



Development Geography Occasional Paper

Naivasha as a development hub - What are relevant problems related to ongoing developments in Naivasha?

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From the 30th of July to the 7th of August 2015 the participants of an excursion to Kenya of the Geographical Institute of the University of Bonn conducted a field school in Naivasha. Focus groups worked on topics like waste management, tourism, consumption, water management or fishery and organized their own empirical study with the support of research assistants from the University of Nairobi for five days under the supervision of Prof. Dr. Detlef Müller-Mahn, Dr. Samuel Owuor and Andreas Gemählich. The results of each group are presented in this paper.

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1. The structure of Cooperations amongst Institutions in Naivasha

Susanne Kempf, Daniel Schmitt

1.1. Introduction

“It gives a feeling of security, when everyone is on board!” (Employee of NGO in Naivasha)

Naivasha is known as an economic hub due to its flourish flower industry and divers landscape with the Lake Naivasha and several national parks in the area.

Nevertheless, Naivasha struggles of socio-economic development and the fast population increase has reinforced it.

A large number of international, regional and local non-governmental institutions (NGI) are working in Naivasha for a long time. Non-governmental institutions include all kinds of organizations who are working in the field of development, including non-governmental organizations (NGOs), FBIs, CBOs and many more.

With this high density of NGIs in Naivasha, the question comes up, how these institutions coordinate their work to be efficient. Thereby, it is also important to take into consideration the cooperation with the sub-county of Naivasha, who is responsible for their coordination of government bodies.

Therefore, the following main question will be asked:

How is the cooperation of non-governmental institutions amongst themselves and the sub-county of Naivasha's administration?

To get an overview of existing cooperations and also to get a better understanding of the meaning of cooperations with their benefits and challenges in Naivasha, the following four guiding questions will structure the research.

1. What cooperation and organization exist amongst non-governmental institutions and the sub-county?
2. What are the achievements of the cooperation amongst non-governmental institutions and the sub-county?
3. What are the challenges of these cooperations?

4. What are the expectations for existing and future cooperations?

The research should give an idea, how the work of development cooperation is organized and structured in Naivasha. To answer these questions, several interviews with different non-governmental institutions and one interview with the Department of Social Development of the sub-county will be carried out.

1.2. Methodology

In order to answer our 4 guiding questions (see Introduction) we executed 6 expert-interviews with representatives of their institution, namely World Vision, Agatha Amani house, Kenya Red Cross, Imarisha Naivasha, KNOT. Per contra to a quantitative research approach, this qualitative method incorporates subjective feelings, current positions of the institution and personal experience of interviewees in the outcome of the research process. The interviewee thus is seen as a subject, being potent in his orientation, interpretation and communication (SCHÜTZE 1978: 118). Hence, the interaction between the two involved parties is seen as an ingredient and enrichment, rather than a disturbance (KÜCHLER 1983: 10). In addition the hereby accompanying flexibility allows for immediate processing of the interview guideline, if new information is mentioned. If new dimensions of relevant data was introduced, it was possible to adapt our pre-assembled structure, and steer the conversation in the direction most valuable for answering our guiding research questions.

Summing up, expert interviews as a tool suited our research due to the outcome being close to the social environment and applicable in a more flexible way, both in the process of surveying and interpretation.

The above mentioned guideline of the interviews can be seen in the annex. It functioned as a structure for the conversation and helped the interviewer to orientate during the talk.

For the analysis of the collected data we transcribed the interviews and executed a Qualitative Data Analysis (QDA). In order to extract the relevant aspects of the mentioned information, the QDA approach is “based on an interpretative philosophy. The idea is to examine the meaningful and symbolic content of qualitative data.” (NIGATA 2012: 24).

Relevant passages of the interviews were sorted into four categories: Cooperation, successes, challenges and expectations. Each categories content being later compared and crosschecked to each other and finally transformed into a part of the final representation.

1.3. Structural overview of the sub-county of Naivasha

After the introduction of the new constitution in 2010, Kenya was divided into 47 county districts that have their own functions, structures and challenges. Each county also has a number of sub-counties, administrating the lowest level of government in the specific area.

The sub-county of Naivasha belongs to Nakuru County in the Rift Valley province. It is also one of the 11 constituencies of the province.

The Administration of the sub-county of Naivasha is responsible for the coordination and management of development policies and plans, service delivery, development activities, maintenance of infrastructure and public service facilities and citizen participation. Its highest administrator is the county chief officer, who represents it on a national, county and sub-county level and manages its administration.

Each sub-county contains of various departments. For our field-school, the department of Social Development, which exists under the Ministry of Labour, Social Security and Services, was the most important one, as it has the mandate to coordinate different actors in the field of social development.

1.4. Overview of existing cooperations in Naivasha

In our empirical work, we encountered various links and connections between NGO's, county government and other forms of institutions. Noticeable in the refurbishment of the data were two different concepts of coordination between stakeholders. One being a government initiated umbrella organization called Imarisha, well-funded and equipped by foreign aid and country internal resources, one being a stakeholder forum for gender based violence (GBV), owned and run by its members.

Imarisha Naivasha was formed by the government and has its purpose in connecting all stakeholders engaged in environmental issues around the lake Naivasha. Due to its official mandate and immense funding (Imarisha Naivasha employs around 20 full time workers) the organization is able to connect key stakeholders and coordinate between

them, resulting in a very organized structure and sharing of successes and challenges. Its problems lie within the durability and constability, as its funding only runs until late 2022. With the actors and NGO's that profited from the organization so far, only playing passive roles its future is not yet determined, especially as the benefits of its existing so far came without a price tag.

On the opposite site, the research was able to identify a forum that notwithstanding has problems with its orderliness but is owned and run by the members itself. The GBV forum consists of many actors involved in woman and youth issues, and besides connecting its associates, tries to get to know each NGO's capacities, specifications and experiences.

After the former head-organization of the forum – Woman Empowerment Link – stepped down and focused on internal projects, the regularity of the meetings decreased and the lack of finance poses new challenges.

Our research showed this two forms of organization of cooperations between institutions of Naivasha. Both present strong pro and contra arguments and face immense challenges in the future. In order to come to a conclusion, further studies have to be made and more information on the specific socio-cultural context have to be gathered.

1.5. Achievements of cooperations

By analyzing the interviews in regard to the achievements of cooperations, it can be pointed out that cooperations lead to the coordination of the different agencies. Through cooperation, the different institutions get to know each other and their specific work field. With this knowledge exchange, the institutions can supplement each other and therefore improve their services.

It was mentioned that during meetings of the cooperations, but also outside of the meetings, the different institutions stay in contact and if one institution has a special case that they are not in the position to deal with it adequately, they refer this case to another member of the network, who has the capacity to take care of this specific case.

1.6. Challenges of cooperations

Through the interviews, it was obvious that there where different challenges in the cooperation amongst the non-governmental institutions and the sub-county.

One aspect, which was mentioned by nearly all of the institutions, is the guarantee of funding and therefore, the sustainable and proceeding of cooperations. For small non-governmental institutions, the securing of funds is a major problem, but also for bigger, international non-governmental institutions because oftentimes they are confronted with too high expectations of their financial situation, which is not adequate to their budget.

Also the sub-county mentioned their small budget, but they also pointed out their broad knowledge which enables them to work closely with the community.

Another aspect, which is also connected to funds, is the sustainability of cooperations. This is also related with the ownership of cooperations. People should own the cooperation, so that they take over the responsibility for them and therefore, cooperations can last longer. These would also lead to an ensured direction and coordination of them.

Furthermore, it was mentioned, that the complex bureaucracy and protocol of cooperations and networks leads to slow down the proceeding and implementation of them.

As well, the accessibility to cooperations and networks where considered differently. The accessibility to cooperations seems to be easier for big, international institutions. Whereas the accessibility for smaller NGOs seems to be more difficult.

It was also mentioned that the cooperation with the sub-county struggles because they are not reachable and did not had the capacity. The “efforts with the sub-county have not yielded any fruits” (M.B.).

Furthermore, it was pointed out that especially state facilities work not completely free of charge.

Finally, it was mentioned that they have to be a harmonization of the different NGOs so that they don't overlap in their work and therefore the cooperations are necessary.

1.7. Expectations of cooperations

The main expectation of cooperations is to improve the work of the institutions by helping amongst each other and with the sub-county by making arrangements. These arrangements and therefore the closer cooperation can “avoid a lot of misunderstanding” (I.N.). Another expectation is to scaling down operations and have a connection with other NGOs and the sub-county.

To take into consideration the special situation in Naivasha, it is also expected to minimize the amount of brief case NGOs in the area.

By analyzing the interviews and taking into account the positive outcomes of cooperations and the benefits of networks, the recommendation is to implement coordinative forums for all sectors. As it can be seen in chapter 4, there already exist different forums for different sectors. But as far as we could find out, there is none for education. By implementing cooperation to this sector would help to improve the work of the NGIs and would help to supplement the work of each other and therefore improve the educational situation in Naivasha.

