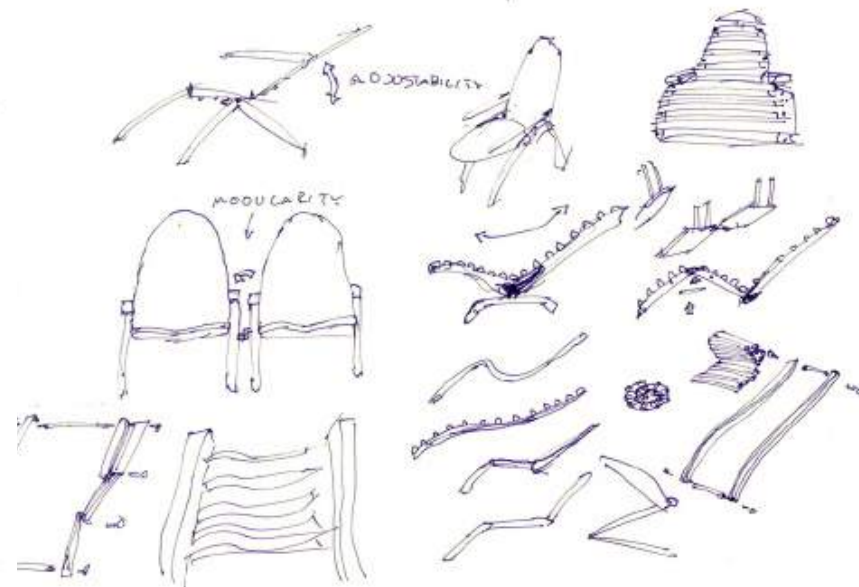
The second sketch is a robust curved piece of wood with an edge to open and close the structure. It's quite big so it allows many dwellers to seat, but the manufacturing and the transportations might be difficult.





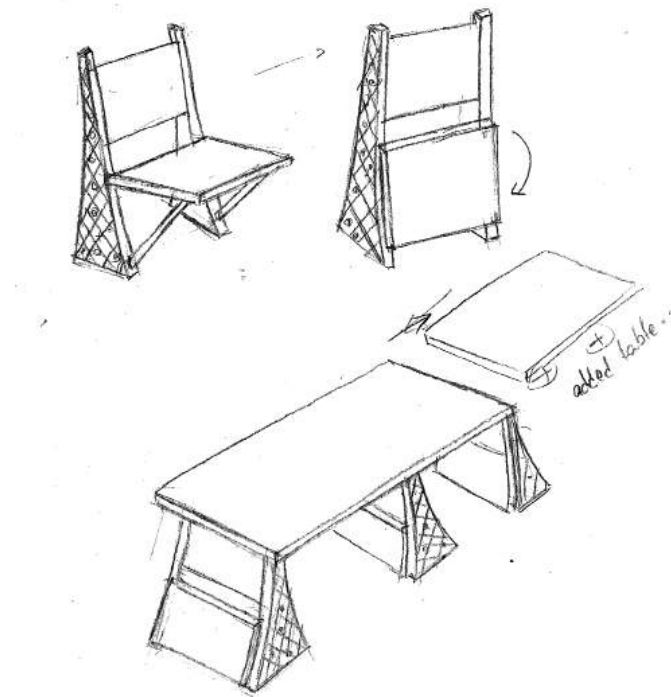
From scenario 3: transportable bed

Based on the idea of the small room for furniture in the households of the slum, this piece of furniture can turn both into a bed or a table and the dwellers can carry with their bed wherever they want to go. It's too big to be easily transportable but it's easy to manufacture.



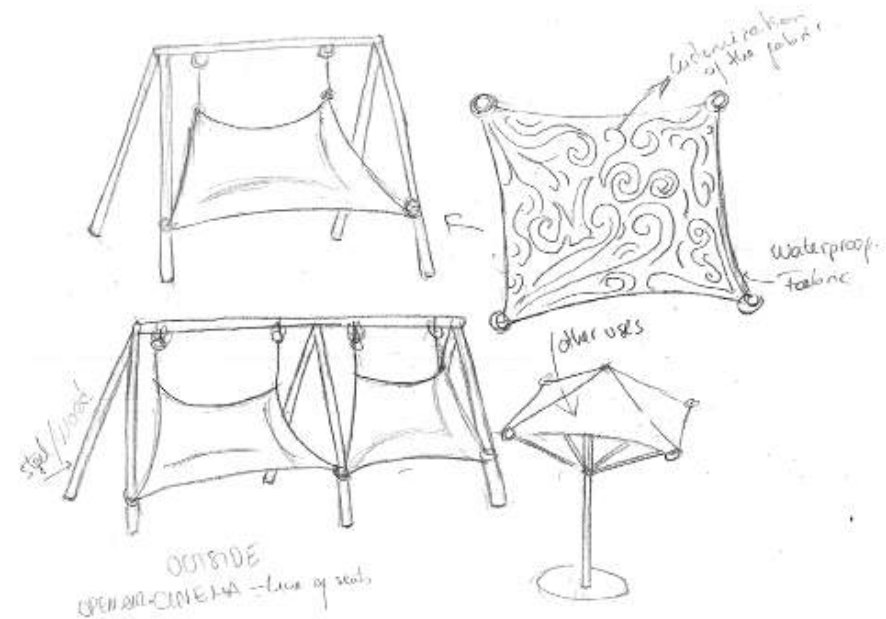
From scenario 4: fix it yourself

A piece by piece chair that allows to transport the whole chair easily in the slum and from the slum to The Netherlands. It's very ergonomic and adjustable but not robust, also people in the slum might need tools at home to fix the chair at home.



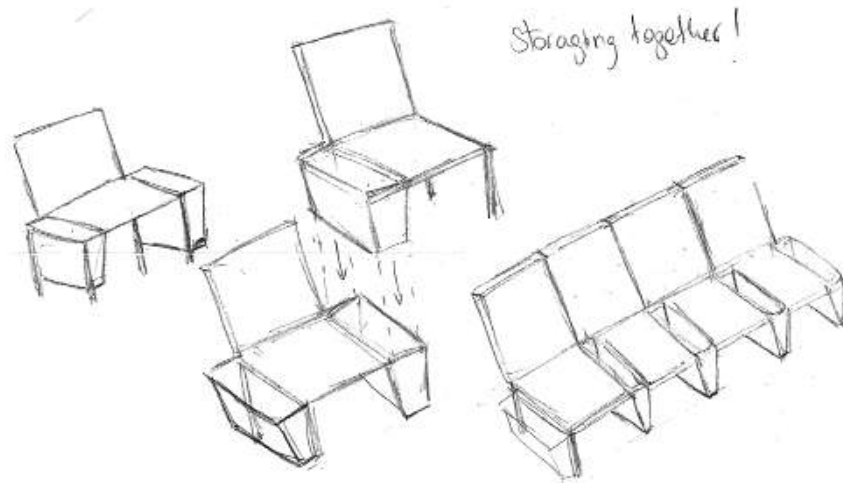
From scenario 5: foldable chair for tables

Quite robust but foldable, it also allows the local artist and the children to interfere in its manufacturing. The folded chair can be used as legs for the table not only at home but also at events in the community centre or the common dinner after the Garbage race.



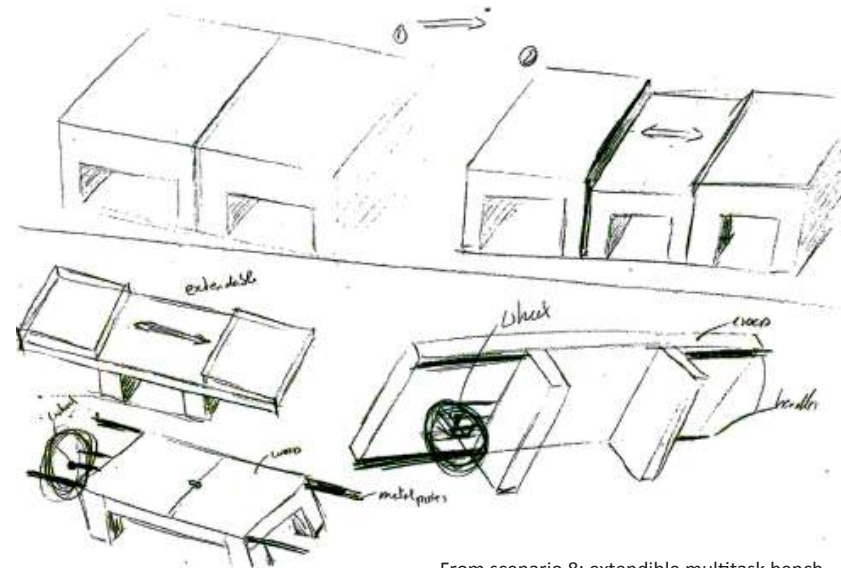
From scenario 6: multi task piece of fabric

Every family or person can buy this thick and waterproof piece of fabric, customized by every dweller at the fabric atelier. Some swing structures are fixed at the open air cinema and people just have to take their fabric and hang it there. When there's no cinema they can use the piece of fabric at home as umbrella, tent or something else. It's not feasible for the Bjenkorf, as to use the fabric as a couch it's necessary to have some structures.



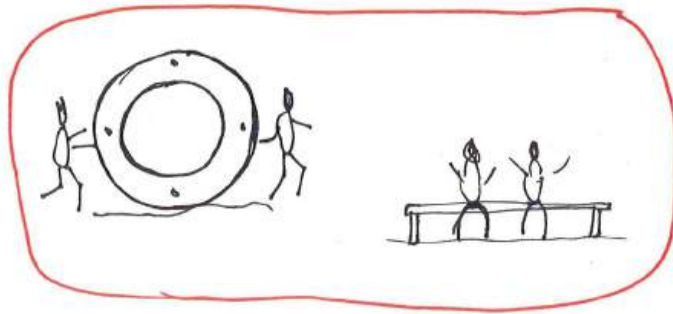
From scenario 7: storing together

The storage room in the chair is what creates the link between the dwellers. Although they can use it at home alone, in some events or the open air cinema they can sit together and share the space for storing and also take more profit of the available space, as there are no gaps in between. It not very easy to transport because is like an average chair.



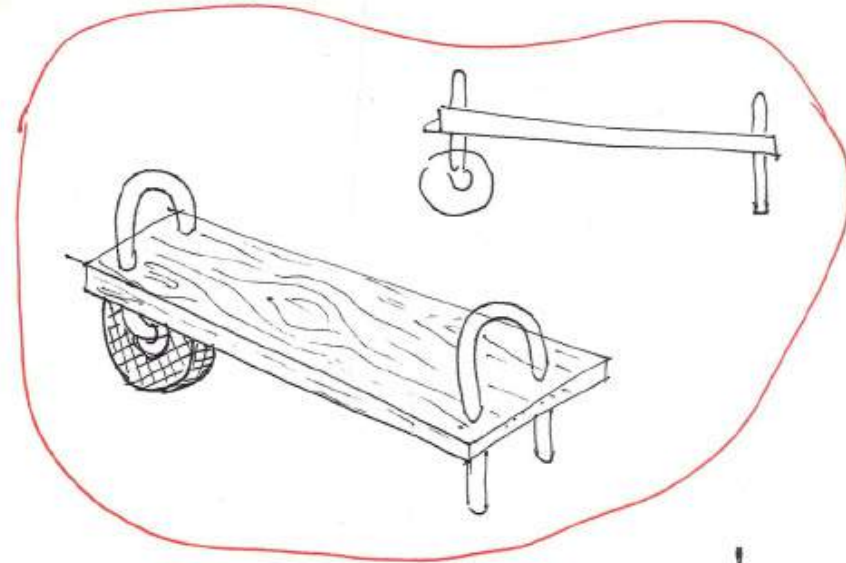
From scenario 8: extendible multitask bench

The main part of this bench is the extendible option, that allows the bench to be used easily at home, but then if it is necessary that more people seat it can be extended. Also this function can be use to transport reduced mobility people or wounded people as if it were an emergency coach. It's very easy to transport because of the wheel and also very robust.

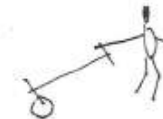


No scenario written down

A kind of common couch for many dwellers. They can transport it turning the couch into vertical position and then rolling it. It's maybe too big and difficult to manufacture and move through narrow alleys.



From scenario 9: mobile bench



It's a very simple and robust bench. It's easily transportable because of the wheel and it allows more than one dweller to sit. it could be a family bench.

### 3.3.3 FINAL CONCEPT

#### MATERIALS

Wooden planks, curved steel tube, wooden wheel, piece of fabric.

#### MANUFACTURING

1st. Wood workshop: almost the whole bench will be done there

2nd. Steel workshop: only the curved steel handle needs to be done

3rd. Fabric workshop: the extendible and additional seat of fabric will be done and attached there.

4th. Local artist will be in charge of carving and/or painting the wooden plank to transform the bench in a piece of art for the Bijenkorf

\*For the first benches, the ones for the dwellers, the local artist won't participate; The children of the slum will be the ones in charge of decorating their own benches.

#### USES

One place seat

Multi-place seat extending the wooden plank.

Additional seat extending and clipping the piece of fabric to other bench.

Couch to transport hurt people or that have reduced mobility.

Possible goal for soccer games



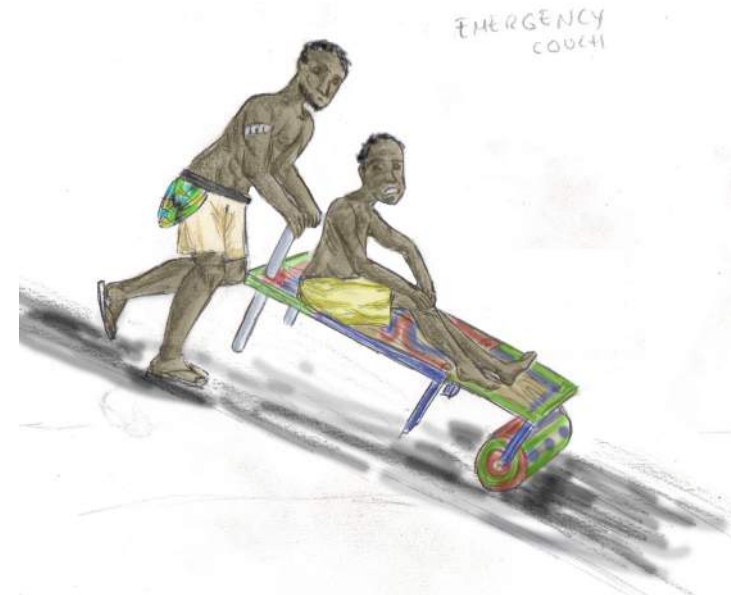
Render of "Kevyt" the mobile furniture



Sketches of the customization of the Kevyt



Children painting the benches at the school



- These sketches show different uses of the mobile bench.
1. The prescribed used in the assignment, being used at the open air cinema.
  2. The bench extended being used as a couch for reduced mobility people or emergency couch.
  3. The bench not extended being used by a housewife at home to knit a bag.

1.5 model of Kevyt, the mobile bench. Made of wooden planks , a wooden stick and curved steel.

The materials and the process of manufacturing the model are almost the same as it would be for the real bench.



### 3.3.4 FINAL SCENARIO

Based on the positive combinations in the matrix we have decided how the final concept was going to be, and taking the product and the setting of the open air cinema we have made a final scenario. To understand properly the scenario it is useful to know previously the setting:

#### THE OPEN AIR CINEMA

Is a new and parallel project of Sodyco. An inflatable screen is set near the waterbassin and the plan is to promote the habit of having once or twice a week a cinema session for people in the slum. This project will really induce them to get rid of some bad habits and illegal activities, as they will have some evenings reserved for the cinema session. The main point of the open air cinema is that the opening film will be about their community in the slum. I will show how the projects of Sodyco have really improved their life quality and they're at the moment much more autonomous both individually and as a community.

#### "KEVYT"

The mobile furniture designed by Sodyco but built, fixed and customized by the dwellers is the perfect product to compliment the Open Air cinema. Before "kevyt" was designed there were not public furniture to sit (as it requires an

investment for the maintenance), and they barely had one or two crappy chairs at home. If an open air cinema was going to be placed at the slum they necessarily needed something better than the cold, dirty and tough floor to sit down and watch the movie, and to avoid placing fixed benches and pay employees for the maintenance, it was further better to design this kind of mobile furniture. Kevyt is available for indoors and outdoors, it is easy to transport and can hold 3 or 4 people perfectly, also adding the possibility to increase even more the social cohesion between the dwellers.