The above presented achievements, challenges and expectations are just a selection of mentioned statements which were pointed out during the interviews. The above represented statements were mentioned by different institutions and therefore confirmed by different institutions.

1.8. Conclusion

We would like to point out that there are different approaches of networks, community-driven approaches or government driven approaches (f.e. IMARISHA). Both have their strengths and their weaknesses. Either one or both can exist and present valuable structures for current and future cooperations that are continuously demanded from all sites.

Furthermore the size and significance of a NGI has large impacts on the accessibility to cooperations, especially on governmental sectors. Due to the multifaceted and diverse landscape of institutions in Naivasha, entry to forums or other bodies of partnerships are very needed and desired. The sub-county therefore is often asked to take a bigger, more central role in this field of networking, especially for smaller NGI's. Still there is also a high demand for "bottom-up approaches", interested in community and stakeholders owned networks that are funded by its members and thus have a high chance of sustainability.

We would like to end our research the same way we started it by letting one of our interviewee emphasize the relevance of cooperations between institutions in Naivasha

"(...) networks can help us fulfill our goals, our vision!" (Employee of NGO in Naivasha)

1.9. Annex

Annex 1: Guideline questions for expert interviews – Naivasha

Guideline questions for expert interviews – Naivasha:

1. Can you give us a brief introduction of the work of your organization?
2. Can you describe your position in your institution?
3. Do you have any contact to other NGO's and the sub-county government in Naivasha? (Probe for: working groups, for a, seminars, conferences, trainings)
4. How does your contact to other NGO's and the sub-county government in Naivasha affect your work?
5. What problems are you witnessing in the cooperation with other NGO's and the sub-county government?
6. What successes can you identify that are results of working with other institutions?
7. What are your plans for the existing cooperations?
8. Do you have wishes to form new cooperations?
 - i) If so, what are plans you have in place to ensure they work effective and sustainable?
 - ii) If not, what are the reasons behind not forming new cooperations?

2. How does the increase of solid waste present a problem for the ongoing development of Naivasha Town?

Anja Lamche, Annika Tritsch, Leonie Gomm

2.1. Introduction

In July and August 2015 students of the University of Nairobi and the University of Bonn participated in a field excursion of the Department of Development Geography of Bonn. In the five days field school with the overarching topic “Naivasha Town as a development hub – *What are relevant problems related to ongoing developments in Naivasha town?*”, waste management has been identified as one of the most relevant challenges Naivasha is facing.

Like many other African countries, Kenya is affected by environmental pollution through waste dumping all over the countryside. Thereby solid waste is not only dumped in the streets and along the highways, but also on farm fields, in residential areas and even natural reserves. An efficient management of waste collection and disposal appears to be one of the big challenges Kenya is currently facing.

This problem can be also observed in Naivasha, a constantly growing Kenyan town in Nakuru County in the north west of Nairobi. Thanks to its close proximity to the Lake Naivasha, which generates various job opportunities, Naivasha attracts many people from neighbouring areas as well as from distant places. Besides numerous challenges, this influx of migrants causes difficulties in the waste situation of Naivasha Town and its surrounding areas. Affected by this problem are not only places which are inhabited by lower income classes but also rich residential areas – although a disparity in the degree of solid waste pollution between these places can be perceived.

This problem leads to the following research question:

How does the increase of solid waste present a problem for the ongoing development of Naivasha Town?

The following guiding questions attempt to provide insights into the subject and support an answer of the research question:

What causes the increase of the quantity of solid waste?

What is the spatial and social differentiation of waste and waste management in Naivasha Town?

How is the waste disposal managed and which potential conflicts could arise?

The present paper contains the findings about waste management, which have been researched during the five days field school in Naivasha.

2.2. Methodology

The following methods were identified as being appropriate for answering the research's guiding questions:

- Observations and informal discussions
- Expert interviews
- Standardized questionnaires
- Mapping

2.2.1. Observations and informal Discussions

To get an impression of the waste situation in Naivasha Town the first step of the field research was observation of the city centre and some informal discussions with residents. During the first visit a high amount of solid waste – especially plastic and micro plastic – was observed all around the place, which was often tramped deeply in the ground. Furthermore there were some sites where solid waste was gathered in even higher amounts by which these locations seemed to be illegal dumpsites within the city centre. In addition you could hardly find waste bins in the whole city centre, although nearly every product – especially on the market and in the supermarkets – is packed into one or several plastic bags. The widely dumped solid waste blocks also the water runoff in the city. While observing many people littering in public places, you can easily get the impression that Naivasha's residents lack the sensitization of polluting the environment by dumping waste in the nature.

Besides the littering you could also detect reutilization of waste like cement bags, which were used to fill gullies or processed into mats for drying grains. Some people also make their living through the dumpsites by collecting and selling plastic bottles.

During the visit of the market side one of the vendors explained, that the market waste is collected twice a week on Monday and Thursday for free by the County Government and is taken to the dumpsite in Kayole. Meanwhile in the living areas the waste is often collected by private organisations or private persons once a week, who charge for each collection 20 KSH. The observations, which were done during the field visits in two of Naivasha's neighbourhoods "Lake View Estate" and "Kihoto", are going to be described in chapter 2.3.

2.2.2. Expert Interviews

The method of qualitative expert interviews was chosen for this research due to the need of local and specialised insider knowledge about the waste management of Naivasha Town. The identified interview partners were experts in waste management with different backgrounds due to their occupations. This made it possible to get access to various and detailed data. Besides their knowledge about the current situation and developments, they were also aware of former times and therefore able to compare the solid waste situation from today with that of the near past. While orienting on some guiding questions, the expert interviews left a lot of freedom for further explanations and unforeseeable discussions.

Interview I

The first interview was done with the director of the Department of Environment of Naivasha Town - Mr. Sam Ngige, who explained, that the solid waste collection and disposal is not managed properly in Naivasha. He saw one of the reasons in the outdated management system and the thereby associated challenges such as lack of capacity, equipment and staff. As this could be changed by buying trucks and employing workers, you can conclude that there is in general a lack of capital. This assumption is confirmed by Mr. Ngige's statement that the issue of waste management is not of high priority for the district. According to Mr. Ngige the waste management is not prepared to serve to growing number of Naivasha's residents. The government sees one solution in public-private-partnerships, which means that the governmental organized waste management is accompanied (in residential areas even replaced) by private actors. Another reason is seen in the shift from state-supported welfare groups – the so called youth groups – once carrying out about 90% of the collection and disposal of solid waste to solely fee-based private actors and organizations. In contrast to the near past, households are now charged up to 250 KSH (instead of around 50 KSH) per month for the collection and disposal service – depending on the level of income. However many households refuse to register themselves for the fee-based services which leads to high

amounts of uncollected waste in Naivasha’s environment. Due to the lack of vehicles hold by the government and the high rental costs for private truck rentals, the youth groups lack means to get back to work. A future solution for the disposal of solid waste is seen in using waste incinerators as well as buying larger land which will be used as dumpsite.

While Mr. Ngige experienced an increase in the amount of solid waste over the last years, he could not see a difference in its composition due to changing consumption patterns and packaging. Owing to a lack of reliable data he could not give precise information about the exact amount of solid waste produced by Naivasha’s population. However he guessed that there were around 70 tonnes of solid waste disposed per day on one of the two dumpsites of Naivasha. That makes around 2.100 tonnes per month and 25.200 tonnes of solid waste per year on one dumpsite.

Mr. Ngige’s information concerning the organization of the waste management in Naivasha and relevant stakeholders as well as those of the other interviewed experts are summarized and illustrated in figure 1.

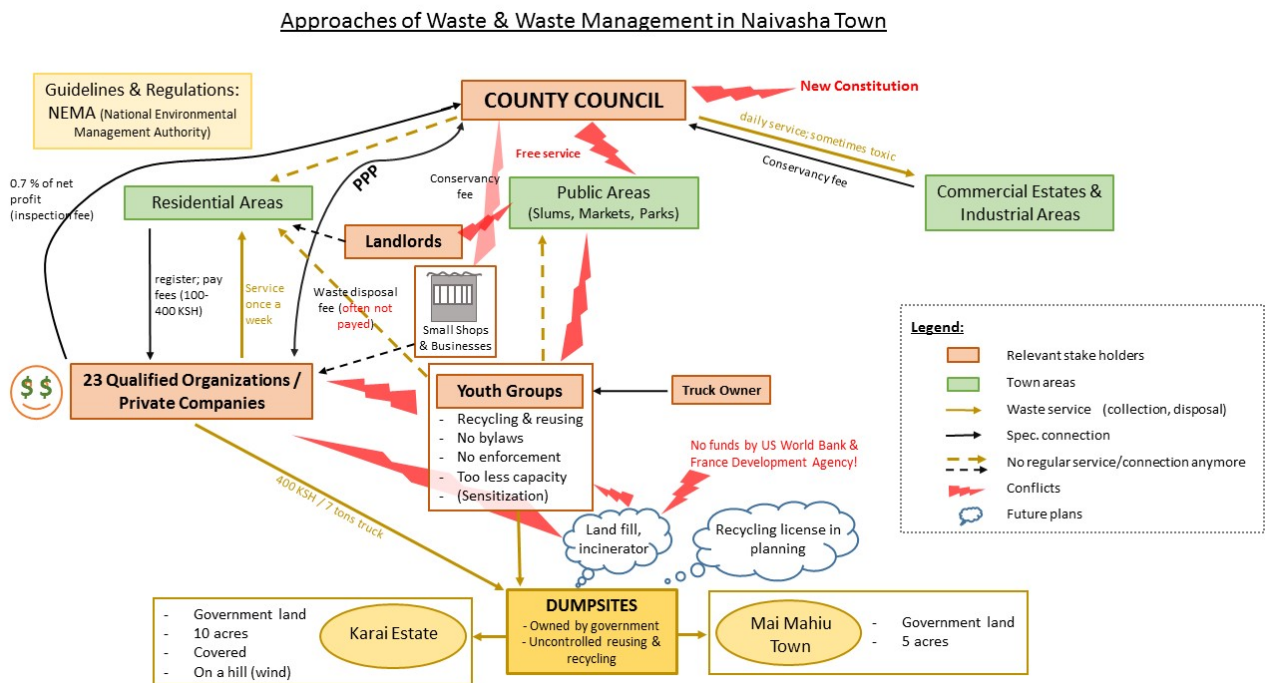


Figure 1: Waste Management System in Naivasha Town

Source: own figure

Naivasha and its surrounding areas are divided into three main clusters:

1. Household or residential areas
2. Public areas, which include slums as Kihoto, market places and public parks
3. Commercial estates and industrial areas.

The commercial estates and industrial areas pay a conservancy fee, so that their solid waste is collected every day by the county council's waste industry. In former times also residential and public areas were served by the county council. Here could be observed a shift away from the former service providers – the county council and the so-called *youth groups* or *welfare groups* – to profit oriented private organisations and companies. Nowadays people in residential areas have to register themselves for the weekly waste collection and pay a fee of 50 to 250 KSH per month. While public areas were served in former times for free by the county council or had to pay small prices to the youth groups, the waste is nowadays collected irregularly and sometimes not at all. The residents explained that the waste collection fee is often included in the rent they pay their landlords but they doubted that the money reaches the service providers. A consequence of these unreliably waste collections in public areas is the mushrooming of many illegal dumpsites. Owners of small shops and small businesses find themselves between the categorisations of residential area and public area, which causes misunderstandings regarding responsible service providers and fees. In addition to the county council's conservancy fee, they sometimes also pay fees to the private waste companies. The youth groups, which formerly worked in public and residential areas did not only offer their services for small prices, but recycled and reused parts of the waste and at the same time, sensitized the residents regarding waste and waste disposal. Due to the need to pay rents for trucks and the costs for waste disposal on the dumpsites, their weakness in enforcing fees from their customers, and the strong and constantly growing private competitors, the youth groups are pushed back or even crowded out of Naivasha's waste business.

This development further reduces the already small amounts of recycling. Without the youth groups Mr. Ngige only recalls some recycling taking place in the industrial areas on an individual basis. He however sees an opportunity in promoting recycling by offering a formal registration (planned in 2015/2016).

As much as Mr. Ngige indicated various problems around the PPS concerning waste management in the residential areas in Naivasha Town, he concedes a lack of ability of the Municipal County to deal with the management of the commercial waste. Here he

sees the need of specialist private companies to guarantee an appropriate handling and disposal of the often toxic substances.

Naivasha's solid waste is disposed on two governmental owned dumpsites, which are in Karai Estate (close to Kayole) and Mai Mahiu Town. The first mentioned dumpsite is the bigger one with a size of ten acres and – owing to its wind exposed position on a hill – covered to avoid the spread of solid waste to neighbouring places. The dumpsite in Mai Mahiu Town is with five acres half the size of the one in Karai Estate. To meet the needs of the growing population, a big landfill and an incinerator are the future plans for Naivasha's solid waste. In the near past the US-World Bank and the France Development Agency offered to give funds for these projects but after the devolution in 2013 they withdrew the promised money and left the county with these plans on their own. Due to this spontaneous withdrawal of necessary financial means, Mr. Ngige sees no other solution than shifting even more responsibility from the government to PPS - even if this most likely will increase prices on the individual level. Prices, which will not meet the abilities of many residents and hence probably not contributing to the overall waste situation in Naivasha Town.

Mr. Ngige helped to identify two neighbourhoods in Naivasha Town as research areas for the quantitative standardized survey: The high-income area "Lake View Estate" and the low-income area "Kihoto".

Interview II

The second interview was conducted with Mr. Dominic Mwangi, Head of the Waste Group Namcol. Like Mr. Ngige, our first interview partner, Mr. Mwangi also saw a massive and increasing problem with waste and waste management in Naivasha Town. The reason according to him is the increasing population of the town due to employment possibilities (mainly in the flower farms). But not only the amount but also the composition of waste has changed. One example he gave was that diapers are gaining ground. The use of polyethelene bags (even in the kiosks) is increasing, In his opinion the problem with waste has been able to grow to such an extend due to the persistent political neglect of the topic throughout the years. His group which is one of the few self-help groups remaining in business faces tough times since the County Government started to shift responsibility and power into the hands of PPS. Being asked about the historical origin and current challenges of the self-help-group, he elaborated:

„Initially it was a requirement of those people who started this industry. Because in Naivasha it started around nine to ten years ago, so the council started to

engage the youths and also, the organized groups, which weren't the youths [in order to get support for the growing challenge of waste management]. So along the way, people started to realize that this industry has some cash [to be made with], So out of greed, some corruption started to occur and some people from the authorities were approached from [private] companies and what happened was that they came in, bribed their way in, and some of these groups have been pushed out of this business by these private companies“ (Dominic, 4:10).

His company also had to experience this kind of treatment when they forcefully had to shift to other, less profitable neighbourhoods (Upper Kayole and Police Line) where a high percentage of people are employed by the flower farms. Being a highly exploitative sector, Mr. Mwangi said the possibilities in these neighbourhoods to charge to an amount which leaves room to pay all the licenses, fuel and leave some money for the volunteers, were barely there.

One key issue he emphasized is the question about jurisdiction within the newly structured County Government in the course of the new constitution. Who is responsible? Where does the budget come from? One easy comprehensible example is the role of the ministries like the ministry of public health, the ministry of environment and the ministry of land. Each of these ministries has a certain interest in the proper handling of waste but since the devolution the issue of jurisdiction remains unsolved.

When it comes to the actual handling of waste, Mr. Mwnagi's company is collecting the household waste on a weekly basis. In order to be collected, the waste is placed either in provide waste bins or in litter bags which are left outside the houses. The average charge is now 50 KSH per household or around 800 KSH per plot.

In order to create awareness and to reduce the amount of polyethelene bags (the ones provided by the supermarkets) on the streets, the company is encouraging the idea or re-using these bags as litter bags. The group is hiring open trucks with a capacity of 5 tons to perform their services. The waste is dumped on the Karai Estate dumpsite which charges a yearly license of 15.000 KSH plus an additional 400 KSH per truck load.

Mr. Mwangi also referred to the manifold but so far unorganized, uncoordinated and unauthorized efforts to recycle some of the waste. Although he recognizes the potential he assesses this project as not feasible within the next couple of years.

“It is something that they try to do. But initially or long they will never do that. You see, with the government officer, you never take them serious! Some of the things they say, but they cannot implement” (Dominic 17: 24-17:41).

When it comes to possible solutions concerning the waste and waste management in Naivasha Town, Mr. Mwangi believed that only a shared effort, which comes both from the governmental-side as well as the citizen side had the potential to lead to success. The measures he envisioned were:

1. Taxation: *“If the government cannot totally ban or close down the industries [of polyethylene bags], what they are supposed to do is to try to over-tax it, and also try to control these industries”* (Dominic 23:03-23:20)
2. Civic education and sensitization: To increase the knowledge to prevent burning (“the Kenyan style”) to prevent health and environment issues.

The main obstacles he indicates are:

1. Not enough capacity (from the governmental side) to handle the rising amount of waste or support the youth groups sufficiently with equipment. Instead of free of charge provision with government trucks, the youth groups are now forced to privately rent trucks which makes their business not only more expensive but also a lot more risky. Being pushed out of business from richer areas into only low-income areas does even increase the risk.
2. Lack of bylaws which make profitable work for the youth groups difficult: If a tenant or landlord refuses to pay for the services, the government (let alone the youth groups) lack the authority to enforce payment- he here refers to the connection between legislative and executive, the lack of enforcement/implementation.
3. Not enough governmental support in the waste management system. Instead of taking responsibility and action, the government tries to pull out of responsibility.
4. A lack of ownership in the low-income areas, which leads to a lack of sense of responsibility. As life in the slums is very insecure and often planned as a transitional situation, movement is preformed if the situation becomes unbearable.
5. Unresolved issues concerning a conservancy fee: The conservancy fee, a fee to be payed by companies in order to get their waste removed, has in the course of the new constitution been removed. However, there are still uncertainties about

and cases of double-paying (conservancy fee to the governments at one side and fees to private companies on the other side).