## FINAL SCENARIO

Morchee, a nice seven year old girl of the slum in Kenya, was hurrying up her family to go out. It was very calm, warm, weekend night of May, and not only Morchee, but many other kids of the slum were especially excited that day. The reason why? It was the opening of the latest project of Sodyco: an open air cinema in front of the waterbassin.

Linthy, the mother of Morchee, was taking profit of the light from the Leds to brush her hair properly and check the color's combination of her suit; she was the star of the film that was going to be projected at the cinema tonight and she wanted to show up at the cinema as awesome as possible. Urk, her husband, was not very enthusiastic about seeing his wife so elegant, but he felt like the proudest man of the slum and everybody knew that. While he was waiting for his wife he decided to pick up the garbage of their dinner and brought it to the containers in front of their block with the help of Morchee and her two brothers; they were so enthusiastic that they couldn't notice that they had been waiting for their mother for fifteen minutes! Linthy was ready to go, as awesome as she pretended to be, or even more! - "they were right when they chosen my wife as the main character for the film..." - Urk thought when he stared at his wife completely flabbergasted. With a huge smile she gave them the sign to go out, so they took their mobile bench and walked fast to the waterbassin, they wanted to be on time to take a good place to see the

movie, especially because it was about their slum and how they had improved their lives in the last year thanks to the social cohesion that Sodyco's projects managed to set at their slum. The mobile bench was also another of Sodyco's projects, many people of the slum had been busy building these benches the last weeks. The aim of that project was to provide people in the slum a comfortable, mobile and useful seat to guarantee that they could transport the bench wherever they went. It was especially useful because they could use it at their home as a normal chair to sit down, but if they wanted more people to sit at the chair they could extend the surface and 4 people were able to take seat at the bench. It was easy to transport because it had a strong wheel at one extreme of the legs, and at the other extreme, above the seat, a handle to pull or push the bench and move it easily. Morchee was very proud of their bench because she helped to paint and decorate it at the school the previous week, and as his father worked at the Wood workshop they could buy it very cheap.

All the family joined their neighbors near the waterbassin, many of them were also pulling some benches, and they sit all together, attaching the benches one near the other to have an extra seat for other members of the family or also for some people that hadn't bought the bench yet. The film was ready to start, everybody was breathless, anxiously waiting to see their slum on the big screen, and Linthy starring with Harrison Ford, the Kerosene man and other dwellers in a great Warner Bross production.



## 4. IMPLANTATION

### FIRST REPORT



### 4.1.1 BUSINESS PLAN

owner to buy new batteries and LED lamps to sell, 1 euro is included for the maintenance of the paddle boxes and 1 euro is left as a loan of the SEDG.

With this system the supermarket owner will receive the money and thus will have the responsibility for this paying-off system, this paying system might increase the social cohesion among the LED and battery owners and the supermarket employees. Within a few weeks, all the households will have a battery and LED light so the supermarket owner will not have to store as much packages as he had to in the beginning when everybody still needed to get one. Only a few still need to be able to be bought in the supermarket in case of a broken battery of LED light.

What?	Amount	Costs (euro)
LED light and batteries for rent	10	100
LED light and batteries for sell	20	200
Paddle box production costs for the wood and steel workplace employees	6	60
Paddle box materials for manufacturing	6	
Paddle box generators	6	300
<b>Total costs:</b>		660

The following table shows a conceptual overview of amounts during the starting weeks of the selling system of the supermarket owner

Weeks after introduction	Amount of LED lights and batteries in the community which need to be paid-off to the supermarket owner	Amount of new LED lights and batteries bought by the supermarket owner	Amount of LED lights and batteries out of the paying-off system
0	20		
10	20	10	
20	30	15	-20
30	25	12,5	-10
40	17,5	8,75	-15
50	11,25	5,6	-12,5

## INVESTMENT COSTS

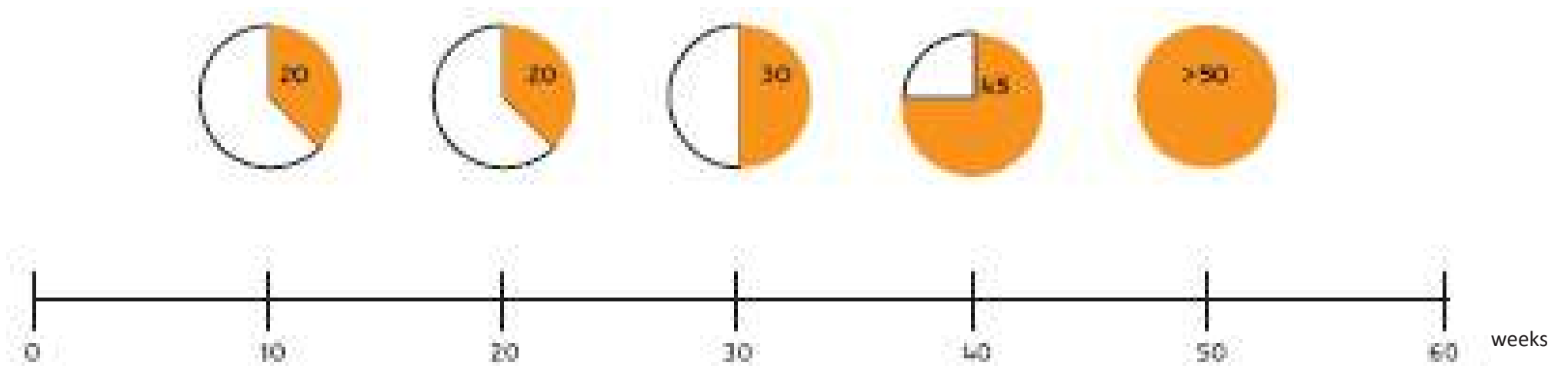
The paddle boxes itself are demonstrated together with the LED lamp and battery during the introduction day at the community centre. Those paddle boxes will be financed from the micro budget of the SEDG. This can, together with the costs for the 20 batteries and LED lights for rent and for sell, be seen as investment costs to get the CIPS working in the community. First the 6 paddle boxes need to be manufactured in the wood and steel workplaces. These employees must be paid and have a salary of 2 euro a day. The paddle boxes are manufactured in 5 days of 9 hours work per day by one person. So the 6 paddle boxes can be made in 30 days by one person who will earn  $30 \times 2$  euro in total, which is 60 euro.

## BREAK EVEN POINT

Considering the paddle box CIPS, the break even point will be the moment at which the costs or expenses and revenues are equal. So the incomes of the community members and the micro credit will meet the needed costs like production costs and the opportunity costs coming with the paddle box. So at this point there will be no question of profit or loss. This moment will be present after all households have paid-off their LED light and battery sets at the supermarket and the supermarket owner has sold all his stored LED light and battery sets.

## INFLUENCE ON SOCIAL COHESION

So in the beginning the SEDG SUDYCO team had to invest in the system but then, within a few weeks the system will work on itself. The responsibilities will be at the community members and the SODYCO team does not have to be integrated strongly in the system. Only in the beginning, when some support might be needed to reduce unclearness of the system at the community members, the SODYCO team gets involved. But the idea is to make a number of community members as a specialist, so when problems occur or difficulties are present, people can ask them for help. This, together with the paying system at the supermarket is a positive thing concerning the social cohesion, this way the CIPS will emphasize the community members to feel responsible to each other and to be interconnected in different ways. Difficulties may occur during the implementation of the project.



This diagram shows an overview of the amount of batteries in the community over 60 weeks.

## 4.1.2 FEASIBILITY STUDY

The paddle box system may not ingrain in the community because the need for LED light just not exists enough among the community members.

But to assume it will ingrain, a feasibility study may be done.

It starts with the introduction day during which the SODYCO members will give explanations about the project to the community members. The introduction day will be promoted by posters in the supermarket, school and community centre and face to face promotions.

- People may not accept it as a positive addition to their culture
- People might not want to invest in it due to the costs which need to be made
- Because the battery and LED lamp will have a relatively high precious value, criminal behavior may occur among the community members.
- People may not realize how vulnerable the LED lamp and battery are, so they might be damaged fast
- It might be unclear how to repair the paddle boxes
- People might not do the right thing when their battery and LED lamp will be damaged, they might throw it away but it needs to be recycled. So a problem would be that the community members do not know the essence of recycling.

### 4.1.3 UPSCALING

At the beginning of the project, the SEDG decide to place 6 pedal stools at the supermarket, so that the dwellers get used little by little to that new form of producing energy. As everybody goes to the supermarket to buy food and whatever they need, placing there the first pedal boxes and having there the batteries to buy, it is a very easy and quickly process to have all the members of the community happily recharging their batteries at the supermarket.

The news about the pedal stool at the community and its success rapidly arrive to the rest of the slum, and many inhabitants begin to go to the community to buy and recharge the batteries. Soon the 6 pedal boxes are not enough, so the SEDG decide to place 2 new points of recharge with 7 more pedal boxes around the slum. As there are not other suitable places as the supermarket of the community to place the recharging stations they build new small buildings for the pedal stools.

The project with the pedal stool is a great success in this slum of Kenya so the inhabitants of the village think about scaling up the project towards other nearby slums.

They visit the community centre and one member of the SEDG speeches, telling the dwellers what they are going to do, to organize this scale up.

The plan is to introduce the pedal stool to the surrounding slums first. Every slum will be given the opportunity to buy ten pedal stools and get a free introduction to this device in their own community centre. This means that approximately a hundred pedal stools will be used in the first two weeks. If this is a success the SEDG's will teach all the people, who are working in the other workshops, how to make a decent pedal stool, so that a small storage can be made. This will result in less unemployment and a better cohesion between all the different slums.

The next step is to introduce the pedal stool to whole Kenya, so the SEDG's need to go to the media and prepare a radio and television message. A special organization has to be established, so that dwellers are being educated, so that they can teach people in other slums. The SEDG's have to meet with lawyers to be sure that there will be no infringements of rights and they can put some effort with lobbying some humanitarian organizations.

On a certain moment problems concerning the logistics and materials will occur. To be sustainable and self-supporting, materials will be extracted from the homeland and will not be bought from abuttal countries as long as it is possible. This means that cities in whole Kenya have to collaborate and that some geographic tactical storage facilities have to be pointed out.

The last step is to introduce the pedal stool to the slums in the rest of the world. There has to be a lot of advertisement and again an organization which will educate know-how's has to be established, but now with a variety of cultures, because it concern's slums all over the world. Maybe a research as to be done about the transforming of the pedal stool to build it with materials which are present in the specific country or environment. More strongly, maybe a research has to be done about the culture differences of the countries so that a more appropriate concept can be more successfully.

At the end there is a plan for a pedal stool, that is typical for each country as far as material and culture is concerned and specially trained know-how's will visit the slums all over the world to teach the dwellers how to build, use and repair the pedal stool.

## 4.1.4 PROMOTION

1st: AGREEMENT between the media/printing centre and the SEDG

- Free advertising in exchange of free batteries for the smooth running of the centre

2nd: ADVERTISING (2 or 3 weeks)

Concepts

- The advantages of having a pedalbox centre in the slum:
  - AUTONOMY
  - IMPROVEMENT of the lifestyle
  - UNLIMITED disposal of energy
- Concept of IDENTITY: the first and only slum for the moment in having this kind of technology
- Concept of COMMUNITY/COHESION : All the people of the slum together, with the same options, and all together working for a better present and future life.

Materials and supports

- Radio adverts
- Posters at the Community Centre and the Supermarket
- Stickers at the school

3rd: PRESENTATION of the product at the COMMUNITY CENTRE

- At 8.00 pm to take profit of the darkness and show the how the power from the pedal box can turn on the LEDS.
- Stickers for everybody
- First selling point of batteries and the lamps. As nobody in the slum have got money saved to pay a battery, there is a special renting plan: 2€ to buy one, and then every week during 20 weeks long, they will have to pay 1 €.
- There will be the option to try the pedal box and charge the bought batteries and also the radio/printing centre ones.

4th: INTRODUCTION of the product.

- The supermarket is the most suitable place because everybody has the need to go there every week.
- The manager of the supermarket will be in charge of renting the batteries with the lamps.
- The pedal boxes are going to be placed there to facilitate the recharging process, and the manager will be in charge of its maintenance

## INTRODUCTION EVENT

From the scenario:

“Around five o'clock they go to the supermarket for the official introduction of the two new pedal stools. Here the head of the village gives a speech and thanks everyone who worked on the project. Basu feels really proud of being part of the new technology in his community. As an opening two muscular men do a competition on the pedal boxes. While seeing this Basu hopes his wife will charge the battery of their LED-lamp since they ran out of power yesterday and this morning he forgot.”

To make sure the pedal boxes are good received in the community some sort of introduction event should be arranged. In the part of the scenario above two extra new pedal boxes are introduced but even more important is the introduction of the first pedal boxes. The first time the people see the pedal boxes they will not know what to do with them and they might even be scared by the pedal boxes. For this reason the pedal boxes, batteries and the LED-lamps should be introduced to the community.

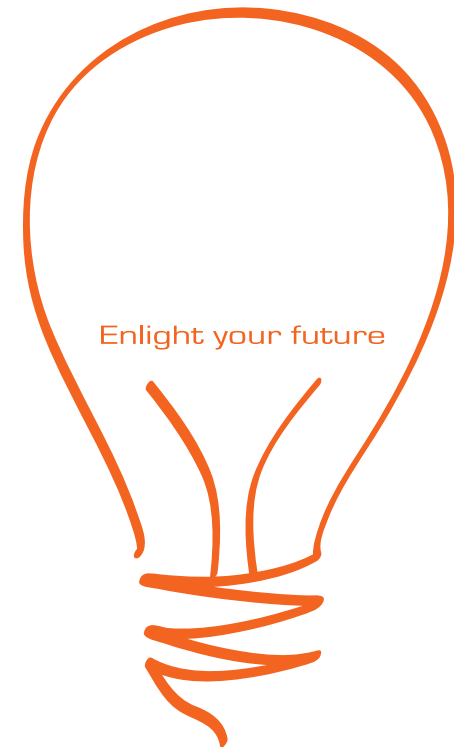
Although the pedal boxes are placed in the supermarket the introduction will be held at the community centre. To organize the introduction the supermarket manager and the SEDG should work together with the community centre. If they announce the introduction in the community centre they can

make sure all the people hear about it. It should be their goal to have the whole community at the introduction event.

At the event they will first show the pedal box, batteries and LED-lamps. Two men of the community will be asked to help with the presentation. They will demonstrate how the pedal boxes work, and hold a competition on who has his battery charged fastest. Afterwards also the use of the LED-lamps will be demonstrated. For this reason the introduction event will be held during the evening. Also people probably will have more time during the evening.

After the demonstration the people are invited to try the pedal stools themselves. They can try out the pedal boxes, charge the batteries and use the LED-lamps. Also a competition will be organized: Who charges a battery fastest? The reward of the competition will be a discount of two euro on the battery and LED-lamp package. Afterwards the people have the opportunity to buy the battery and LED-lamp package. As described in the business plan they will have to pay two euro to get the package and then pay the rest in the paying-off system. The supermarket owner will sell the packages in the community centre that evening. Afterwards the selling of the packages will move to the supermarket just like the pedal boxes.

PROMOTION MATERIAL: posters, stickers, maybe grafity on walls...



Basic icon of SODYCO projects



## 4. IMPLANTATION

### SECOND REPORT



## 4.2.1 BUSINESS PLAN

### GOAL

The goal of the project is to improve the life standards in the slum and to solve the problem of garbage. The goal of this project is not to make high profits, however we also need to feed our children. So the financial goal of this project is to make little profit, just enough to pay ourselves and to have some savings.

### IMPLEMENTATION

To make the garbage system a success a lot of attention needs to be given to the promotion and integration of the system. It is crucial people do not see the collection system as obligatory and a pain in the neck but as a positive and nice thing to do. For this reason we organize the garbage races to make the garbage collecting a social event.