Mr. Mwangi deeply regretted the government's decision to stop supporting the youth groups and privatizing big parts of the waste management system of Naivasha Town. The worsening working conditions fuelled by corruption consequently pushed many groups out of business and are continuing to do so. This will lead to an even bigger problem with waste in the poorer parts of town because instead of collecting the waste of the poorest people (who are unable to pay) for free, the private companies are only collecting after they received the payment. The mushrooming illegal dumpsites will again lead to more frequent outbreaks of diseases in the slums and shantytowns¹.

Furthermore, Mr. Mwangi said the youth groups play an important role as recyclers and re-users but also as teachers by sensitising people about waste recycling, reusing and disposal. Last but not least the youth groups present one of the few possibilities for the youth to earn money, a fact that keeps many of these youngsters out of crime and reduces poverty.

Mr. Mwangi also thought about future generations: *"If we choke this lake, the generations to come will suffer!"* (Dominic 42:52- 42: 59) and sees the government responsible for taking care of the waste management in Naivasha Town:

"The government knowing that this lake also financially, economically supports Nakuru County. So, what they should do is take an active role in addressing the issue of waste. This is by funding these groups which are dealing with waste, either partially or fully and also in these areas apparently you go and realize that in these low income areas, the population is very high, so the volume of waste is also very high [...] [the government] is supposed to come up with policies, laws and bylaws. That will compel these landlords and all the tenants to pay these people [the youth groups] for the services they are rendering" (Dominic 43:01-44:21).

In order to achieve a sustainable change, education from an early age was the most important measure, Mr. Mwangi told us. It was the key to achieve *"recycling, reusing and*

¹ Interesting here is also the fact that the county government, which is in charge of the ministry of health, is spending an increasing amount of money for the treatment of waste-related diseases by young kids (0-5 years) from the most affected areas.

also reducing” (Dominic 45: 36- 45:39), measures he saw inevitable in order to guarantee a healthy and safe life for the future generations.

Interview III

The third interview partner David Khan is the chair of the waste company NAFO CHAIN, which was which was founded in 2013 and located in Karagita, Mirera.

NAFO CHAIN does not only collect solid waste and disposes it on the dumpsite, but also burns the polyethelene bags, collects plastic bottles for sale and sorts out the organic waste, which will be used as animal food. NAFO CHAIN employs seven waste disposers, who are all at a young age with tough backgrounds. Mr. Khan explained that all of them were former drug addicts and the work for NAFO CHAIN serves them as a kind of rehabilitation.

Every Friday the group collects solid waste in Naivasha and disposes it on the dumpsite in Karai Estate close to Kayole. For their service, NAFO CHAIN charges 500 KSH per month per plot, in which approximately 15 to 30 households live. That means each household has to pay between 16 to 33 KSH per month for a weekly waste collection, which is – in comparison to the fees charged by the highly profit oriented companies – extremely cheap. NAFO CHAIN hires one four tons waste collection truck, for which it pays every Friday. While disposal on the dumpsites costs 400 KSH per trip, NAFO CHAIN does not have to spend money for that and get the service – due to their kind of charity character – for free.

After every working day each of the seven waste disposers get a salary of 500 KSH. According to Mr. Khan, the company still works often without being paid by their customers. However, he explained that he saw great improvements regarding the success of his company. As a result of the customer satisfaction with their waste service as well as with their effort to sensitise the residents, the customers stick to NAFO CHAIN’s service.

Regarding to developments in waste quantities, Mr. Khan observed an increase of solid waste in general and especially at the end of a month as an effect of the rising consume when the salaries are paid out.

2.2.3. Questionnaire

The method of quantitative standardized questionnaires was used for the research to be able to interview in a relatively short time a high number of residents and get very specific information – mainly about actors and quantities and frequencies regarding waste and waste disposal.

This was possible due to the feasible length of the questionnaire and the kind of questions it contained. Most of them were closed formulated with predefined answers. Even the open questions could be answered quickly in just a few words. The questions were formulated easily understandable and for most of the questionnaire participants translated into Kiswahili by the Kenyan students.

The purpose of the questionnaire was to get information about the quantity of solid waste produced in the specific neighbourhood and possible developments in comparison to the early past, the waste's origin, the perception of an in- or decrease of the neighbourhood's population as well as about the management of waste disposal. The end of the questionnaire consisted out of demographic data such as gender, age, household size and occupation of the questionnaire participant. When asking the residents for their own recommendations to improve the waste situation or to meet the demands of the population, an open end was established and a more detailed answer expected.

Kihoto

One of the two for the study identified neighbourhoods of Naivasha Town was Kihoto, which is situated in the Lake View Ward close to Lake Naivasha in Nakuru County. Kihoto can be described as a relatively small slum where lower-income and middle-income classes live in brick houses without pipe water supply or healthy sanitation facilities. Most of the questionnaire participants in Kihoto worked as (casual) employees and business people. Also a fisherman, a flower farm worker, two employees or officials of the county government and two housewives were interviewed. Most of them were females at the age between 21 till 30 and 31 till 40 years. The average household size was around 7.4 household members.

The importance of waste management as a relevant research topic was strongly confirmed by the questionnaire participants in Kihoto, where 22 out of 24 saw solid waste as a problem. This perception was further reinforced by the widespread illegal dumpings of solid waste close to the residential area of Kihoto (see figure 2) as well as the cholera infections which occur periodically.

Lake View Estates

The second of our study sites was Lake View Estate, a residential area located on a hill. Despite the relatively close proximity to Kihoto, the demographical composition as well as average income differ to a high extent between the two neighbourhoods. Most people living in Real Estate Area were between 31 and 40 years of age working as

business persons. All visited households were living in gated communities which massively dominated the streetscape. Roads were wider and mostly paved, with few people outside. Although this environment was not as easy to access, we were able to conduct 15 interviews (n=15). Although there was still dumped waste visible on the sides of the roads, the amount was visible less. Also didn't we come across narratives about outbreaks of cholera or comparable diseases in the neighbourhood.

2.2.4. Mapping

In order to get an overview over our two study sites and their individual waste situation, we decided to map both neighbourhoods. Figure 2 and 3 show Kihoto and Lake View Estates respectively. Each map comes with an implicit legend, which gives an overview over symbols used in the maps.

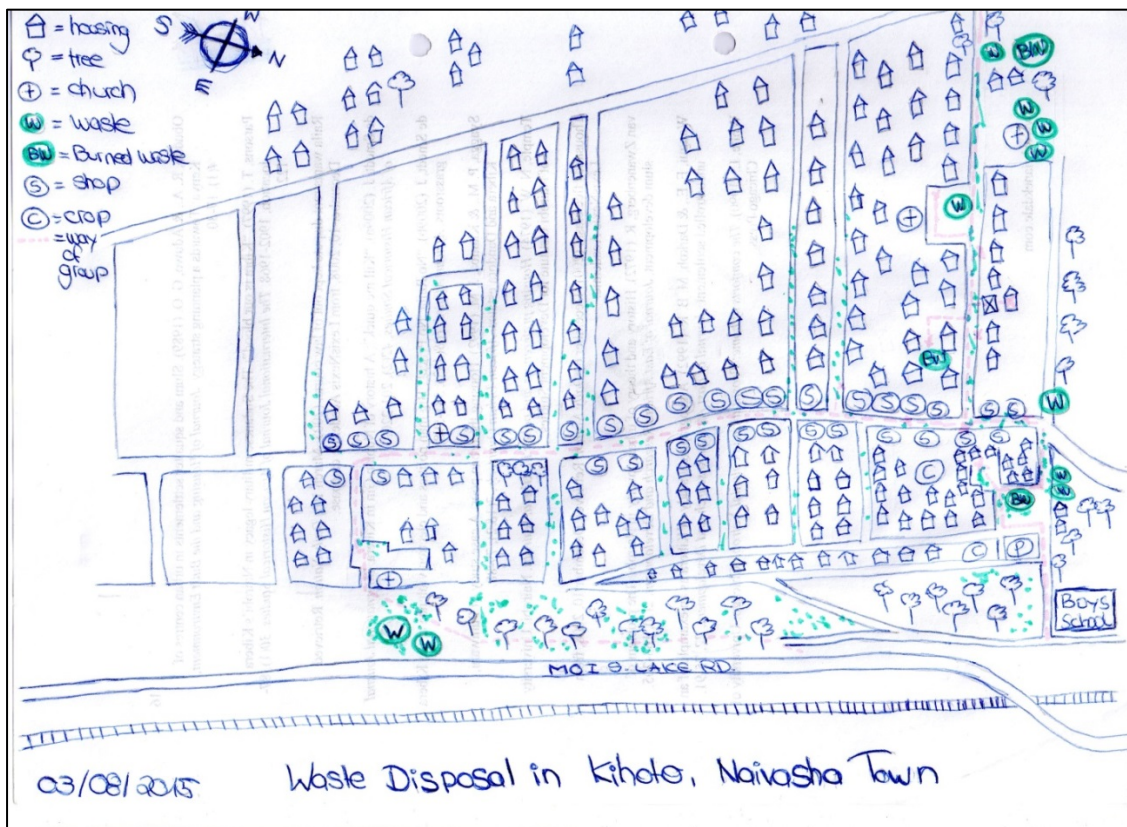


Figure 2: Map of Kihoto, a low income neighborhood in Naivasha

Source: own figure

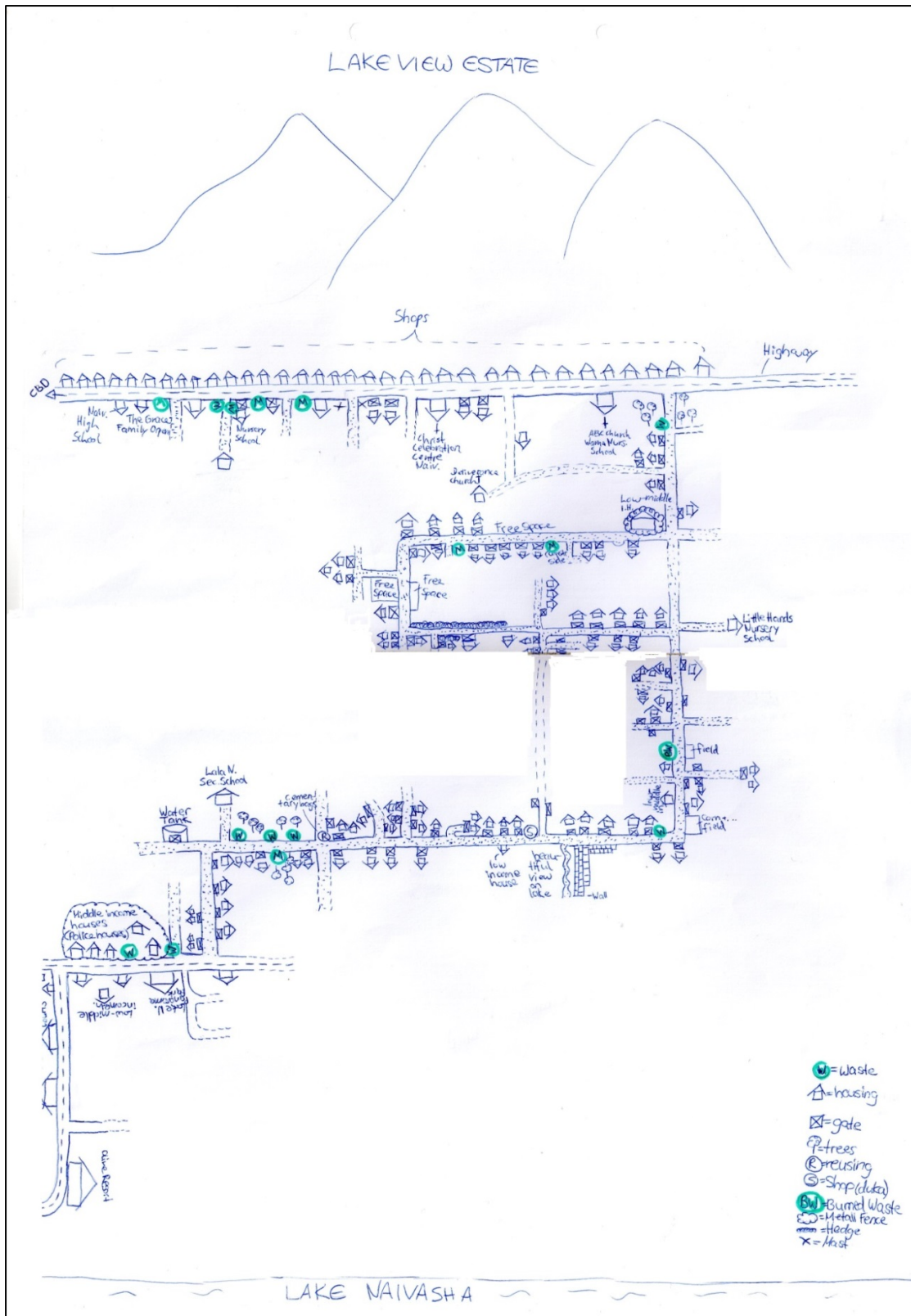


Figure 3: Map of Lake View Estates, a high income neighborhood in Naivasha
 Source: own figure

2.3. Results

The following subchapters are used to present findings to our three guiding questions and key question (as previously presented in chapter 1). The conclusions are based on insights gained through the three expert interviews as well as the 39 conducted questionnaires.

2.3.1. What causes the increase of the quantity of solid waste?

First of all, an increase of overall solid waste has been found in both high and low income areas. This became evident in all expert interviews as well as in through the questionnaires. Figure 6 shows the general differences touching the issue of solid waste between the low-income neighborhood of Kihoto and the high-income area Lake View Estates.

Although the amount of waste produced per household is higher in Lake View Estates, there is significantly less waste found on the streets. Also the composition of stakeholders involved is different with Kihoto relying on the relatively cheap but not very reliable service of the County Council and remaining youth groups whilst Lake View Estates are serviced by private companies and (to a diminishing part) youth groups. The average price however is significantly higher than in Kihoto. Also the topographical position is favourable in Lake View Estates. Situated on a hill, much of the waste on the streets is drained downwards whilst people in Kihoto, living on the lowest part of the city are the recipient of waste.

General waste quantities and qualities

The main driver of the experienced growth of the amount of solid waste in Naivasha Town is a significant population growth (see figure 4). Contributing to this growth is mainly the flower industry.

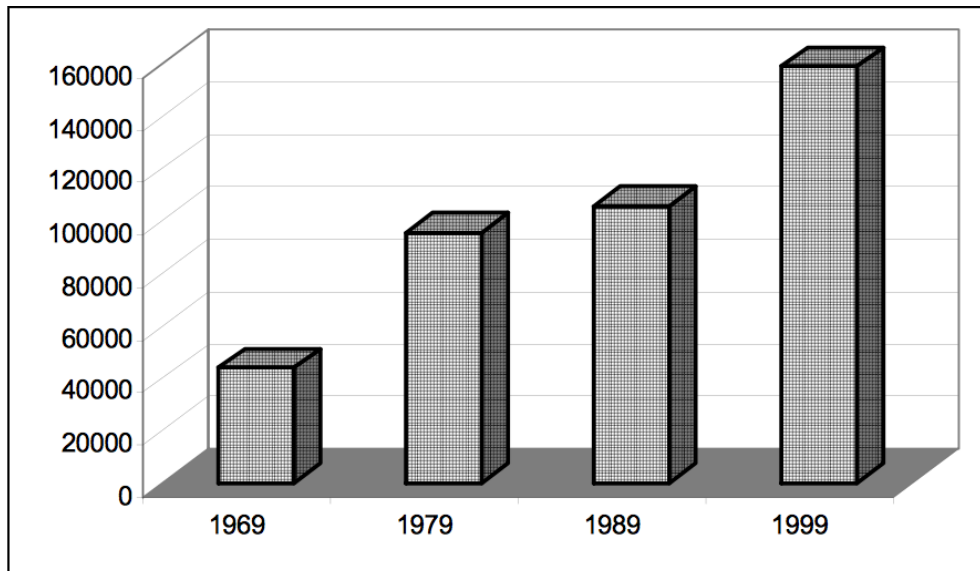


Figure 4: Population development in Naivasha between 1969 and 1999

Source: Mireri 2005, 93

However also important seem to be a change in consumption patterns. Representative for this are the many supermarkets and small kiosks (especially in Kihoto), which sell often processed and packaged food and provide free polyethelene bags. Plastic was evident to be the main problem. But not only waste producing shops and processed foods are to blame, also new products which can be linked to a newly gained wealth in some parts of the population are appearing on the market- and later on the waste balance. Diapers are one good example.

Solid waste on the streets

Apart from the overall increase of production of solid waste, waste has also increased to be visible on the streets. One reason is the overall increase of prices for waste collection. This increase has different reasons (see figure 5).

A combination from losses of capacity of trucks and manpower in the course of the new constitution and the concomitant devolution and a huge in-migration into the area due to the flower industry, led to a decreasing ability of the County Council to provide services, later to a privatization of parts of the waste management system. This was accompanied with better service but also higher prices. Prices a big part of the population is not able to pay. The former operating youth groups were forced to reduce their service to the lower income areas and additionally pay for their own trucks, which made business also more expensive, increasingly unprofitable and risky.

Next to the increase in waste production and composition, the low political priority and the restructuring of stakeholders involved (and the associated increase in prices), the population is not sufficiently sensitized and lacks a sense of responsibility concerning waste and waste management.