To introduce the garbage system an introduction event of half a day will be organized to show how the system works. Here the different types of garbage are explained and it is showed how to separate the garbage. Also the working of the garbage cooker and the function of the sorting point should be explained. Afterwards the people can be sent to the streets to collect garbage. Since people usually just throw their garbage on the streets it will be easy to collect a lot of garbage the first time they do.

Probably the same day the first garbage race can be held so people also get familiar with it. When the garbage is collected also the garbage cooker will be demonstrated and a big dinner will be organized by Sodyco using the cooker to cook on. After dinner the coolest aspect is presented: The bag making. It is demonstrated how people can make their own bag and hereby earn some money. It is explained there is a reference design of Sodyco, which people should use as a guideline for their bags. After this introduction event, people can start using the system. In the first week maybe everyday other day a race will be organized to collect the big amount of garbage present in the community. When the garbage lying on the streets is collected after the first week every week one garbage race will be organized. This will be probably sufficient to collect all the garbage.

### INVESTMENTS

To initiate the system quite a lot of investments need to be made. First of all the garbage containers need to be paid. Since there are five house blocks five container systems will be made. The design of the containers can be made by the steel and wood workshop and because of this the costs will be quite low: One garbage container system will cost 20 euro. Second investment will be the garbage cooker. This will be the biggest investment since we have to use expensive materials

which cannot be processed in the slum. Maybe even some workers need to be hired to build the cooker. The costs of the cooker are estimated on 1400 euro.

Next investment is the sorting point. Basically the sorting point should be able to save the different garbage for a while and it should have a cleaning facility for the bag materials. This cleaning makes it quite expensive and a good system should be designed for this. The sorting system we designed will cost 200 euro.

Another investment will be the machines and tools for the bag making atelier. These will probably also be quite expensive but by using second hand tools from the city this can probably be done with a budget of 200 euro. Of course they also already have some machinery available

Last investment will be the promotion of the system. The promotion is not really an investment but since the biggest part will be spent for the introduction of the system we see it as one. The promotion budget will be 100 euro.

Total investments:

Garbage containers	5 x 20	100
Cooker		1400
Sorting point		200
Atelier investments		200
Promotion		100
Total:		2000 €



*Example of a cooker*

## OPERATING COSTS

Besides the investments there will also be operating costs. There will be the payments of the employees of the garbage station and cooker and the atelier. There will be one guy operating the sorting system, one doing the cooker and at the atelier two persons will help and support the people. So in total there will be four people working in the system, who will earn two euro a day. We as members of Sodyco will manage the whole system and help where necessary.

Furthermore we have to take into account the operating costs of the sorting system and the atelier. Since the sorting system is cleaning the garbage they use energy and water and the atelier uses energy as well. These costs are estimated on 10 euro a week. Also the maintenance of the facilities should be taken into account, we will reserve 3 euro each week for this. Other operating costs are the garbage races. The garbage races will probably cost about ten euro for each race, so after the first week this will cost 10 euro per week.

Operating costs: (per week, after first week)

Employees	7*4*2	56
Operating costs		10
Maintenance		3
Garbage races		5
	Total:	74 €

## INCOME

The income will be generated by the selling of the bags. The bags will be sold to “De Bijenkorf” for seven euro, of which two euro is given to the one who made the bag and so the income from one bag will be five euro. This five euro will be used to pay the operating costs in the first place. A simple calculation shows us that we need to sell 16 bags each week to cover the operating costs. The rest of the money which will be earned will be used to pay off the micro credit and to give ourselves an income.

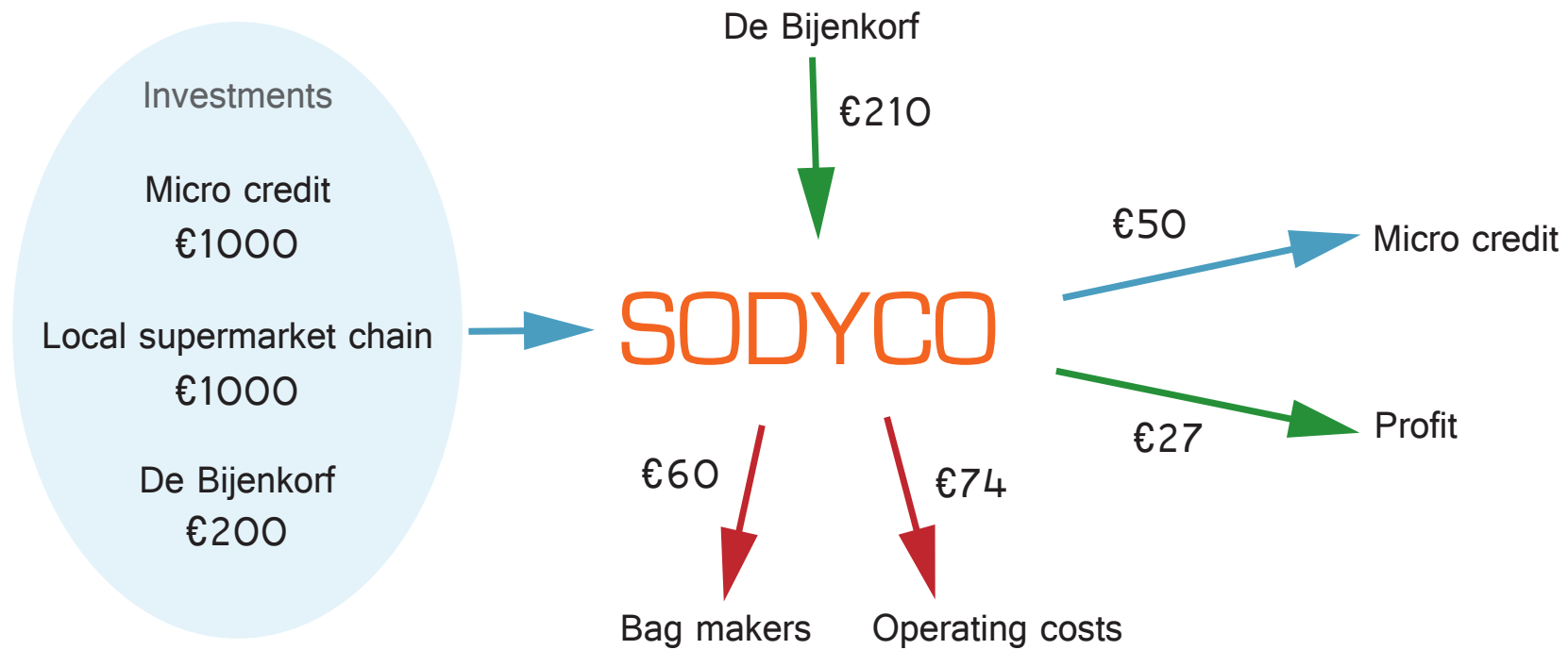
The investments will be done with the micro credit of thousand euro and a gift of thousand euro from the local supermarket chain. This Kenian supermarket chain is already supporting other cooker projects, and provides 1000 euro for our project. In exchange for their support they want to have some advertising space on the cooker. We will pay off the micro credit with the income from the bags.

Furthermore “De Bijenkorf” will loan us 200 euro at the start of the projects to get working. We will pay this loan back in three months. This money will be needed to produce the first batch of bags.

## BREAKEVEN POINT

The breakeven point depends on the amount of bags which is made per week. We think in the beginning there will be a higher bag production because there is simply more trash in the community. After a while the garbage collection and bag production will stabilize and we estimate there will be a final bag production of 30 bags a week. This means we generate a cash flow of 150 euro a week. Of this 150 euro 74 euro is used for the operating costs and we will use 26 euro for our own profit and future projects. Since we also run other projects it will be possible to only use 16 euro for the payment of Sodycos members and save the other ten euro for future projects. The remaining 50 euro will be used to pay off the micro credit. A simple calculation shows us we will reach the break-even point in 20 weeks. The credit of 200 euro from “De Bijenkorf” will be paid back with extra bags made in the first three weeks.

This is the cashflow per week. The Profit is used for the payment of Sodyco and any future projects.



## 4.2.2 FEASIBILITY STUDY

### ‘DOES THE IDEA MAKE ECONOMIC SENSE?’

The idea which SODYCO wants to implement in the slum is a system which works like a promotional feature for bijenkorf display. So in the form of a race, like a game in which each house block will challenge each other, coins can be earned. Then, with these coins, materials for producing a bag can be received in exchange. These bags will then via the Bijenkorf create opportunities for the inhabitants to earn money. This money is for the people in the slum of course a way to buy foods and other necessary materials.

From this system, money can thus be earned by the people in the slum. So in a way of making the inhabitants being able to build up a financial system in which they can all join, this idea does make economic sense. Actually the two main factors which need to be staying stable are the production of the bags and the purchase of the bags in the western countries. If there is a continue stability between these two factors, the system makes economic sense.

The amount of money which the people in the Bijenkorf will pay for the bags will cover the costs of the costs for the production of it. This can be noticed when looking at the financial part of our concept.

The investments which need to be done are in our financial study partly realized by sponsoring of the supermarket in the

slum and the Bijenkorf. So this makes SODYCO's idea dependant of the willingness of sponsoring the system of the Bijenkorf and the slum supermarket.

One critical part is that the people in the slum are dependant on the western countries. So if no bags are bought, no money will enter the slum. The ideal situation is when the dwellers would cover the whole system of the bag trade. The problem is actually that the western people can live without what the dwellers deliver (the bags), but the slum people can not live without what the western people deliver (the money). But with enough promotion and a realistic view on what the chances are for the people in the slum, possible economic problems can be avoided.

## POSSIBLE PROBLEMS WHICH MAY OCCUR

Garbage will be stolen from each other. Because the garbage will be a way to earn money, people have another look at the garbage as they first did. They will not throw it out of the window no more. This of course seems like a good thing, but when competition will enter among the inhabitants, the trash can cause unfriendly situations.

Another possible problem might be that when something happens in the slum, like when someone dies/ a disease spreads in the slum or the garbage point burn out, the system can not run for a certain time. This will cause that no or less bags can be produced so no or less money will be earned.

Also it might happen that the dwellers in the slum will not accept the system. So despite of the promotion and the building of the containers,

When there are not enough materials to produce the containers and the garbage point with, there is also a problem. These components are really crucial for the race system to get started. For the garbage point is might not be that disturbing for the implementation because also, in case of need, the community centre can be used to be as point where coins are distributed at the end of the race. But for the containers at the house

blocks, it will be a problem when they are not there. In this case garbage will still pollute the slum and separation of the trash is hard to do.

When the cooker gets damaged there also needs to be a kind of back up plan. Without the cooker, trash will accumulate at the garbage point and still there will be a garbage problem in the slum.

The feasibility depends on how the community members accept the garbage collecting system. Especially the bag making is of big importance since here the money is carried in. The people should enjoy the making of the bags and produce enough bags to regain the investments. We think the people will enjoy the garbage races and hereby the collection of garbage. Also the collection of garbage will be seen as a way to make money because the people earn the coins to make bags. The bag making will be fun to do and will be a social activity. Also the garbage races and the collection of the garbage will be social activities, hereby enlarging the social cohesion.

### 4.2.3 UPSCALING PLAN

The system of earning coins for garbage is not only for our slum necessary. This is because the garbage is a problem in all the slum areas. So the idea is to scale the coin system up to all the slums in the surrounding, so that the pollution will be decreased in all of these areas.

#### PREPARATIONS

When the system is functioning in success and fully managed by the dwellers in the first slum, the SODYCO team can start to scale up the system to the other slums. This will be within about X weeks.

The preparations which need to be done in these other places are almost the same as done in the first one. The tree containers have to be placed at each house block and the community centre and workshop area have to be enhanced with the garbage point.

The plan is that the cooker from the first slum from then on will be available also for the other slums to burn their garbage in. when building the cooker in the first slum, this has to be taken into account. The sharing of this cooker will increase contact between the people in the surroundings on a social cohesive way. They have to work together and plan when who can burn his/her garbage. It might also be possible that the first slum will do the burning for the other slums for an exchange.

The sharing of the cooker will also cause a way smaller amount

of investment costs during implementation of the system then those which needed to be done in the first slum.

#### THE GAME

So when the system scales up, more and more races will take place every Sunday. Next to this, also races can be organized in which different slums will compete against each other on a special track through the slums. During these days when the game is played together, the dwellers of the different areas will spend time and work together which will cause social cohesion also in bigger scale then only in the slum where SODYCO started.

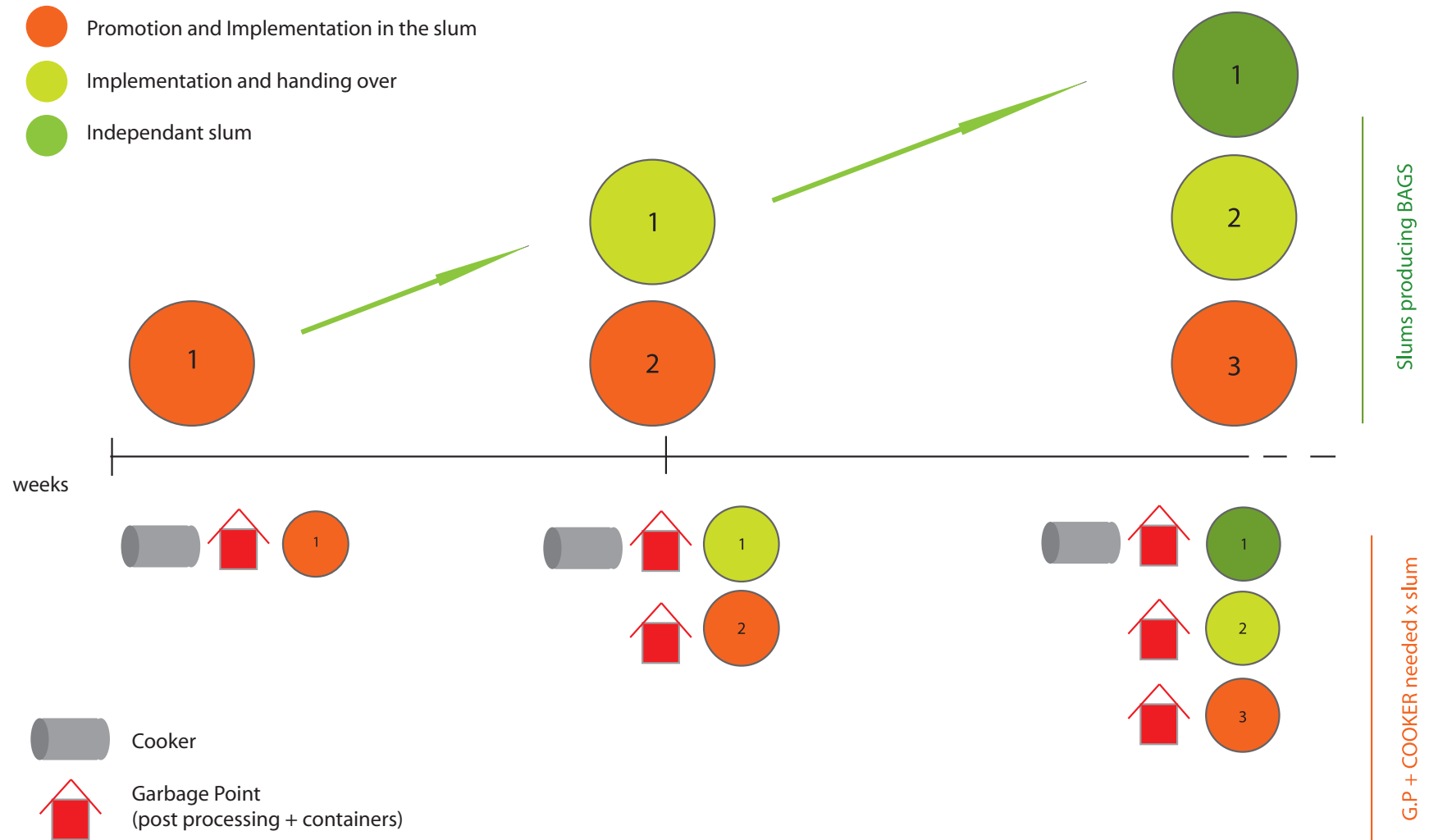
The coins which can be earned are divided in the same way in each community. When the slums will work together during the competition and will challenge each other. Also maybe teams of different house blocks in each slum can merge together or make arrangements to win the race together. During the first big race, the SODYCO team will organize the event. When the system is working well, the organization can be taken over by an elected and proper group of persons who manage the gathering. Promotion for having the race in each single slum will be done in the same way as done in the first slum. The promotion for the races between the different slums can be done by hanging posters around or with help of promotion teams who will pass by each slum to find out weather they want to join or not.

This promotion can be done by the group of dwellers who will organize also the race, as told before.

## THE BAGS

So during the race the communities will compete against each other. The coins can be earned and the materials for the bags can be received. These bags all will be sold in the same Bijenkorf, so the people in Europe might think that the bags will come just all from one and the same area, made by the same people. Because the bags will be real personal creations, these bag makers will not like it when this personal touch is not recognized by the buyers of the bags. These different slums might have a certain pride over their community and want to stand out. So to make sure that every slum can be able to show their own creativity in a way that people will recognize the difference between all the produced bags, each slum will have a different bag standard which needs to be followed during the bag production. Now in the Bijenkorf the interested people will see the bags as even more special and personal, the destination of where these bags come from is more clear and precise. This might also even increase social cohesion between European people and these dwellers in the slums.

## SCHEMATIC VISUALIZATION OF THE UPSCALING PLAN



#### 4.2.4 PROMOTION PLAN

##### 1st. VISUAL RECLAIMING WITH POSTERS

- “The new garbage collecting system” posters at the streets
- Stickers for children at the school
- Word by mouth will spread the expectation.

##### 2nd. A HALF-DAY EVENT FOR THE OPENING

- Explanation of the system.
- Workshop to learn what the different kinds of garbage are.
- Explanation of how the cooker and the Post Processing Point work.
- Showing the guideline design for the bags
- First approach to the manufacturing of bags at the fabric atelier.

##### 3rd. NEW VISUAL ADVERTISEMENT

- “The garbage race” stickers and posters everywhere



Sticker and poster advertising the new system

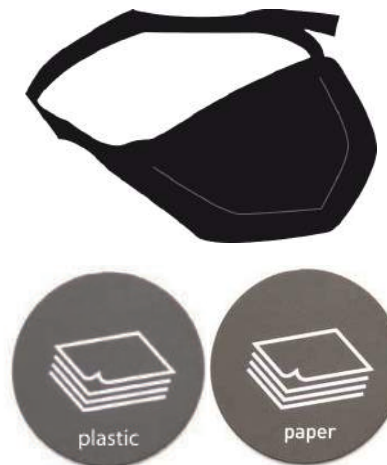
## EXPLANATION FOR THE DIVISION OF GARBAGE IN THE CONTAINERS

### GARBAGE FOR THE COOKER



A specific melting process  
inside the cooker

### GARBAGE FOR THE BAGS



### USELESS GARBAGE



POSSIBLE PROMOTION POSTER FOR THE BIJENKORF





## 4. IMPLANTATION

### THIRD REPORT



### 4.3.1 BUSINESS PLAN

#### GOAL

The goal of this project is to create social cohesion with moving furniture as medium and to provide people in the slum a comfortable, mobile and useful seat. Also SODYCO starts an open air cinema; this will emphasize the use of the furniture among the inhabitants. The furniture will be a way to earn money, same as the bags in the previous project. So the furniture will be manufactured in the slum by the dwellers and brings again activities and responsibilities to the people. The furniture should be sold at the Bijenkorf in Holland and in this way there will be incomes for the dwellers and contact with the western world in a certain way. The goal is to create something in the slum which the inhabitants make feeling more bonded to each other. Because of this, the furniture needs to be available for everybody in the slum and thus shall have a reasonable price. Again, next to the previous projects, SODYCO has a micro credit of 1000 euro which makes the financial goal to also make a little profit so this can be paid back as quick as possible.

#### IMPLEMENTATION

Nowadays having or using furniture is not obvious in slums like ours. People do a lot on the ground, like cooking and sleeping. But SODYCO will have the challenge to implement furniture in the house holds. This furniture also is going to be used at

the new open air cinema in the slum to sit on during watching movies. The idea is that everybody has it's own furniture at home which they can bring to the cinema when a movie plays. The moving furniture, the mobile bench, thus belongs not to a public service. Because of this, the SODYCO team needs to reach the inhabitants personally with the mobile bench; the people need to want to invest in the furniture themselves.

So what SODYCO first does is getting in touch with the wood and steel households. With the workmen they share the build plans of the mobile bench and explain to them that these benches can be used for the up coming cinema and at the households. They also tell them that money can be earned if they make extra ones to export to Holland. The manufactured benches will then be decorated by the children from the school and become a creation of many people in the slum together.

During this manufacturing period, the SODYCO team will promote the open air cinema with posters in the streets in combination with the first movie which will be played. Also on the posters the mobile furniture is presented so the inhabitants get to know already the mobile bench a bit. Then, when the benches are ready to be sold at the supermarket, the people in the slum will recognize these from the posters and want to have one. Because the supermarket owner also needs to make some space available for this, he also gets a little bit of the

profit made from the furniture, not in a financial way but in a materialistic way. The supermarket owner can use the furniture until somebody wants to buy it. The first day when the benches are available for sell, the workmen who made the furniture give, with guidance of the SODYCO team, an introduction about their furniture project and make also the other reasons next to the cinema reason clear to the people. By letting the workmen doing the talk and presentation of the benches the people in the slum will probably faster will respect their story and effort which they have put in the project of making the furniture. The benches will be quite expensive to pay in once for only one household, but the idea is that in first case families can share those benches and then, when enough money is saved, another can be bought so each family has an own bench. The sharing of the bench is doable because probably neighbors of each other will use the bench outside together.

When two families want to share the furniture that live not that close to each other it should also be not a problem because the furniture is mobile so it is very easy to replace it. The piece of fabric from the bench makes is possible to let more people sit at only two benches.

The money paid for the furniture goes partly to the workmen and to the SODYCO team till the investment costs are paid back. Of course the benches made for the Bijenkorf in Holland also bring money. From the money coming from the Bijenkorf

a bigger part will go to the SODYCO team then in case of sold furniture in the slum, because the organization and contact with the western world mainly in the beginning is done by the SODYCO team. But on a certain moment, when the inhabitants get familiar with the system and they are able to fill the responsibilities of SODYCO, the profit all goes to the slum people themselves. By then also the micro credit should totally be paid back to the SODYCO team. This comes clear at the chapter about investments and breakeven point.

## INVESTMENTS

To implement the concept of the mobile furniture into the slum, less investments need to be made then for the previous garbage project. The total project consists of two different aspects, the open air cinema and the manufacturing of the benches. Then the promotion which needs to be done can be seen as a third aspect in which needs to be invested.

### **Open air cinema investments**

Products needed to make it happen and prices (from [www.marktplaats.nl](http://www.marktplaats.nl))

Beamer	250€
Screen	150€
Total	400€

### **Promotion investments**

Posters and instruction meeting at supermarket, 100 € for the posters

### **Bench investments**

The total price for a bench manufactured in the slum, including material and loan for the workmen, is 14 euro (see appendix). The costs for the bench production will be seen as an investment till the moment that the system pays itself off.

### **OPERATION COSTS**

Besides the investments which need to be done for the promotion, starting materials and cinema equipment, a number of people are involved in the system. In the workshops workmen will manufacture the parts to assemble the bench in the end at the wood workshop. This is because the bench mainly consists of wood so then easily the piece of fabric and the steel frame can be put on the right locations when the wooden construction is finished. This assembling is done by the man working in the wood workshop. Because of financial considerations, this is done by also the man who manufactures the wooden parts of the bench.

Then, when the benches are manufactured, they have to be sold in the slum supermarket and in the Bijenkorf in Holland. This makes the supermarket owner also part of the system. The supermarket owner will not receive any of the money earned; this is because the price for production is equal to the price of the bench for sell in the supermarket. The reason why the supermarket owner would want to offer his supermarket as selling point for the benches is the acquaintance it will give to his supermarket. A second reason for the supermarket owner is that he will be able to use the benches in and around his supermarket himself until they are sold. The condition though is that the possible damage which he causes at the benches needs to be repaired on costs of himself.

The benches which will be sold in the Bijenkorf need to be transported to Holland. The price of the Kevyt which the people need to pay in the Bijenkorf will cover these costs.

### **INCOME**

#### **Micro credit**

As comes clear at the chapter about investments, there needs to be invested in three aspects. These three aspects are promotion, cinema equipment and materials for the first amount of benches till the system pays itself off. These starting

investments will be financed by the micro credit coming from SODYCO. SODYCO has 1000 euro available as starting tariff which needs to be paid back after usage.

### Earned money

Everyday 2 benches can be made when the workshops work together well. When assuming that from every week 6 days will be used for production, 12 benches can be made in one week. The material investments costs are thus  $(12 * 14€ = )$  168 euro. The profit will be achieved from the Bijenkorf sells and the sells in the slum supermarket. The price of the bench in the Bijenkorf is 240€, concerning the fact that the benched first need to be exported to Holland and that the Kevyt will be an art creation for which people want to pay a quite high price. From this 240€, about 140€ is available for the Bijenkorf to import the benches and to promote them, which makes a profit of 100€ for the slum.

The price of the benches in the slum is much lower then the production price, because there will be enough profit from the Bijenkorf to buy materials to produce new Kevyts. In the slum the Kevyt will be sold for 5€ per bench, so inhabitants will be able to buy them with their low income.

Per week 6 benches are available to sell at the Bijenkorf and 6 are available to sell in the slum. So per week an amount of  $(6*100€ \text{ from the Bijenkorf} + 6*5€ \text{ from the slum} = )$  630€ is

earned, assuming that every bench of the total 12 gets sold per week. From this 630€, 168€ is then used the next week for material investments again. So the actual profit per week is  $(630€ - 168€ = )$  462€.

This amount of money will pay back the investments for the promotion and the open air cinema equipment.

### BREAKEVENPOINT

This table shows that already in the 2th week the system will bring profit to the slum people. Now the beak even point is reached. The 668€ which was used from the micro credit for SODYCO to start the project in week one is now also fully paid back again. This paying back will be within 2 weeks. But when not all the benches will be sold in once, the breakeven point might be a bit later.

Week	Investments (€)	Earned money (€)	Total money left (€) = total money last week + earned money – investments
1	400 (beamer + screen) 100 (promotion) 140 (material first 10 benches)	212	-428
2	140	212	-356
3	140	212	-284
4	140	212	-212
5	140	212	-140
6	140	212	-68
7	140	212	4
8	140	212	76

### 4.3.2 FEASIBILITY STUDY

The Kevyt project differs itself from the other 2 projects because with this project real money can be earned. the kevyt is a bench which will be like an art item created by the slum so a lot of personal effort will be put in the benches. And especially in the benches which will go to Holland to be sold in the Bijenkorf. The sells in the Bijenkorf are the source for the real financial basis of this project. The income which will come from these sells are the reason why also the people in the slum will be able to buy the benches for themselves. As explained in the business plan, the price in for the inhabitants in the slum is way lower then the cost price for which the Kevyt can be manufactured. So when there would be no profit coming from Holland, the benches in the slum also needed to be much more expensive so the production costs could be covered.

Another thing is that the extra money which will not be nessecary for new production of benches can be used to pay the possible losses of the previous projects off. Next to that it also should be mentioned that in our business plan we assumed that all the Kevyts in the slum would be sold in once, so a continues and stable cash flow will grow. So in cases that the amount of sells will be at its minimum and the incomes will be to low to keep producing new Kevyts, loans and new material can be paid from the earlier earned money. So to conclude this, the system actually funds inselfs in a certain amount of time.

On a certain moment the system will not be strongly dependant on its incomes no more. This funds first needs to grow though.

The only critical moment is in the beginning of when the system is implemented. The first investments will be financed with the micro credit of SODYCO but those investment costs also need to be paid back. And on that moment the slum is dependant on the sells in Holland. First they need to receive these incomes and then they can continue producing again.

On the other hand another strong aspect occurs; when a moment comes that there is no money for investments in manufacturing of the Kevyt, the production stops for a moment. So in this situation the system can for a while transform in a system which produced only under request. This way no senseless losses will occur.

So to start the implementation of this system, the financial aspects will not form a problem because the micro credit is available for these investments. And after the procedure that the equipment for the open air cinema is bought and the first benches are made, the feasibility depends on the interest of the inhabitants and the people in Holland to buy the benches. With promotion we will try to stimulate these interests. In the slum the streets and the well attended places like supermarket and community centre will be decorated with our posters which describe the essence of the project. in Holland we need

to make sure that the visitors of the Bijenkorf get to know the roots of the Kevyt; so where it comes from, by whom they are made and the personal effort with which they are made. When these aspects are communicated in the proper way in Holland, the people will be motivated for purchase.

### 4.3.3 UPSCALING

It is interesting to up scale the system to other slums. A proper moment to start with this is when the breakeven point is reached at the first slum in which the bench system is implemented. Then, when the inhabitants of the slum have taken over all the responsibilities to get the sell and manufacturing working, SODYCO can replace their attention to other slums. This approaching of the other slums can then best be done with a few inhabitants of the slum who keep their selves busy with this system. They can help SODYCO then to show that the bench system will have a positive effect on their slum. The people in the new slum will find it more reliable when they get to know about the situation in the first slum.

The future idea is that within a certain amount of time, the slums will work together during the manufacturing of the benches. So for example one slum specifies itself to the pieces of fabric, one specifies itself on the wooden constructions, one on the wooden trunks, one on the steel legs of the bench and one on the painting and decorating of the bench.

Although each slum will still produce benches for their own inhabitants in their own slum but this idea is purely for the benches which can be sold to the Bijenkorf in Holland.

## 4.3.4 PROMOTION

### KEVYT POSTERS

In the beginning posters will be spread around to let the people get to know the Kevyt. With these posters also the introduction event at the community centre and the first open air cinema will be announced. These posters will be hanged up two weeks before the introduction event. This way people will already talk about the Kevyt and they will know what to expect at the introduction event. At the posters also the first movie of the open air cinema event will be promoted.

### INTRODUCTION EVENT

The Kevyt will be introduced at the community centre. Here the first three pieces will be shown and these will be given to the community centre. The first three benches will be decorated by the local artists and will function as an example for the community members. It will be explained the children can paint the benches together at the school, they can customize their bench.

At the introduction event the first series of five benches can be bought and afterwards they can be directly used at the first open air cinema event. After the introduction event at the community centre the people will go to the water basin to watch the first open air cinema movie. This movie will be about the life in the slum and the projects of Sodyco.

### PAINTING EVENTS AT THE SCHOOL

To further promote the system we will organize painting events. The children of the school can bring their benches and together they will paint them. Sodyco will provide the paint and some local artists will help the children painting. The local artists are also the ones painting the furniture for the Bijenkorf.

In the beginning the painting events will be organized every two weeks. This way the first months all people can paint their chairs and after a couple of months later everybody will be provided with their painted chair. Then after the first three months the events will be organized monthly and people can repaint their benches. This way the people can customize their benches and change the look if when they are fed up with the old design.

### MORE POSTERS

When the system is introduced the first two months posters for the Kevyt will be spread around so the people will be stimulated to all buy the Kevyt. Next to these posters also posters for new open air cinema events will be spread. The open air cinema events will be organizes every two weeks.