Figure 5: Changes in waste production and waste on the streets in Naivasha Town

Source: own figure

2.3.2. Spatial and social differentiation of waste and waste management in Naivasha Town?

	Kihoto (n=24)	Lake View (n=15)	Total (n=39)
Do you see waste as a problem?	Yes: 92 %	Yes: 73%	Yes: 85%
Amount of waste in plastic bags?	<1: 4% 1-2: 92% 3-4: 4% >4: 0%	<1: 6% 1-2: 47% 3-4: 27% >4: 13%	<1: 5% 1-2: 74% 3-4: 13% >4: 5%
Change of waste?	Increased: 92% Decreased: 0% Same: 2%	Increased: 60% Decreased: 0% Same: 33%	Increased: 79% Decreased: 0% Same: 15%

Reasons?	Population growth: 83% Ways of packing: 37% Failing system: 92%	Population growth: 40% Ways of packing: 53% Failing system: 6%	Population growth: 66% Ways of packing: 43% Failing system: 59%
Where are household commodities bought?	Supermarket: 92% Market: 79% Street vendors: 75% Small shops: 92% Farms: 4% Kiosk: 17% Lake: 4%	Supermarket: 93% Market: 60% Street vendors: 40% Small shops: 40% Farms: 0% Kiosk: 0% Lake: 0%	Supermarket: 92% Market: 72% Street vendors: 61% Small shops: 72% Farms: 3% Kiosk: 10% Lake: 3%
Average Amount of years living in the area?	20 years	6,5 years	--
Where do you put your solid waste?	Plastic bag: 16% Receptor point: 4% Hang it on the gate: 25% Open pit: 12% Open space: 25% Outside shop: 4% Burning: 4% Collected by private company: 4% Recycling:-- Municipal collectors:--	Plastic bag: 13% Receptor point: % Hang it on the gate:-- Open pit:-- Open space: 13% Outside shop: -- Burning: -- Collected by private company: 53% Recycling: 6% Municipal collectors: 13%	Plastic bag: 15% Receptor point: 3% Hang it on the gate: 15% Open pit: 8% Open space: 21% Outside shop: 4% Burning: 3% Collected by private company: 20% Recycling: 3% Municipal collectors: 5%
Reusing?	Yes: 67%	Yes: 47%	Yes: 59%
Who is collecting the waste?	County Council: 54% Youth Groups: 4% Private Company: 4% No one: 29%	County Council: 13% Youth Groups: -- Private Company: 53% No one: 27%	County Council: 38% Youth Groups: 3% Private Company: 23% No one: 28%

How often is the waste collected?	No specific day: 4% Once a week: 29% Twice a week: 8% Once in fortnight: 8% Once in three weeks: 4% Never: 46%	No specific day:-- Once a week: 67 % Twice a week: -- Once in fortnight: -- Once in three weeks-- Never: --	No specific day: 3% Once a week: 43 % Twice a week: 5% Once in fortnight: 5% Once in three weeks: 3% Never: 28%
Do you pay for waste disposal:	Yes: 54%	Yes: 33%	Yes: 44%
Has the price changed?	Yes: --	Yes: 13%	Yes: 8%
Has the service provider changed?	Yes: 33%	Yes: 7%	Yes: 23%
If yes, how?	More effective: -- Initially collected by youth groups: 8% Initially collected by County Council: 21%	More effective: 7% Initially collected by youth groups: -- Initially collected by County Council: --	More effective: 3% Initially collected by youth groups: 5% Initially collected by County Council: 13%
Has the service changed?	Yes: 83%	Yes: 20%	Yes: 59%
If yes, how?	No consistency: 36% Has declined: 4% Has improved: 4% Now responsibility of individual: 21% Council now charges: 4% Now collected by private company through landlord: 4% No longer through youth groups: --	No consistency: -- Has declined: -- Has improved: -- Now responsibility of individual: -- Council now charges:-- Now collected by private company through landlord: -- No longer through youth groups: 7% More effective: 7% No longer reliable: -	No consistency: 23% Has declined: 5% Has improved: 3% Now responsibility of individual: 13% Council now charges: 3% Now collected by private company through landlord: 3% No longer through youth groups: 3%

	More effective: -- No longer reliable: 4%	-	More effective: 3% No longer reliable: 3%
Recommendations for better waste disposal?	County Council should take responsibility: 71% More regular collection: 29% Increase staff: 13% Better equipment: 4% Youth should be involved: 4% More recycling:-- More garbage bins:- - Lower prices: -- Bigger containers for waste:-- More dumping spaces: -- Nothing: --	County Council should take responsibility: 40% More regular collection: 13% Increase staff: -- Better equipment: -- Youth should be involved: -- More recycling: 7% More garbage bins: 7% Lower prices: 7% Bigger containers for waste: 13% More dumping spaces: 7% Nothing: 13%	County Council should take responsibility: 59% More regular collection: 23% Increase staff: 8% Better equipment: 3% Youth should be involved: 3% More recycling: 3% More garbage bins: 3% Lower prices: 3% Bigger containers for waste: 5% More dumping spaces: 3% Nothing: 5%
Gender	Female: 75% Male: 25%	Female: 73% Male: 27%	Female: 74% Male: 26%
Age (in years)	15-20: 4% 21-30: 42% 31-40: 33% 41-50: 4% 51-60: 4% >60: 8%	15-20: 13% 21-30: 20% 31-40: 47% 41-50: 13% 51-60: -- >60: --	15-20: 8% 21-30: 33% 31-40: 38% 41-50: 8% 51-60: 3% >60: 5%
Occupation of head of the Household	Business person: 46% Casual employment: 6% Flower farm	Business person: 46% Casual employment: 13% Flower farm	Business person: 46% Casual employment: 21% Flower farm

	employee: 4%	employee: --	employee: 3%
	County Government	County Government	County Government
	employee: 4%	employee: --	employee: 3%
	Fisherman: 4%	Fisherman: --	Fisherman: 3%
	Housewife: 8%	Housewife: --	Housewife: 5%
	Teacher: --	Teacher: 7%	Teacher: 3%
	Financial adviser:--	Financial adviser: 7%	Financial adviser: 3%
	Health worker: --	Health worker: 7%	Health worker: 3%
	Civil servant: --	Civil servant: 7%	Civil servant: 3%

Table 1: Some statistical results from the questionnaires conducted in Kihoto (low-income area) as well as Lake-View (middle-income to high-income area). Results in %

Source: own table

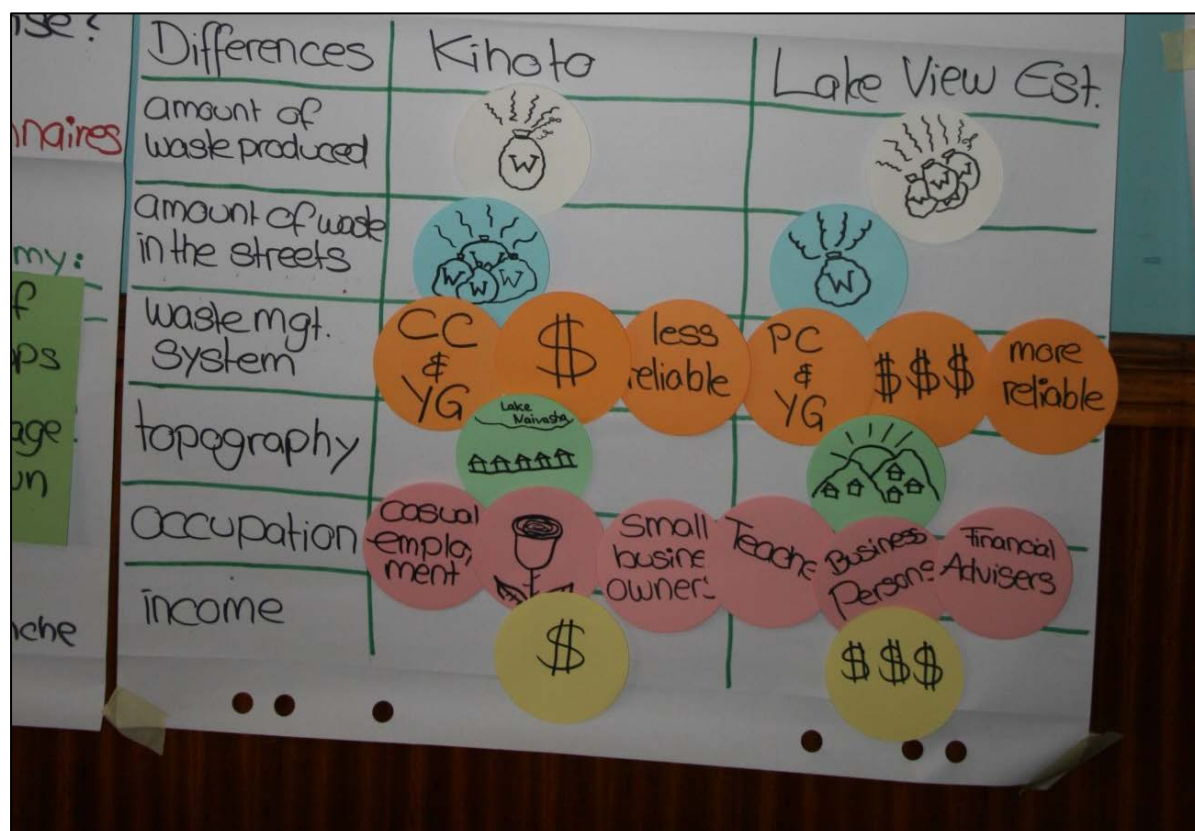


Figure 6: Differences of solid waste between Kihoto, a low income area and Lake View Estates, a high income area

Source: own figure

2.3.3. How is the waste disposal managed and which potential conflicts could arise?

When it comes to the management of waste in Naivasha Town, we are confronted with a very interwoven and multifarious and often untransparent system. The devolution and change of constitution furthermore adds to the uncertainty and question of jurisdiction of waste management. This further complicates issues and prevents the steadily advancing problem concerning the disposal and handling of solid waste. Figure 1 already gives a very detailed and figure 7 a simplified overview over the different stakeholders involved and their reciprocal relationships.