## SCHEMATIC OVERVIEW

### 1. Visual promotion

- “The Kevyt” posters at the streets
- To promote the Kevyt, the introduction event and the first movie
- Word by mouth will spread the expectation

### 2. An afternoon introduction event

- Presenting the Kevyt
- Explanation of the system
- Showing the first Kevyts for the community centre

### 3. First open air cinema

- The first movie will be shown at the open air cinema
- Movie about the slum life and projects of Sodyco

### 4. Painting at the school

- Children can paint the Kevyt at the school
- Materials and help provided

### 4. More posters

- More posters to promote the Kevyt
- Posters for new movies at the open air cinema

**SODYCO**  
Social Dynamic Cohesion

Sunday 28 april

Introduction at the community centre

Slide it, Move it, Sit it



Poster for the Introduction Event

# First Open Air Cinema

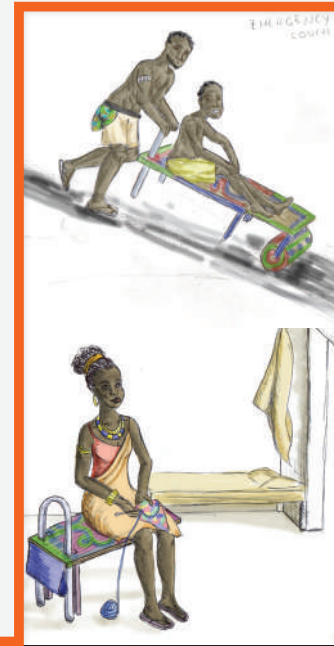
Sunday 11-04 20:00

## SLUM'S LIFE

Strarring Harrison Ford



Kevyt



**SODYCO**  
Social Dynamic Cohesion

Poster for the promotion of the Open Air cinema

Move it, Slide it, Sit it

Paint your bench at the school

Sunday 11-04 15:00



Kevyt



**SODYCO**  
Social Dynamic Cohesion

Poster for the promotion of the customization at the school



## 5. APENDIX

- SCENARIOS
- CALCULATION THIRD REPORT



# FIRST REPORT

## Hester

### Scenario 1

*Themes: wood workshop/home, charging the battery is no problem*

Yao is a member of the working team in the wood workshop. Today he is working on a wooden rolling kitchen table for his wife. During his work he is surprised by an assemble problem in the rolling table wooden wheels, so he decides to think of another way of assembling it at home this evening so he can finish the table tomorrow. He lives in block 1 of the community so during his walk home he meets his friends who live in the block next to him. During the conversation the idea of an open air cinema comes up and they all get enthusiastic about it. They decide to come together this evening to fantasize and talk about it. When Yao comes home he shares his ideas with his wife and 3 children, who also consider it as a fantastic idea. It gets evening and Yao puts the LED light on to keep it light in the kitchen where Yao's wife prepares a dinner for the family and the friends. This is the 2th evening that Yao and his family use the LED light so Yao has to take the battery to the pedal power stool within 2 days.

The evening is long and choosy with the family and the friends fantasizing about the open air cinema and Yao finds no time to think about how to improve the assembly method of the rolling

kitchen table. So because of this spontaneously appointment with the Yao's friends, he decides to work on it during the night. He realizes that now he will use the remaining supply in the LED light battery to have light during the night work. He decides to go to the pedal power stool tomorrow already in stead of the day after, but he does not mind because there he can tell all his friends he will meet there about the fantastic cinema plan!

### Scenario 2

*Themes: wood workshop, repairing paddle stool, own responsibility*

Yoruba is busy in the wood workshop sawing a new seat for one of the power pedal stools. Yesterday, his son and school friends were sent together by their moms to the pedal power area to recharge LED batteries. They decided to do a match about who could spin the power paddles as fast as possible. His son and another young boy were the two fastest ones and because of the fanaticism and the competition of the boys, the seat of his Yoruba's son broke. Fortunately his son had no injuries, only a few scratches for which they bought a box of plasters at the supermarket nearby.

### Scenario 3

*Themes: house blocks*

Fadhila lays in bed next to her husband on a warm night. It took a long time before her 2 sons and daughter fell into sleep. The warmth always causes light sleeping at her children, especially at her youngest son. Fadhila turns once again in her light sleep when she hears crying, coming from the next room. Fadhila always knows what to do in these situations and gets out of her bed to walk to the living room. There she puts on the LED light so she can look for the wooden puppet and the fabric doll. The crying goes on but she cannot find the 2 toys which will

help her son to get reassured. The LED light is on for half an hour when suddenly it turns out, the LED battery is empty. This makes it impossible for Fadhila to find the toys so she decides to bring her son a glass of water. The next day she starts with a visit to the power pedal stool area where she meets her friends to recharge their LED batteries.

### Scenario 4

*Themes: wood workplace, adjustable paddler*

At the community centre a meeting is arranged because some topics need to be discussed. Nangila, who has a daughter which follows education at the community school, suggests making different sizes of pedal power stools. When she went to fill her battery this morning, her daughter wanted to join her. When her daughter saw her mother spinning, she wanted to do it too but when she climbed the stool, she could not reach the paddles. When Nangila tells this story, more mothers confirm this with own experiences. So therefore, different sizes of pedal power stools might be handy! Yoruba, Nangila's husband, works at the wood workshop and suggests to make 2 'child' pedal power stools. He also says that the children at the school then can paint the two stools in bright colors as a nice activity during a school day. The day after the meeting in the community centre, Yoruba starts with sawing the two small seats for the two small power pedal stools.

#### Scenario 5

*Themes: wood workshop, exchanging each other's battery in times of need*

Each Monday it is lively at the power pedal area with men and women who have been up late during the weekend. The LED light burned longer during the choosy evenings. After Safisha is finished with spinning the power paddles, she gets down from the seat chatting with her friends. She unplugs her battery and walks with her friends to the table for a cup of thee. They discuss how hard their husbands work at the steel and wood workshops each day and decide to walk by their workspaces to say hi during their walk home. After their cup of thee they put their batteries in their bags made from fabric and walk out of the recharge center. When arriving at the wood workplace it seems that they were just coming on the right moment! Safisha's husband Naadir was just running out of power when he was working on a wooden table. In his workplace is minimum of sunlight and therefore a light is burning more often during the day than in their homes. Safisha and Naadir arrange that Naadir takes the just filled battery and will, before he goes home for dinner, pass by the recharge centre to fill the empty battery.

#### Scenario 6

*Themes: wood workshop, wood recycling and LED light in the wood storage*

At the wood workplace, the employees are very busy with deliveries for making new chairs for the community centre hall. For this delivery it seems that they do not have enough wood and they decide to do a collection action at which every community member should hand in old wood which is not in need no more. Old tables, old chairs, old floors and many other wooden products are quickly brought to the wood workplace. The delivered wood is stored in a place where one man has the responsibility to survey the supply. In this storage, a LED light burns, so when it gets dark and the employees want to continue working, the different types and shapes of wood can be distinguished. The battery needed for this LED light to burn is, together with the LED lights of the fabric workshop and the steel workshop, are regularly recharged at the stool paddlers. The job of charging up of the batteries is divided over the employees of the 3 workplaces.

#### Scenario 7

*Themes: house blocks, general lighting at the home blocks*

The community has four home blocks in which all the families live. Each family has its own battery for their power needed

for the living. Many times it happens that one family gets out of power unplanned early, a kind neighbor is then the solution. Also at the community centre, this is open till around 11 o'clock, batteries to lend are available. Each home block has its own general lighting system. So during the night it is still pleasant and rather safe to go outside. The batteries for these lights also need to be charged every day, because when shines during the whole night, it is empty in the morning. For the charging of the batteries, each block made a scheme on which every day another household has the responsibility to go to the paddle box area.

#### Scenario 8

*Themes: wood workplace, wood shredding machines*

In all the households of each block, a fireplace is used to get warmth in the living rooms during cold seasons. For this fireplace, shredded wood is used as firelighter to start the chunks of wood get in flame. This shredded wood is produced by the wood workplace. Here big machines are shredding wood waste and cut down trees into little pieces. To supply power for these machines paddle boxes are used. These machines are only active in the seasons in which the temperature decreases. The paddling is done by the person who needs the shredded wood, so when one family wants a portion of firelighters, the deal is to paddle on the paddle box itself.

## Joël

### Scenario 1

*Themes: Super market, pedal boxes outside super market*

In a slum there is a super market manager Dodi who is trying to manage with the constant and growing needs of the people. The people do not have a lot of money but the needs are great because of the number of the children in the average family is big. The basic needs for those people are important such as food, shelter and light. The pedal boxes in the front of the supermarket are one solution for that.

In the super market Dodi tries to provide as much as possible for those people but he cannot provide everything for the growing numbers of people, especially because people cannot pay for those services. With that comes the issue of crime. The crime rate is rapidly growing in the slum because of the number of unemployed people. Dodi has to always watch out for the robbers and guards the store for the robbery same time tries provide as much services as possible for the people in the community. The pedal boxes at this part of the community are protected by a fence so that at night time no one can damage or steal them.

### Scenario 2

*Themes: Super market, pedal boxes inside super market, watched by manager*

The supermarket has got few pedal boxes in the premises. They are inside so that the manager can keep an eye on them so no one can damage or steal them. But the problem is that the whole thing takes a lot of effort from the manager and even from the honest citizens to charge a battery. Queues for the charger are long and it takes a lot of time from the sales person to look that anyone can't steal anything from the chargers.

### Scenario 3

*Themes: Super market, sells pedal boxes, sign of wealth*

The supermarket sells the pedal boxes for the people although they are pretty expensive. They have sold a few and the people can do the maintenance and take care of them. The people also borrow them from each other and when they have made the placement few of the families can have electricity. The super market also sells locks on them so that thief's cannot take the pedal boxes. They also have become a sign of wealth of the family who owns it.

#### Scenario 4

*Themes: Super market, part to charge batteries, social event*

In the supermarket there is a separate department where the people can charge the batteries with the pedal boxes. It has developed as a social to go there and chat about the recent events with the other people when you are pedaling your batteries full.

#### Scenario 5

*Themes: Community centre, pedal boxes in the community centre, social vocal point*

At the community centre Sheila is everyday trying to work for the people. She also has to be face to face with different needs of the people of the slum. As she is trying to cope with the difficult problems what poverty provides such as crimes, prostitution and drugs. Lot of people come there and talk to Sheila because she is one of the most trusted person in the community. Sometimes Sheila hopes that she could give something concrete to the people of the slum different than a shoulder to cry on. At this case the pedal box are pretty useful because of the fact that many people visit the community centre and it is a vocal point at the community. Also protection measures are taken because the big amount of crimes going on constantly.

#### Scenario 6

*Themes: Community centre, pedal box space inside, special hours*

The service of charging the batteries has also has a social aspect at the community centre. The people are charging batteries and getting off from the weight that they have on hard at the special paddling space at the community centre. Sheila has also managed some special hours for the people to charge the batteries. Mostly it's common for the men of the society to come and have this social event.

#### Scenario 7

*Themes: Community centre, rental of pedal boxes*

The rental services could also be offered by the community centre because it is expensive to buy the pedal box from the store. But it has a lot of limitations because you have to be known and trusted to get the pedal box. Otherwise they would all be lost and not returned to the centre.

## Scenario 8

*Themes: Community centre, service to charge the batteries*

From the community centre there is also organized service where you can leave your batteries to be charged. These batteries are charged at the social events where the local men and women can get a comfortable social and sporty moment. This thing is organized by the few trusted people at the city centre.

## Kristan

### Scenario 1

*Themes: Atelier fabric, charging of batteries by the atelier fabric*

Afi wakes up at seven o'clock; she has to go to work really early. She leaves her husband Silko sleeping. He can wake up later, because he only has to go to the city to look for a job. Since three years Silko has been unemployed and Afi's income is their only one. She works in the atelier fabric in the centre of their community. Today she has to be early because they will have a lot of work. From eight the people will start bringing their batteries and at eleven the new wool will come. Quickly she eats something they left yesterday evening. It is only a small breakfast because her husband and five children also need to eat something and they are running out of food. In three days Afi gets her payment and then they will be able to buy some new food. The next two days they have to try to borrow some food of the neighbors or maybe Silko will find something in the city. At half past seven Afi leaves home and in five minutes she is at the atelier. Azizi her colleague is already there and they start to prepare for the collection of the batteries. Just before eight the first villagers come to bring their batteries. At half past eight they have collected 17 batteries which is really a lot. Afi is wondering if they will succeed to load them all. It takes more or less 20 minutes per battery and they only have one

pedal stool. The pedal stool and batteries are part of the Pedal Power Project, which started half a year ago. In this project the villagers rent a battery and led-lamp of the local authorities. The batteries can be charged with a pedal stool. Since the women in the atelier fabric do not have that much work, there is not that much wool, the authorities decided to place the pedal stool in the atelier fabric. This was of course a big honor for Afi and her colleague. They now charge the batteries for the community and ask five cents for this service. Today occasionally new wool would be delivered. Her colleague Azizi starts with the pedaling and they charge a batteries on turn. At half past eleven and 8 batteries further the wool is delivered. Three men from the village bring the new wool and Afi instructs them were to put it. Azizi stops cycling and together they take a look at the new wool to see if it is good quality. They are always excited when there is new wool because then they can make fabrics again.

### Scenario 2

*Themes: Atelier fabric, tired, help from friends*

It has been a long day for Marka. At 8 o'clock she arrived at the atelier fabric and now at half past six she can finally go home. It is normal to work this long when there is a new supply of wool. That had always been the problem of the atelier fabric: When there is no wool the women have nothing to do, but then when

a new supply of wool arrives they have to make the fabrics as quickly as possible.

Marka yawns, after ten hours of work she is really tired. And now she also has to go charge their battery. Two months ago her husband and she finally bought a LED-lamp and the belonging battery, they finally has enough money. Since then they charge it every three days at the charging point, which is situated near the Social Entrepreneurial Design Group. Today it is her turn to charge the battery, so she has to stop at the charging point on her way home. She also needs to kook and hopefully her daughter has bought the ingredients she asked for.

Together with her friend Gimya she walks to the pedal stool point. There they have to wait for two others to finish but then they can charge their batteries simultaneously since there are two pedal stools. During the pedaling they have a little conversation and also some other friends of Marka arrive. At a certain point Marga feels so tired that she has to stop pedaling, she really cannot do anything more. Quickly one of her friends runs to the community centre and comes back with a cup of tea. One of her friends takes over the pedaling and this way she gets a full battery after all. Then she is walked home by two friends who live nearby and at home she asks her oldest daughter Nuria to do the cooking. She herself sits down completely exhausted.

### Scenario 3

*Themes: Atelier fabric, metal workshop, sunroof*

Issay works at the metal workshop of the community and he is head of the pedal box manufacturing. Because of this he, his wife and children have gathered a lot of respect in the community and they also are quite rich.

Lately he got a new idea to further improve the pedal box; he wants to make a sunroof for them to protect the pedaling people from the sun. For this reason he has gone to the atelier fabric today to talk with Loba, the boss of the atelier fabric. He shows her some sketches of his ideas and explains what he wants to make. Loba is directly enthusiastic and assures they will cooperate to make the roofs.

Together they select the type of canvas which is best to use and Loba helps him optimizing the design of the sunroof. Because of the way the women will sew the canvas some things needed to be changed. Normally the women only make the fabrics and then sell them. For this kind of projects however they kindly make an exception. Issay and Loba agree to a price for the roofs and then Issay returns to the steel workshop to start working on the frames for the sunroofs.

While working he thinks about his oldest son and he hopes he will not forget to charge the battery for their LED-lamp. His son already forgot yesterday and because of that they only had light for ten minutes yesterday evening. Since the pedal stools are

situated next to the community centre he can watch them thru the window of the metal workshop. So when school finish he will be able to see his son charging the battery.

#### Scenario 4

*Themes: Atelier fabric, pedal box centre*

Arhur has been living in this community for his whole life.

Together with his wife Nala and their five sons he lives in one of the best huts in the slum. His family has always owned the atelier fabric and now he is the owner.

The atelier is doing really well and since one year he also opened a pedal box centre in front of the atelier. He has bought three pedal stools and the villagers can recharge a battery for four cents. The pedal centre is self-service. The pedal box centre turned out to be a really big success and he gets almost the same profit out of it as out of the atelier fabric itself. He also still tries to improve the pedal boxes in cooperation with the Social Entrepreneurial Design Group, who developed the idea. The batteries and LED-lamps are rented to the villagers of the community, and this way almost everyone can afford one. The whole project has totally changed the community and has led to a better standard of living. Arhur is really proud he is part of this great development.

#### Scenario 5

*Themes: School, battery stolen at school, charging point in front of metal workshop*

Makalo is now ten years old and in his opinion he is already part of the grownups. Nonetheless his parents still send him to school, which is really close to their block. Makalo is one of the smartest children in the class and the teacher Miss Maritz really likes the boy. He is really studious and she thinks it is a pity he will probably never get a change to go to high school and university. This morning Makalo has brought the battery of their LED-lamp. Yesterday it ran out of power and Makalo usually has to recharge it. He does this on his way home at the charging point in front of the metal workshop. In the classroom they always put the batteries in a cupboard at the side of the classroom. When school finishes Makalo wants to get his battery but he cannot find it anymore. He goes to the teacher but she cannot find it either. They conclude it must be stolen. Makalo gets really angry and he also gets scared for the reaction of his father. It happens a lot the batteries get stolen at the school and his father always says him to keep an eye on their battery. Today the lesson was so interesting that he stayed a little longer having a discussion with the teacher. In that time somebody must have taken the battery.

The batteries are quite expensive and his parents were really proud to finally have one. They only had the battery for two

weeks and they did not have the money to engrave their names in the battery yet. Most people do this to prevent their battery from being stolen. Now Makalo has to tell his dad his battery has been stolen.

#### Scenario 6

*Themes: School, painting the pedal box, pedal box in school*

Obi is really excited today. Together with his parents and three sisters he has breakfast but he cannot wait to go to school. This is because today they are going to paint a pedal stool. The school has decided to buy a pedal box for at the school and the children of the higher class are allowed to paint it. Obi is just in the higher class ( he is 8 years old) and he is really excited about this. In the preparation he had a big role in the design of the graphics and he really likes to do this kind of stuff. In his free time he often goes spraying graffiti with his friends. Now they get a pedal stool at the school a new opportunity has grown for the villagers to charge their batteries. Till now they only had a pedal stool at the community centre and there used to be long rows for it. This was also caused by the fact most people need to work and for this reason want to charge their batteries at seven o'clock in the evening. To prevent the same thing with the second pedal box they decided to place the new pedal stool in the school. this way the children can charge the batteries when school is over.

#### Scenario 7

*Themes, School, pedal boxes in front of school, big problem*

Ayo teaches at the little school of the community, she teaches the younger class. She really likes her job and she really tries to teach the children to read and write. However this is not so successful, because the school lacks the material needed for proper education.

Since three weeks there is another problem she has to face: The Social Entrepreneurial Design Group placed a pedal stool centre in front of the school. The children are allowed to charge the batteries of their families during the lessons. So one after another the children leave the classroom to charge the batteries. Of course Ayo complains about this since it is really destroying her lessons. The head of the village, who is also head of the school, however says the need for light is more important than education. Ayo does not agree on this but what can she do. Also the parents think the pedal box is a good idea, because they do not have to charge the batteries anymore. Ayo tries to convince everybody this is really bad, but she cannot convince them.

### Scenario 8

*Themes: School, trip to the pedal boxes, big wealth of the pedal box*

Goma is now seven years old and lives with her six older sister and brothers and her parents in a very small hut. Since half a year she goes to school and she really likes it. She always looked up to her older brothers and sisters and now she can just as smart as them.

Today is a very special day and Goma cannot wait to go to school. Today they will go to the pedal box centre. Next to the community centre the pedal box centre is housed with pedal boxes for a big part of their slum. Not only their community uses it but also the rest of the slum. Because of this their community has gained a lot of respect and also became one of the richer parts of the slum. The whole pedal box project started in their community and the villagers are really proud of that.

Goma has never seen the pedal boxes since the centre is only opened for everyone older than nine years. She really wonders what they look like after the great stories she heard about the pedal boxes and how they changed live in the community. Maybe they are even allowed to try one of the pedal boxes.

### Robert

#### Scenario 1

*Themes: Workshop steel, poverty & illness, lack of community cohesion*

Abu lives in the slums of Kenya with his daughter, son and wife. He works at a steel workshop which pays him far below minimum wage. Due to the bad conditions on his work, like the hot environment and dusty air because there is no air extraction installed, he became ill with the flu. The problem is when he stays in bed, he won't get any money and they didn't have saved some cash. So every morning he gets out of bed with an ever decreasing condition.

One day he is going home after his work and because his wife asked him, he went to the recharge center to recharge his battery. He stepped in coughing and sneezing, with his face covered with dust and red eyes from the stinging metal splinters. He wanted to sit on the stool just when the senior of the village gives him a kick and yelled at him that he is possessed with daemons. Some other village inhabitants, even neighbor and friend Kamil, looked at him mad. They told him that he must never come here again, or they would kill him. The senior said: "there shall live no evil in this building, we must honor the gods for what they give us".

Abu stumbles back home and falls in the arms of his wife, he

tells her: “We have no electricity, no money and above all no community”.

Scenario 2 (a new end for scenario 1)

*Themes: Workshop steel, poverty & illness, community cohesion*

Abu lives in the slums of Kenya with his daughter, son and wife. He works at a steel workshop which pays him far below minimum wage. Due to the bad conditions on his work, like the hot environment and dusty air because there is no air extraction installed, he became ill with the flu. The problem is when he stays in bed, he won't get any money and they didn't have saved some cash. So every morning he gets out of bed with an ever decreasing condition.

One day he is going home after his work and because his wife asked him, he went to the recharge center to recharge his battery. He stepped in coughing and sneezing, with his face covered with dust and red eyes from the stinging metal splinters.

Just when he tries to sit on the stool of the recharger he falls, but Kamil could grab his friend just on time. Everyone sees that Abu is in a temporary state of mental confusion and they decide to help him. They let someone get water for him and brought him to his home. Abu's Wife took care of his body and washed him. Someone started to charge the battery of Abu and the wife of Kamil made a meal for the family of Abu. The next

few days Abu was recovering of his illness and a week later he held a speech at the community centre. Abu Said: “We have no money, little food supplies and bad roofing, but we have a community which stands for each other”.

Scenario 3

*Themes: Workshop steel, recycling*

Maranish is a colleague of Abu, but has better working conditions, because he is allowed to work outside. He heard by word of mouth that some inhabitants from other villages have been trying to build a more improved pedal stool. In his head he makes a plan of doing the same and in his break he walks through the bushes and the slums, trying to find some old metal and wood and recycle trash to make a better pedal stool. Eventually, Maranish managed to develop a recharger which can be used at a lower speed, but generates a same amount of energy compared to the previous stool. The consequences of these new stools are a more relaxing atmosphere and a more crowded recharge center, because the inhabitants have a lot less to do. They put less effort in it and that leads to a more crowded recharge center even when the sun burns by day, where in former times nobody wanted to sweat during the pedaling.

Nowadays, after introducing the new stool, Maranish gets in his every half an hour break to the recharge center. He plugs in his

batteries and while he is pedaling he drinks a tea and is chatting with his friends, who are all doing the same with an easy pace.

#### Scenario 4

*Themes: Workshop steel, burglary, social control*

On an unfortunate morning, Maranish finds out that his golden ring, which he has been given from his father a couple of years ago, has been stolen. After searching for an hour he is certain that he has been robbed last night. He goes to the authority, but already knows that the chance they can help him is zero, so he spread the word and told everybody he ran into, that his ring has been stolen. A couple of days expired and the prospect of retrieving the ring was already gone, until a young woman knocked on Maranish's door and told him that she thought she saw a little boy with a fancy golden ring recharging his battery at the center, while she was doing the same. Unfortunately she lost the little boy out of sight, but she almost knows for sure that he must be living in Block 3. Maranish thanks the woman and closes the door. He knows he can't visit all the dwellings of block 3, because it will take too much time and it doesn't give a statement of confidence to the rest of the people.

So now Maranish visits the recharge center every three days and asks people if they have seen a little boy with a golden ring. Another couple of days go by, when suddenly Maranish hears yelling coming from the recharge center. When he gets closer

he sees a little boy thrown in the mud with a bunch of people surrounding them. The boy wears a golden ring on his left thumb. In front of the boy stands his father, Abu, defending his son from the pressuring crowd and tries to question people of what is happening.

Maranish steps into the crowd laughing and helps the boy getting up. He asks the boy if he can get his ring back en explains all the fuss to Abu. Abu startles and apologizes to Maranish. Maranish nods, smiles and says: "it's OK, your boy learned his lesson, let's have some tea at the community center, I am glad that we are making this to a better society".

#### Scenario 5

*Themes: Workshop steel, enlighten*

Back at Abu's place in the workshop, Abu finally dares to say to his supervisor that he thinks there is too little light in the workshop. He comes up with the argument that he probably could be working better when he sees a lot more and it is far more better for his safety when he sees everything what happens. Because the boss doesn't want to be like a bully he agrees with Abu that the workshop should be enlightened a little bit. Abu comes up with the idea that a LED lamp should be installed and that he will paddle for the electricity himself. So now every morning Abu starts paddling for ten minutes and then works for three hours. He takes a break of half an hour. A

break which includes a paddle session of ten minutes so that he can work for the next three hours.

#### Scenario 6

*Themes: Water basin, Safety*

A new problem has to be overcome. A woman fell into the water basin last night. It was very cloudy so there wasn't a clear moon. That contributed to the poor sight and that was probably the reason of this accident. The woman is fine but it could have ended worse. So the inhabitants of the slum were thinking of positioning a pedal stool nearby the well, so when you want to collect a bucket of water, you can sit on the stool. Then while you are pedaling electricity is generated and simultaneously the rope moves, which is connected to the bucket. So you will kill two birds with one stone.

#### Scenario 7

*Themes: Water basin, locations*

The sun burns hot and the flies are circling around Amy's head when she goes home, just leaving school. When she comes home she sees her mother sitting on a chair with her hands around her ankle, frowning her face. She tells Amy that she fell from the crank a few minutes ago. So Amy had been asked to fetch water from the water basin and to recharge the batteries.

Unfortunately the water basin is on the eastside of the village, the recharge centre at the southwest and their home in the north. On her walk to the recharge centre, which she will be visiting first, she starts contemplating about the locations of the buildings in the village. Wouldn't it be easier when the water basin and the recharge centre were positioned next to each other? It would, because usually the two tasks have to be done at approximately the same moment. The water basin is difficult to move, but the recharge centre only consists of a few pedal stools. She arrives at the recharge centre, charges the batteries, then walks to the water basin and then goes home. To put her ideas into practice she goes to the local authority and propounds her idea to the chief. He agrees and the next day a couple of strong men were asked to move the recharge centre to the water basin. At the end of the day when everything worked out successfully the residents thanked Amy. Because of the new location the people have to bridge smaller distance and a more sociable community arises.

#### Scenario 8

*Themes: Water basin, delivery*

Mzungu heard what happened with the relocating of the recharge centre. He is a very smart boy, is getting older and starts thinking about earning a lot of money by himself. Because he and his friend were used to hang around the water basin,

they come up with the idea to start a delivery company. The company will deliver water and fully charged batteries. They call their selves “Elequa”, named after their products electricity and water. By gaining some reputation with flyers and mouth to mouth advertisement the businesses were running well. Every morning they visit the five blocks in the village with a handcart and pick up the empty batteries and barrels. Because of the fact that the recharge centre and the water basin lying near each other, the period between picking up the goods and delivering them is strongly reduced.

## **Marcia**

### Scenario 1

*Themes: Local authority/bank – alternative punishment*

Chitundu is a 20-year-old boy, and he has been recently in trouble with the Local Authority because he is member of a criminal gang. The police of the city have caught him red-handed with a stolen car and he have to give declaration at the police station to see what is going to be his punishment. The morning he had to go there and declare, he met in the main entrance a policeman that asked him who was he, and what his case was. When Chitundu explained everything to the policeman he made him to enter into his private office: He wanted to deal what could be an alternative fine. The offer of the policeman was to make Chitundu responsible of charging his battery every day during 2 months, instead of paying a huge fine or going to the prison. Chitundu accepted the offer in spite of being aware that this meant to pedal more than 2 hours every day to manage an average charge in his battery and the one of the policeman.

## Scenario 2

*Themes: Local authority/bank – reward*

Matzuly is one of the eldest women of the slum (she is almost 70), so she has got a well-known reputation, she has been so hard-worker during her whole life and she is very wise and sensible. Although she hasn't got much money, neither possession, she has got bank account where she has saved little by little a considerable amount of money, made of her work at the atelier workshop. She has had an exemplar behavior in many different social aspects, as for example housing poor orphan children during decades. Nowadays she is in a big trouble to recharge her battery and have energy at her house because both her 2 sons have died and her husband is very ill, almost dying. She has to wake up early every morning to go to the recharge centre and pedal with all her efforts just to charge half of the battery that will be worn out at the end of the day. She has decided to go to the bank and find an agreement to pay somebody to recharge her batteries every day. At her arrival to the bank the men in the desk offered himself to do the work without receiving any money: He was one of the orphan children she had at her house 20 years ago.

## Scenario 3

*Themes: Local authority/bank – inequality, abuse of power*

It is well known worldwide that life is not always the same easy for everybody, and also in the slum, where almost everybody is in very similar bad life conditions; it is possible to find how the authorities have got preferences and facilities in some aspects. While everybody has to go to the recharge centre to pedal and have their batteries 100% charged, there are some influent people of the village (as the boss of the policemen, the owner of the bank and the workshops and some other illegal influent people of the slum) that have managed to buy better batteries, easier to recharge and better to safe energy. The batteries were supposed to be all the same, so that everybody had the same opportunities to have the same energy with the same effort, and when people have discovered that there was another kind of batteries, they have tried to buy them in the black market. Unfortunately for them is very difficult to contact the person that sells this batteries, so if they really want to buy the new better battery they have to deal with that influent people. Anyango, a 30-year-old woman of the slum, worker of the atelier workshop, arrived to an agreement with her boss in which she has to work free as maid in his house three days a week.

#### Scenario 4

*Themes: Local authority/bank – cooperation  
(Alternative end to scenario 3)*

It is well known worldwide that life is not always the same easy for everybody, and also in the slum, where almost everybody is in very similar bad life conditions; it is possible to find how the authorities have got preferences and facilities in some aspects. While everybody has to go to the recharge centre to pedal and have their batteries 100% charged, there are some influent people of the village (as the boss of the policemen, the owner of the bank and the workshops and some other illegal influent people of the slum) that have managed to buy better batteries, easier to recharge and better to save energy.

The person they contacted to buy the batteries is a powerful man of the city centre, difficult to meet out of the black market that he controlled, but the boss of the policemen had had some business with him years ago. He decided to order a meeting at the Community Centre to inform the people of the slum about the new batteries, so that they could all discuss the fact and find out how many people would be interested in investing some money in them. As the price of the new batteries was a bit higher and there were many families interested in acquiring one, the bank decided to put a percentage of the total amount of money that they had to pay with one condition: All the people owing a new battery had to go twice a week to pedal

and charge the batteries that the bank needed to keep on working.

#### Scenario 5

*Themes: Media/printing/radio – social needs and cooperation*

Makalani works everyday from sun to sun at the steel workshop to be able to bring enough money to his house and maintain his pregnant wife and his 3 little children. He always complains that he has very little time to socialize and to charge his batteries, and moreover if goes to the recharge centre there's almost nobody there because it's very late. He was so annoyed with that situation that he decided to gather some workers and go to talk with their boss to see if they may find a solution. The afternoon they met there was also in the office the responsible of the media and printing centre, arguing with the boss because of the prices he asked for the services given to the steel workshop.

When Makalani exposed his complaints to the boss and the responsible, the three of them realized that there was a solution, not only for Makalani problems but also for the boss problems with the prices of the media centre. The workers of the steel workshop could end their working day earlier 3 times a week but they had to go in groups to the media centre to recharge their batteries. With part of the energy from the pedal boxes the computers and printers would work until the centre

closed. With this agreement the workers now can socialize and chill and they don't lose their time because they are charging their batteries. The media and printing centre has given to the workshop a lower prize because it is saving energy every week with the workers pedaling for the last hours of the working journey.

#### Scenario 6

*Themes: Media/printing/radio – music, information and social gathering*

Jaramogi is very worried because she is in charge of the radio centre in the slum and everyday is more difficult to find good radio frequencies. She is the one who decides which kind of programs must be in the station of the slum, and moreover everyday there're more people that don't listen to the radio because they use the energy from the batteries to other things and usually they prefer to watch the T.V. After 2 weeks pondering about it, she has decided to ask if it would be possible to place some pedal boxes at the radio centre. Her idea is to encourage the people of the slam to meet and go to the radio centre instead of just go for a walk in the slum, and take profit of it and recharge the batteries while they listen to music or the news. Is the ideal solution for the radio crisis and also for the people that maybe haven't got T.V or radio at home or maybe they prefer to use the energy for other staff. Jaramogi's

idea has been very successful, and everyday there're people pedaling at the radio while they enjoy the music or they get informed about what is happening in the world.