It is visible that the waste management in Naivasha Town isn't standardized. Neither between the different fields like residential areas/public areas/commercial areas/etc., nor between different neighbourhoods. Since the County Council suffered from a lack of human resources, youth groups were brought in and provided with trucks in order to take care of the solid waste. Being able to offer good prices and sometimes even servicing poor households for free, the groups also sensitized people and furthermore kept the youth out of crime and provided some income.

With the devolution, the County Council was weakened even more as the same amount of trucks and human resources had to serve a much bigger area. Not being able to provide the youth groups with the necessary trucks anymore, PPPs were introduced. Due to greed and corruption, soon many youth groups were bribed out of the middle and high-income areas and left to serve the lower income parts of town where less money is to be made. Many groups were completely pushed out of business. The high risk of serving a low-income area only in combination with the hiring costs of the trucks makes business for the youth groups hardly profitable. This leads to some poorer parts of town being left out when it comes to waste collection. Free services in the poorest parts of town are no longer feasible. As a consequence illegal dumpsites are mushrooming and streets are partly heavily polluted. This again leads to environmental problems and promotes the outbreak of diseases like cholera. Additionally a lack of sensitization and fewer employed youngsters are among the consequences.

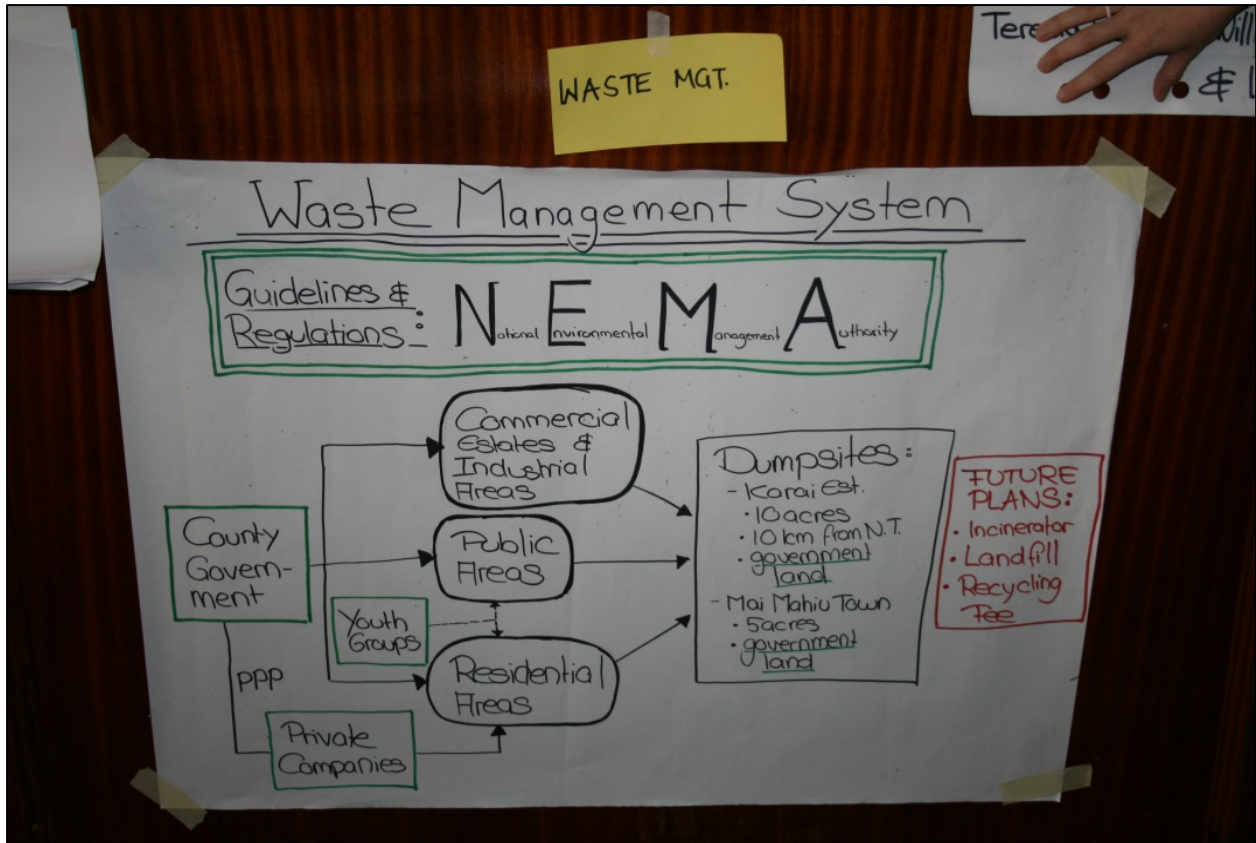


Figure 7: Simplified overview of the waste management system and its key stakeholders in Naivasha Town

Source: own figure

2.4. Conclusion

After having elaborated on our three guiding questions, this chapter strives to concur to our research question "How does the increase of solid waste present a problem for the ongoing development of Naivasha Town?". As figure 8 illustrates, three different fields of problems were identified: the environment, the "social" field and the field of the economy.

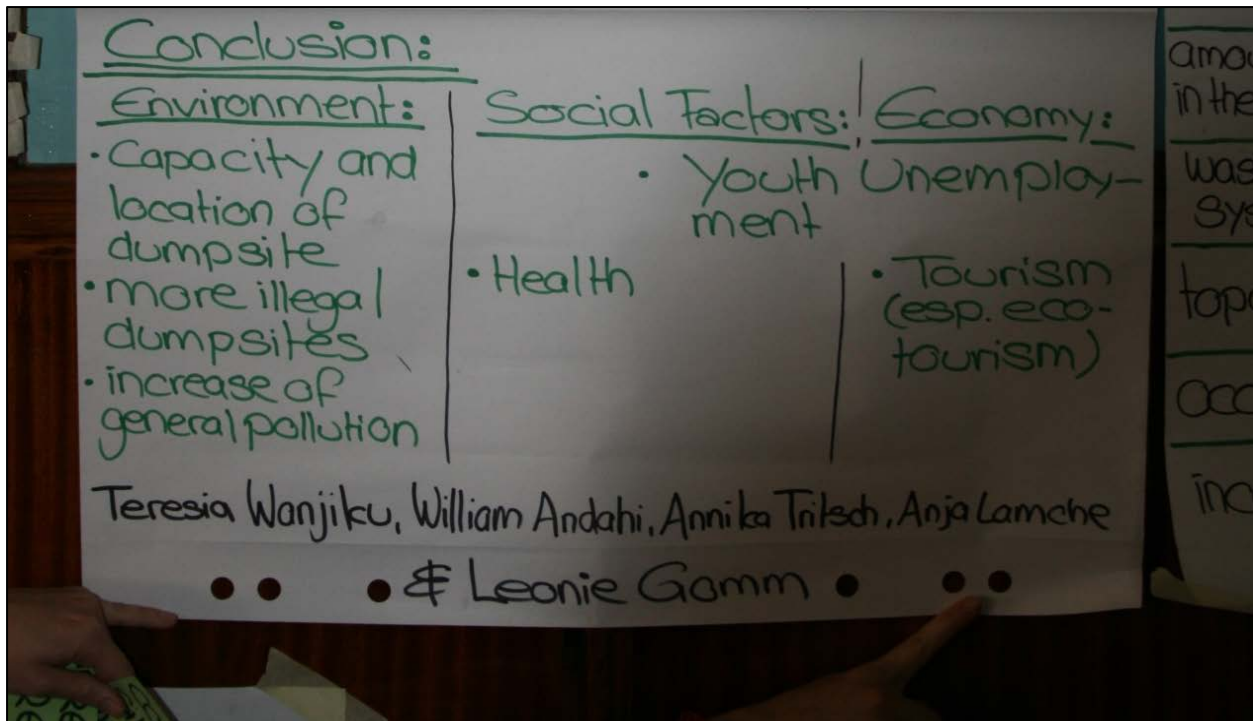


Figure 8: Different fields in which problems concerning waste and waste management are occurring or likely to occur/increase

Source: own figure

The ongoing waste management system puts a lot of stress on the environment since the capacity (not big enough) and location of the dumpsite (open dumpsite on a hill) is not suitable. The previously often mentioned structure of the waste management system leads to an increasing number of illegal dumpsites, which contribute to the experienced increase of general pollution.