#### Scenario 7

*Themes: Media/printing/radio – cooperation, agreement*

There has been a catastrophe at the printing office: A "short-circuit" in a printer has ended up with a big fire because of the amount of paper that was stored there. Unfortunately, the media and radio offices have also suffered the effects of the fire, there's no fax, no telegraph and part of the satellite is also burned. The big problem now is to find as quickly as possible the way to return to normal life and don't let the habitants isolated of information. What is going to be difficult is to have the amount of energy necessary to work intensively in the repair of the centre. Jaramogi and Nyawire (coordinator of the media and printing centre) have decided to place many pedal boxes close to the centre and invite the inhabitants to pedal for their future own benefit. The pedal boxes will be linked to some machines that will work with the circular movement of the pedals, and there's also another incentive: they can recharge their batteries and then when the centre is repaired, they will be able to have some free bonus for to print, call, email or send a fax.

## Scenario 8

*Themes: Media/printing/radio – recycling paper and wood  
(related with scenario 7)*

Many of the houses of the slum are built of wood, and because of the high humidity and the rain, the wood structures of the poor shacks are very weak and it is dangerous to live in them because they can fall down at any moment. Moreover, with the recent fire at the printing office of the centre, there are important and urgent reparations to do. The social entrepreneurs have decided to offer the possibility of pick up all the wood structures of the collapsed houses and also the paper that is already used from the media and printing centre, and gather all them at the community centre. Then with this entire staff, some machines are going to recycle it and to convert into paste to use for repairing other houses (as the recent burnt media/printing and radio centre) or also to make new paper to work at the school or to print when the building will be working again. The most important thing is that these machines are going to work with the energy of the pedal boxes, so it's necessary that everybody cooperates to do things as quickly as possible and improve the quality of the slum as much as possible for them.

## SECOND REPORT

### Robert

#### Scenario 1

Themes: Community Centre, garbage, trash cooker

Kenya's huge and squalid slums don't have much of anything, except mountains of trash that fill rivers and muddy streets, breeding disease. The trash pollutes the environment, which, along with illegal forest chop, results in deteriorated nature. Kenya contends with heavy rain and due to the lack of vegetation, whole pieces of land are washed away and streets end up as mud pools. This leads to the fact that collecting garbage is very hard, so that trash will remain in the slum. The SEDG people have built a cooker that uses the trash as fuel to feed the poor, provide hot water and destroy toxic waste, as well as curbing the destruction of woodlands. The community centre is centered in the slum, what means that from all directions trash can be brought, carrying the trash with the least distance. There is a big container where everybody can throw their garbage in. The SEDG people set up a program; when you deliver your trash you can get warm water in return. It works as follows:

Maino is an inhabitant of the slum. He is at home and wants to boil his rice, but he has to little gas supplies to boil enough water and he has no money to buy a new one at the moment. He heard of the presence of the trash cooker and decides to

try it out. He grabs his rice pan and his trash and walks to the water basin to fill his pan. Then Maino walks to the community centre and on the way he finds some more trash. He has never thought of cleaning the slum with taken the trash with him, but this time the trash means more heat. He continues his walk and steps into the community centre. He asks the servant on duty how he can exchange the trash for some warm water. "It's easy" says the servant and both walk outside to the cooker. The servant puts the pan on a plate on top of the cooker, opens the lid and throws the garbage in it. A few minutes later Maino takes the pan of the cooker, thanks the man and walks home in a hurry, spoiling heat as less as possible.

#### Scenario 2

Themes: Supermarket, garbage, sensitizing

The slum looks as if it is literally built on trash, with waste including excrement filling the rough mud streets and streams, so only fetid pools remain. Small rubbish fires stutter on the roadsides, spreading acrid smoke near kiosks selling food. Pigs and goats forage in the waste and children play by filthy streams and drink from water pipes covered in garbage. The head of the slum says: "The plan is to make the slums garbage free in a year's time through sensitization of people and door-to-door collection of garbage." A campaign will be

settled to ensure the whole village gets acquainted with the process. Specially trained people will go from door to door to show the consequences of throwing the garbage on the streets. Most people don't want to be bothered with problems about the environment because they have bigger problems, but the instructors tell the dwellers that if we go on like this their children can have no water from the water basin anymore, because it will be polluted. Mostly it is still not enough to get the dwellers cooperating, so the campaign will sponsor the local supermarket with bottles of unpolluted spring water. You can exchange your garbage with a bottle of clean water. After a few days or weeks the supermarket has a lot of trash, but now it is centered so that the garbage can be taken away. Awareness will be created on not throwing garbage in the open and people will be sensitized on using bins.

### Scenario 3

Themes: Supermarket, garbage, recycling

The slum contends with high amounts of garbage which leads to different sorts of problems. Basat, The owner of the supermarket comes up with the idea to recycle the trash in the slum. Basat commands his two sons to skim the slum to search for old bottles and cans. The two sons ask their friends and finally twelve boys and girls are searching for plastics and

metals that can be used. At the end of the day a lot of bottles and cans have been found, so the next day Basat has a lot of work with sorting, cleaning and preparing the found materials. It saves him money because when he goes to a farmer he does not have to buy cans or sacks to carry the food with him. The next step is that he asks his fellow inhabitants to bring the collected and useful garbage to his supermarket. Then the two parties have to bargain about the deal. This will lead to a society which cooperates with each other and amplifies the social cohesion within by understanding what to do with trash. Basat hopes that his idea will be imitated on larger scale, for example in the workshops, but also in the house blocks.

## Joel

### Scenario 1

#### Theme: Wood workshop

At morning Tebien goes to work at the wood workshop on the opposite site of the community. The journey to work takes about 10 minutes. There Tebien meets his friends the other guys who are working there. They have a busy day in front of them because the workshop has a many different parts and products to make and assemble to the markets outside and inside of the slum. Tables, stools and various different kinds of products are made by 10 people who got a stable income from that.

Through out the day the different machines and tools produce a lot wood dust and scrap. That waste is gathered to a big closed container behind the wood workshop and usually post processed somewhere else.

Tebien likes the work a lot and after 8 hours at works feels proud that he can work in such good environment and produce good things for the whole community. Chairs to school, tables to the community center and today he made some part to this new waste disposal carts which will be new service in the slum community. The production is made with close relation with the steel workshop. The service is executed with carts that service people fill with garbage and bring to the post processing point

where the rubbish is sorted. The usable materials are washed and used as a material for bags which are partially transported to western countries and being sold there. The bags are also sold in the slum but with a lower price. This manufacturing is usually made.

The whole community is proud about this waste disposal method from which they have information through promotion that took place there at the community. Its going to be a whole new thing for the people in slums and will have an big affect to the quality of life in the community. Also the people are proud of the new image that the place in which they live has as an environmentally friendly and active place.

During the day and according to the timetable that the workshop has there will be different people to pickup the ready product from the workshop. So the workers also don't have the time to slack around and for that reason Tebien has a boss Roger who takes care that the work is done properly and at time but they haven't had any problems with being in time. A big reason for that is the good atmosphere that there is at the workshop because almost every one is friend with each other. After work Tebien and the other workers usually walk to waterbassin and have a moment to drink water and socialize.

## Scenario 2

### Theme: Steel workshop

In the morning Manu wakes up after 7 a clock and walks to the steel workshop. They have big hurry there because they have to make the assembly and manufacturing the parts for the waste disposal carts because most of the parts are made from steel and the service starts pretty soon. The hole 14 men staff is working hard to get the first 10 carts ready to operate.

The workers at the steel workshop are also proud of the new project because of the big role that they have in making this new thing happen although they don't even have the newest machinery to make the carts.

But from those machines they also have waste and for that they have a container to store the material for post processing and recycling. The container is behind the workshop were its easy to be picked up and to make empty. This waste material processing is made by raw material post processing organizations of the slum. The recycled metal is also a small part of the final product, a bag, which is sold to various locations in Europe and in Middle-East.

During the day the workers have two pauses. And they are the moments were the socializing really takes place other then that for Manu and the other workers its just business.

Manu is one of the oldest workers at the steel workshop and tutors some of the younger workers how to make the welding

and pending of the metal. For that reason his honored member of the workgroup.

After a long intensive workday Manu usually goes home and eats a good dinner then sits on a ports of his block and has a cup of tee.

## Scenario 3

### Theme: Wood workshop.

The morning starts for Ester as normal for the people in wood workshop. Up at 7 a clock and then to work.

She is the only woman working at this workshop so she has to proof herself constantly. The guys are constantly question her skills but Ester has shown the guys that woman can also work there. That for she has gained stable position in the work community.

Normally she does the same work as guys in welding, cutting and assembling the steel product. Also cleaning the workshop is a basic thing which she makes with the other personnel in the workshop. The waste material will be gathered to a container and recycled by a public organization.

They also have two pauses at the same time as the steel workers have so that they can socialize and meet each other because the workshops are next to each other.

After a eight hours workday Ester has to get her youngest son

from the school. Currently the father is unemployed so he takes care of the food and house. The garbage of the house the father normally takes in front of the house and the public waste gathering service will take those away. In the evening they usually have dinner and discuss about what happened during the day.

### **Kristan**

#### **Scenario 1**

Themes: Water basin & Media centre, people make their own bag

Esi looks at the garbage in the corner of their little hut. She wants to make another bag in the atelier, but she does not have enough waste yet. She decides to visit the neighbors to see if they have some garbage she could use for her bag. Her neighbor Abina does and she can get their waste for her bag, they agree next time her neighbor can also use her waste if she wants. Esi is happy her neighbor gave her the garbage and she already sees some useful materials for the bag. Quickly she hurries to the bag atelier, which is near the water basin. This is done because the water of the water basin is used to clean the garbage. Afterwards the water is filtered and purified and leaded back to the basin. Esi still does not understand how they manage to do this, it is almost a miracle.

When she arrives at the atelier Esi starts to split the garbage, she puts the useless waste apart from the useful and the useless stuff she separates further. There are containers for organic waste, steel, wood, plastic and toxic materials. The materials she wants to use she takes to the cleaning facility, and she cleans them. There are different cleaning options provided for the different materials and afterwards the materials can be

dried outside. Since it is a hot day Esi's materials are dry quickly and she then takes them to the actual atelier. She ended up with some really nice and colorful plastics and a piece of plastic board. With the blueprint, a guideline for the bags, by hand she decides how to make the bag and she decides to buy some new materials. People can buy new materials in the atelier to complement the garbage they brought; they buy them on account and pay them back with the money they earn with the bag. Esi sets to work and makes her bag. The atelier is supplied with all kind of machines and Esi likes working with them. After nearly five hours of work her bag is finished. She shows it to the other women in the atelier who are impressed by the colorfulness of it, they all like it. Then she goes to the atelier supervisor who manages everything and sells the bags to a company in The Netherlands. He judges if the bags meet the quality standards and then for each bag the people get 10 Euros. Esi's bag is found good enough and after subtraction of the materials she used she gets 9 Euros. Happy she goes home, this week they will have enough money for food. Since her husband is unemployed it is hard for them to get by.

## Scenario 2

Themes: Water basin & Media centre, printing garbage

Chacha works in the printing/media centre of the community and he is responsible for the new garbage bag project. Together with the Social Entrepreneurial Design Group he set up a new project to collect the people's garbage. In this project the people can make their own bags out of their garbage. The people have to bring their own garbage to the collecting centre. The collection centre just like the bag-making atelier is situated next to the printing/media centre. In the collection centre the garbage is sorted and the material which can be used for the bag making is cleaned. When people have brought a certain amount of garbage they are allowed to make a bag. In the printing/media centre they can design the bags using the available computers. Because some garbage materials are dull and colorless they have the ability to print on the garbage. With a special printer the people can print on plastic bags, fabrics and thin plastic sheet material. This enables the people to make colorful and distinguishing designs. Chacha's job is to help the people doing this. Since the community members do not have much experience with working with computers it sometimes is difficult for them to use the printers. Because of this Chacha has an important job and everybody looks up to him. He self also sees it as an honor to do this but he also would like to work in the city again. He

was one of the few people who found a job in the city and he worked as a secretary. It was this job where he learned to work with computers.

When the people are finished with printing their materials they go to the bag atelier to make the bags. Here they can also buy some new materials which are subtracted from the payment they receive for the bags. In the atelier they have some sewing machines and other machinery to make the bags. When the people are finished making their bag they can sell it to the atelier manager who then sells the bags to a Dutch company named “De Bijenkorf”. Chacha and the atelier manager are the two people who run the bag making project, and they have two more employees working at the collecting centre sorting the garbage. Chacha is responsible for the selling to the Dutch company, which he really enjoys. In future he may even go to visit The Netherlands to see how the bags are sold. He really looks forward to this.

## **Marzia**

Scenario 1:

Themes: Households, game

Omisha and her family were very excited that Sunday afternoon of April: After the whole week collecting and selecting the right kind of garbage for their household container it was time for the contest. All the neighbors of the households were preparing everything for the race; it was the first one after the new system for collecting garbage was set. This new system consisted of a complex of 5 containers for garbage, each one for a concrete kind of waste (paper and wood, plastic packages and bottles, useless pieces of metal, organic waste and glass) and also one for each block of houses. As everybody produces similar scraps, they were told to separate them into the 5 containers, although every household had assigned one determined for the weekend race.

Everybody was excited and the adults were checking to have only the assigned materials in their container, as it was a requirement to play in the race. At 6 o'clock in the afternoon, the local authorities and other quite important dwellers appeared at the households to check the containers and give the sign to begin the race: From the blocks to the community centre pulling the carts of the containers with the separated garbage.

Omisha's father was the captain of the plastic cart and within other men of the block was going to take part of the race. The following week would be the turn of women's team and the next one the children's turn. This order was decided by popular voting taking into account some safety terms: The first week the amount of garbage to collect and separate were going to be much more than the followings, that the streets of the slum would have been already cleaned for the previous races so children could pull the cart with lower weight.

All the teams were ready to begin, the start line was crowded and the expectation grew up minute after minute...PAM! The sound of a giant drum gave the sign to start, and within the teams and their carts everybody began to run toward the Community Centre, where some members of Sodyco and also dwellers were waiting for the winners.

The teams had to overcome some obstacles in their way to the goal trying not to lose their materials to reach the Community Centre. The plastic team was ahead, but followed very close for the metal's one: Omisha's father cheered his team, they only had to overcome the obstacles of the waterbassin and they would arrive to the goal!!

Many inhabitants went directly to the community centre to be in first line of the goal to claim the winners...and that was the plastic team!! They arrived the first with some advantage from the metal cart, and then very close the paper and the organic, and then the glass team.

The race had been very successful and everybody seemed to be very happy with the activity. The Sodyco members congratulated the winners and gave them bottles of water for their great race.

Now it was turn to select the useful garbage to make the bags, so not only the winners but everybody took materials from the carts and went to the atelier workshop to work on their bags. There were some posters with explanations for the process and the requirements for the bags, but everybody could design the graphics of their bags choosing the colors or the brightness of the materials to use.

## Hester

### Scenario 1

Theme: School, waste separation, team work among school kids, bags from workshops sold in bijenkorf

During school holiday the children of the local school are offered a nice day activity organized by the school. The activity is mainly to collect materials with a specific color and use this in teamwork situations. For boys and girls different activities are thought out. A football tournament is available for the boys and the girls can spend there time on making a bag together in a team. For the kids who can not decide, there is an opportunity to practice a play. For each of these workshops, teams are made which will be identified by a certain color. The football teams with each a different color, the girls making each a different color bag and the different roles in the play which will need an outfit.

The first day of the vacation, after the explanation and division of the workshop, the children are asked to collect garbage at the waste heap in the certain color for their activity. The garbage can be collected with the garbage collector wagon and then be putted in containers like shown on the picture. After this week of workshops, all the material which was used for the football teams and for the play outfits is kept by the school in the certain color division so this can be used to create bags



during other school activities, for example making bags. These bags can be sold in Holland and the profit will go to the schools in the slum so new study materials can be bought. The sand waste in the slum can be used to identify the football field lines and for the building of the decors for the play. Also the bags might be decorated with the sand in a certain way. At summer periods, these workshops are also organized in weekends, this way the collection of bags which can be sold in the Bijenkorf are supplied continuously.

Equipment for the workshops and packaging for the bags is financed with the micro credit.

### Scenario 2

Theme: Fabric atelier, creativity workshop, use waste material for bag creations, originality for each slum, sold at bijenkorf

At the end of each month, the left over pieces of the fabric atelier which are collected and saved during the whole month are used for some creativity. The creativity workshop is totally based on the usage of waste material and everybody can join. Flyers are spread in the slum to invite as much people as possible for creating bags at the fabric atelier. Every participant can increase its creativity and originality by bringing his or her own garbage.

A standard design for the bag can be used, created by the SEGD team, as a basis for the bag design. This way, each month a collection of bags of the same basic shape will be created. This will emphasize the ability to identify the location of where the bags are made. When scaling up this system, so when different slums will join this project, each slum might have its own basic bag shape or basic design. Then in Holland the location can be identified, so in which slum the bags are created. The slums will feel original and proud of their specific bag creations which will be admired in Holland.

### Scenario 3

Theme: School/ fabric atelier, blanket production, bags made from blankets, bags sold by bijenkorf

In winter the temperatures in the slum are lower than how the people are used to. Although there are also times when the wind takes up and the sand on the streets and other places outside blows inside during the lessons. For these reasons, the schools in the slum cover their entries with a blanket. These blankets are made every year during workshops for the children who get taught at the school. Every year in the end of the summer these creative activities take place in corporation with the fabric ateliers. The fabric atelier saves up all the leftovers from their fabric work, which then can be used by the school kids to make their own blanket creation.

Then, when the cold times are over and the blankets are not useful anymore, the blankets return to the fabric atelier. Here the blankets will be used to create a collection of bags from, which then can be sold in countries as Holland. The money which will be received can be shared between the school and the fabric atelier to be used for school or fabric work equipments.

## THIRD REPORT

### Kristan

#### Scenario 1.

Chair with only legs at one side.

Today is the big day. Together with her team Garcia will participate in the 'Chair together' competition. In this competition they will do all kind of games in which they will have to face the other house blocks of the slum. They will do a stool dance, a move your chair race and other kind of games to see which house block is best with the chairs.

The chair with one leg is the latest and really funny product of Sodyco. This chair can only be used when you have at least two people with chair. The chairs can be connected side by side by the connecting system and hereby you can create in theory an endless line of chairs. The chairs are mostly used in the community centre and other social events like the open air cinema, but some people also use them at home. The chairs are made in the steel workshop and sold to the people for ten euro each.

At the big 'chair together' event all chairs are brought together and are used to play games with. Garcia's team is one of the favorites and they start with their favorite part, the chair race. In this race the people have to make one line of chairs, go stand on it, and then move the line forward by removing the last chair and move it to the front.

#### Scenario 2.

#### Round couch

Mugab is working in the furniture workshop. He is in a big hurry because the couches need to be finished this afternoon. They will be used in the community centre for the presentation about health and hygienic that evening. The community workers already collected all couches in the community and rolled them to the community centre. To accommodate all the community members however they need three more couches. Mugab is working on the three couches together with his two colleagues.

The couches can be rolled.

#### Scenario 3.

#### Take your bed

Magu and his wife wake up early that day. Together they quickly change the bed into the sitting position to have breakfast. His wife heats up the breakfast, which actually is the rice they left the day before. Then Magu leaves the house and walks to the bus station outside the slum and takes the bus to the city. Since one week now he works as a cleaner in one of the big hotels in

the city. He is really proud of this and when he gets paid he will finally have enough money to send his kids to school.

Also the slum is improving lately because of the projects organized by Sodyco. With their latest project they provided good furniture for everyone. The couch which can also be used as a bed is a really clever design and because of its portability it is possible to take it anywhere. Sodyco is also organizing open air cinema now and also in the community centre the couches are good usable.

When Magu comes home there will be an open air cinema. After having diner he and his family go there.

## **Joel (pack of scenarios nº4)**

Scenario 1.

Scenery: Wood workshop

Pablo is one of the 20 workers who sweat for the good of his family in the hot workshop. The surrounding is extreme. Even though its hot outside its even more hotter at workshop when the temperatures near the dangerous machines at daytime can climb up to +40 degrees.

The paste at which they work is also fierce. They have a lot of orders because the low costs that the workshop has due to the low salary which the manager has to pay to the workers. But it's something and that something is what makes those guys go there every day. They only have two breaks during the day and those Pablo uses to go to the roof of the workshop, eat and have a cigarette. Many things go through Pablos mind but in the end he consider himself a happy man. He has wife who is pregnant and he has some sort of income although the work is hard and dangerous sometimes. But there has been some interesting things that Pablo had to manufacture few days ago. They were the mobile stool which had to be made for the community so that the people would be able to take them to the public events and outdoor cinemas. Pablo and his friend

were more than happy to work for those stools which had a good response from the public.

But after hard day at work Pablo is exhausted. He walks home with his friend because they live in the same block. After a warm meal his able to stay up only few hours and that time Pablo usually uses to have a talk with his wife about the ongoing events in the community.

#### Scenario 2.

Scenery: Community Center

The day has been busy for the community center manager Dani. They have just started to distribute the mobile chairs which are given for each block to public needs. Those needs are mainly socializing, public events and outdoor cinemas which are in great favor in the slum.

But Dani is in a worry. He only hopes that there's not going to be any violence or damage done to the chairs because then people could get angry to each other and he could be able to provide more of them. even though he has organized a repair shop to the CC.

The line is getting longer but Dani has no problems to manage because his one of the most trusted persons in the community. This trust is gained through many good events which people

have liked a lot. Dani also sees a few unfamiliar faces among the normal community people. Those person have come here in a hope of having those chairs but Dani has to say no because those people are not living in this part of the slum. That's also one thing which for Dani hopes that this public custom would take place in every slum.

#### Scenario 3.

Scenery: Steel workshop

Caglayan is a traveler who ended up working in this steel workshop through many colorful events which some of them are not so glorious. But those events have made him stronger and he is very committed to work in that workshop because he has a child coming with woman called Bahar.

Caglayan has even learned to like his work because he has met few good guys at work. After a hard day at work Caglayan and the guys normally sit at the ports of the workshop and have a beer.

But now it's Sunday and there's the open doors cinema. The guys at work have had many discussions about the film that they are going to play there and everybody is enthusiastic. When the work day is over the guys hurry home and take their wife with them. They have heard that there even new chairs at the cinema so the experience would be even more glorious.

They normally had to sit on the ground through the whole film. The Film starts and people sit on the new comfortable seats. Everbody enjoys the movie and Caglayan even notices that the few parts which he manufactured two days ago are in those chairs which they have.

## **Marzia**

### Scenario 5.

Yanwo was the father of a big family in the slum; he worked very hard at the Wood workshop to earn Money to feed his 4 children and his mother, who was unable to work because of her age. Mali, his wife, took care of the house and the children but also was working in the fabric atelier in the manufacturing of the bags for the Bijenkorf, the last project of Sodyco in the slum.

Since the social entrepreneurs arrived their lives turned to best day after day: now they had electricity, a continuous income of money because of their work, the lifestyle in the slum was better, safer and relaxed...And now it was going to be even better! That morning Yanwo and his wife were going to receive at their workshops the design guideline for the manufacturing of a Mobile Furniture, that a part of being sold at the slum would be also brought to the Bijenkorf and sold for much more money; definitely this mobile chair was going to be a very good deal for everybody. The previous week there was an opening event at the community centre to explain the dwellers the project, and it seemed again that everybody was going to take part on it and see the common benefits. The mobile chair was thought initially only for the open-air cinema that was placed in

front of the waterbassin some weeks ago, but now, to prevent the quick worn-out of the furniture and taking into account that it is mobile, they decided to place them at the Community Centre and only brought them to the open air cinema when there was a play.

The special thing of these chairs was the authenticity of every single piece: a part of being made at the wood and fabric workshop, where the local artist carved to good with the symbols of their country and their slum. Then the smallest sizes went to the school, where the children could end up the decoration, painting the carved sculptures and also the fabric. Another special thing a part of the customizing was that they were foldable so easy to transport and carry, but maintaining the robust structure. Because of its robust structure, the mobile chairs had another function: They could be used as supports for a table. With 2 chairs and a wood plank a nice and robust table was set, and it was possible to add more chairs and more planks to have a longer table. This function could be very useful for Community dinners indoors and outdoors when there was no film at the cinema.

#### Scenario 6.

Linthy was a seven-year old girl from the slum, and she was very happy because the open air cinema sessions were going to begin that weekend. With the new inflatable screen near the waterbassin, weekend nights at the slum were beginning to be different, definitely better, safer and calmer than they used to be. All the children were especially excited, probably because they had seen how their lives improved every time that Sodyco set a new project in their slum. Also, it was going to be the opening not only of the open air cinema but also of the mobile furniture that many dwellers had been building for weeks. The system of the new furniture consisted in a structure of steel similar to the swing for children, placed in front of the inflatable screen for the cinema. Then every family and everybody who wanted could have a specially manufactured piece of fabric to hang at that structure and used it like a bench to sit comfortably while the film is being played. When there's no film being played, the swing structures can be used for children as an extra place to play, just attaching a rope and an extra support to sit down.

The piece of fabric was manufactured at the atelier workshop, and sold at the supermarket, that has recently expanded its building because of the success of the pedal stools and the batteries. The best thing of that piece of fabric (completely

customized by each family) was that after the cinema session they could remove it from the swing's structure and brought it back to their homes and give to it another use. For example as it is thick and waterproof, Linthy loves to use it as a tent to play with her friends outside the block of houses. Mathe, her mother, that is a worker of the atelier workshop, sometimes uses it as an umbrella for the sun or even for the rain!

At 8.00 p-m all the household's dwellers were ready with their fabrics hung at the swings waiting for the film. It was calm, warm weekend night of May, Harrison Ford starring at the film, and many of them appearing the streets of their slum.

Scenario 7.

It's fantastic! - Exclaimed a group of men in the Community Centre- That Saturday was the opening of the new project of Sodyco, an open-air cinema set in from of the waterbassin, for what they would have to build some special mobile furniture. The design guideline they Sodyco proposed was to build some wood chairs with an attached space for storage. Then if you want to sit by your own you can use this space for storage your things, but the best part is that to sit at the cinema you have, or you can, put your storage space inside the storage space of your neighbor's chair, and then sit together and share this space during the film.

## **Robert (pack of scenarios nº8)**

Scenario 1

Themes: Furniture, neighborhood meeting

Kaba is the man of the house; he is 36 years old and works as a civil servant at the community centre. He is married for 15 years now and they have three children.

Kaba has an important role in the community and is a man of prestige; so many people in the slum respect him. His task is to announce to the slum when there is a neighborhood meeting at the community centre. The head of the slum gives a speech once a month, but the last time people were complaining about having tired legs, because of the fact that most of the dwellers had to stand for approximately two hours, listening to the speech. This led to the departing of many dwellers.

So, or the head of the slum had to shorten his speech, what he did not wanted to do, or he had to arrange something so that the people would not have to stand the whole time. This is where Kaba comes in. He was given the assignment to ensure that everybody has a seat at the moment of the speech. So he considered making a light, stable and extendible bench for every household, which everyone could buy for little money, bring to their houses, where they can use it, and then when there is a speech, and bring to the community centre.

#### Scenario 2:

Themes: Furniture, multi usable furniture in house.



Melaka is an old man living with his whole family in one house, and because he is getting more and more crippled, he wants to have a movable seat, to rest now and then. At the moment Melaka notices the irritation of the family members, because he is not able to move quickly what leads to the fact that he is not a real help in the household anymore. He wants to do things like helping with washing the food or watching the children, but the only thing he can do now

is sitting on the edge of the bed. If he had an extendible chair like the one on the right, he could mobilize much easier and can help people with small things, because when he arrives at a point he just unfolds his cane and can get to work at that particular place, instead of having the need to search for an appropriate resting place.

#### Scenario 3:

Themes: Furniture, hospital stretcher

Kaba, the man from the first story, walks through the slum when he suddenly hears an awful scream coming from a rocky hill twenty meters from him. He walks with a hasty but cautious pace to the sound and when he arrives at the ridge he sees a boy lying on the ground, with a twisted knee. He wants to lift the poor boy's body, but then the boy screams even louder. Kaba was thinking what to do, and then he thought of his own made piece of furniture, which he made for each household. His own house is for sure ten minutes walking from here, but this is a good opportunity to check if his system of supplying every household a bench, had worked. So he told the boy to hang on and that he will get some help. Within two minutes he was back with a bench and three other dwellers. The boy got lifted on the bench with care and got carried away from the rocky path. He was brought to the neighbors of the boy, who happened to be doctors.

Without this bench he may have had some more injuries.

**Hester**  
**(pack of scenarios nº9)**

**Scenario 1:**

Moving furniture, during events like garbage race, general property

The moving furniture is actively used objects in the slum. At each event the furniture, which is mainly banks on which more than one person can sit. Now people are able to enjoy together of the functionality and comfort of the furniture. The furniture is seen as a general property of the community, so everybody is able to use them. During events in the slum, for example the garbage race on Sunday, the furniture is moved from the school (where it stands during the week in the classes and on the playground outside). So for the race these furniture pieces, which are about 10 banks, made in the wood and steel workshops, are moved to the community centre where the people who will not run in the race can sit down and watch how the race gets started. Then during the racing, the people who sit in the furniture move the banks to the garbage point, where they can sit down again and look how the racers cross the finish line. Also the racing people can use the banks to sit down and rest.

After the race, when at the cooker a big dinner takes place with all the members in the slum, the banks are again used to sit on during eating. When the evening is ended, the men of the slum

will roll the banks back again to the school, so on Monday the kids in the slum can easily follow lessons again.

**Scenario 2:**

Decoration by kids at schools at every house block

A set of new moving furniture is entered in the slum, so the wood and steel workshops had a big task to complete. When the furniture is finished, those are brought to the school where the kids can decorate these banks with painting creations. These decorations are specifically for each of the four house blocks, so each house block will have its own creation and own identity. After decorating, the furniture is brought to the proper house block where it will stand in front of the houses. Now people of each house block can enjoy outside and make use of the personalized furniture.

**Scenario 3:**

Moving furniture to play the game of 'crazy court' or soccer.

During breaks, the children having lessons at the school can move their furniture out the classes and do plays with it. So the one day they point out a soccer field with the banks, but the other day they set up a 'crazy court'. For the second game the children make 2 big groups so that the first group can set up a 'crazy court' for the second group. The first group needs to manage it in such a way that the second group can not figure out how to find the exit.

## CALCULATION

	Amount per bench	Where received	How long to manufacture	Costs (assuming that the loan of a workman is 2 euro a day)
Fabric	1 square meter	produced in the fabric atelier	½ day by one person	1,00€ for loan 0.43€ for fabric (*source 1)
Wood	1.5 square m of plate 30 cm of trunk 4 thin beams, 2 m in total	From other slums which are located near the forest and trade in their manufactured wood, it takes half a day to manufacture so it is usable for the bench. The trunks can be received from trees in the neighborhoods and be cut into the correct pieces in the wood workshops	½ day by one person to get the bought pieces of wood and the cut trees in the suitable shapes to assemble the bench	1,00€ for loan 4.50€ plate 1.70€ beams (*source 2)
Steel	2 meter of steel hollow tube with diameter of 4 cm	From second hand sources like old ships found in the neighborhoods or from slums that trade in their manufactures steel, it takes a half day to manufacture	½ day by one person	1,00€ for loan 4,00€ for steel (*source 3)
Paint	0.3 L	From the fabric atelier	½ day in the school by the children and local artists	0.30 € for the paint (*source 4)
Total price of the bench				13.93 ≈ 14,00

\*(source 1: [www.alibaba.com](http://www.alibaba.com), source 2: [www.speurders.nl](http://www.speurders.nl), source 3: half of the PMB prices, source 4: [www.gordkoopsteverf.nl](http://www.gordkoopsteverf.nl))