With the recent changes of relevant stakeholders, precisely the access of PPPs in the waste management system, poorer neighborhoods which are often left out are faced with an increased the exposure to diseases and less employment for the youth which often leads to an increase in crime.

The economic problems however do not stop here. Also can a polluted ecosystem keep tourists away (compare group “tourism”).

When it comes to the question of how to tackle these issues, caution should be exercised: The underlying political and social issues are not easily understood and calculated. However some general recommendations (see figure 9) will be given- these however must be adjusted and fitted to the actual context carefully.

First of all a general sensitization about the possibilities and benefits of recycling, reusing and reducing of solid waste should be in focus. Furthermore and as a step

following the sensitization, the responsibility of waste management should be shared between the government and the population. Here, a sense of ownership is of importance. On the governmental side, political adjustments and fitting bylaws have to be established in order to allow enforcement of laws. On the other side could a higher taxation of waste producing industries help to reduce the amount of waste produced in the first place. It furthermore became clear that the privatization of the waste management system does not benefit to all parts of the population. Here youth groups could be able to offer precious work- but not without sufficient funding. Apart from the youth groups, also a wider availability of public waste bins on the street could rise awareness and in addition to it lead to less waste on the streets.

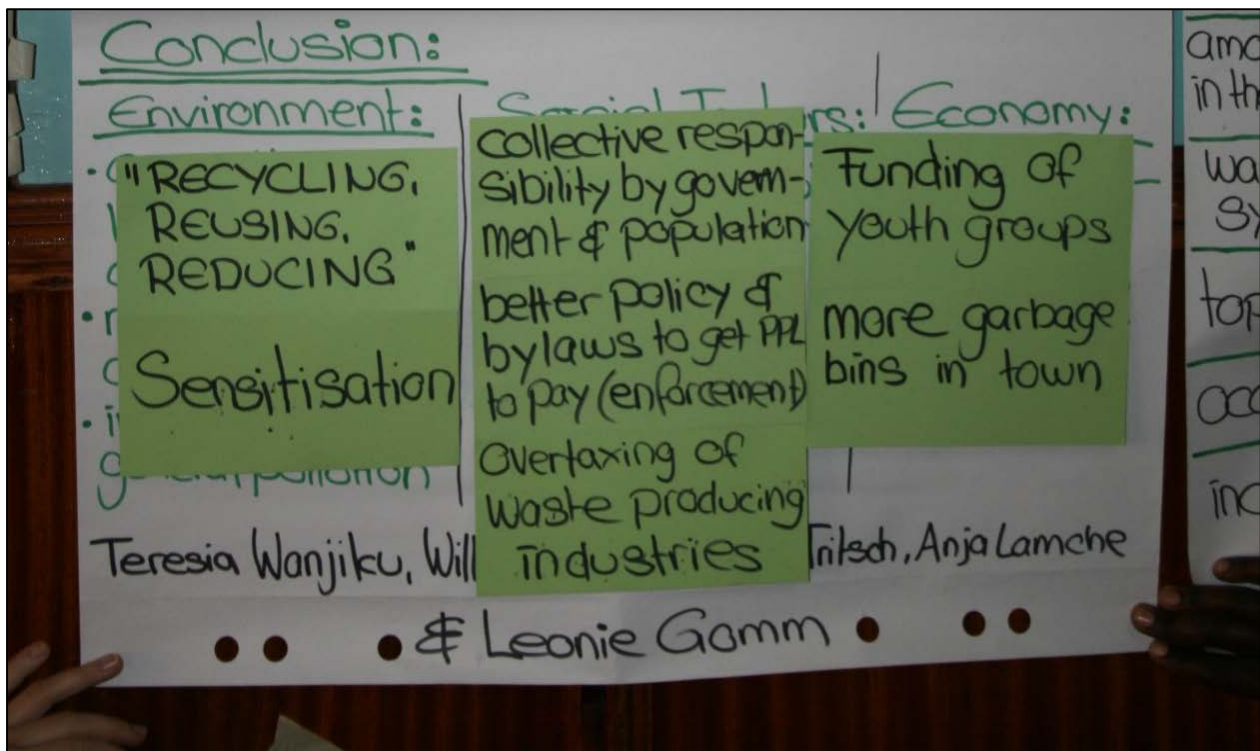


Figure 9: Some initial suggestions on how to improve waste management in Naivasha Town extracted from various sources (interviews, observations, questionnaires)

Source: own figure

3. Tourism in Naivasha

Teresa Bauriedel, Sarah Weiß

3.1. Introduction and relevance of the topic

Lake Naivasha is Kenya's most important location for flower industry. Due to this fact, there is a rapid population and economic growth in the area around the lake. Recently, a lot of research is dealing with this mentioned topic. Tourism is mentioned as an important local economic driver in this area next to the flower industry, but there is no detailed research about the social impact and spatial spread of tourism. You can't even get specific numbers of employment in the tourism sector.

The aim of this study is to provide a deeper and more specific insight into the tourism sector, especially in social aspects (employment and working condition) and the local impact (supplier) of tourism. To put the findings into a broader context, the study also contains information or rather estimation from an insider view (hotel manager) about the current and possible future situation of the whole tourism sector in Naivasha.

Arising thereby is the following key question:

In which way does tourism influence local development in Naivasha town?

To be more specific, following guiding questions have been formulated:

- What kind of hotels are found in Naivasha and where are they located?
- To what extent does tourism (hotels) provide employment in Naivasha?
- How does tourism involve the local supplier?
- What are the challenges being faced in tourism development?

3.2. Methods

Due to the sharp timetable and in line with the formulated research questions, three different methods have been chosen to work with:

Observation: This serves to get an impression how the tourism industry is visible in the area of Naivasha and at the part of South Lake road, where many big hotels and resorts are based. The area of relevance for the sampling and for realizing the research can be specified due to the results of the observation.

Mapping: Results of the observation are categorized as different kind of hotel classes and visualized in a map. An overview of the spatial distribution and differentiation within the research area is possible.

Interviews: Altogether a qualitative approach has been chosen. To get information about the general hotel structure and the scheme of the supplier chain, expert interviews with hotel manager of different hotel categories have been conducted. Further workers of every chosen hotel and of different positions in the hotel structure/hierarchy have been interviewed. Hence a more holistic overview of the hotel as workplace could be gained. All interviews are semi-structured interviews. Therefore special guiding questions for hotel manager (Annex 1) and for hotel worker (Annex 2) have been prepared. This guideline of questions for every interview has been used to keep the findings comparable. Also the two different perspectives on hotels – from a manager and a workers view – can be compared.

3.3. Data collection and study sampling

For the sampling, hotels in the area have been identified by means of Google Maps and the hotel recommendation list in the guidebook Lonely Planet Kenya. Smaller hotels which are neither at Google Maps nor in the guidebook have been spotted during the observation sessions (see above) and were selected additionally. Thus it can be ensured that the most dominant and visible hotel facilities are included in the study.

For the realization of the interviews, every hotel has been visited spontaneous by a team of two members. In most cases it was possible to complete the interviews at once; only in a few cases, it was necessary to arrange an appointment for another day.

Data:

The final results are based on the information generated by observation, hotel visits and the following numbers of interviews:

- 14 expert interviews
- 25 interviews with hotel workers

3.4. Data analysis and results

According to the four guiding questions, this study is dealing with the social aspects and the local impact of tourism in Naivasha. The results are presented in different subchapters. Chapter 4.1 deals with the distribution of different hotel types around the Lake Naivasha. Chapter 4.2 comprises the guiding questions two and three about

employment and suppliers. The third chapter deals with the challenges which hotels and the area are facing.

3.4.1. Location of different hotel classes and target group

To get a more detailed view and local differentiation of the hotels, a classification of the hotels has been undertaken with the information gained during the interviews. Instead of using the international “Star”-hotel-rating system, which would have been too general for this study, an indicator system has been generated. The classification of the hotels is based on the following three indicators:

- price per single room
- location (town, hillside, lakeside)
- employee per room

For the calculation of the classification, every hotel got a grade from one to three (yellow, orange, red) for every indicator (see chart below). The single rooms with a price till 5.000 KES are graded with one (yellow), till 10.000 KES with two (orange) and over 10.000 KES with three (red). Are they located at the Moi road they are graded with one, because the location on the main road is not very attractive. Are the hotels located at the hillside, they got two, because these hotels have a nice view and more space. The hotels around the lake are the most attractive with a lot of space and a location directly next to the lake. They are graded with three. As last indicator, the number of employees per room has been chosen (number of employees divided by number of rooms). Do the hotels have below one employee per room, they are graded with one, do they have below two with two and if they have two employees or more with three. The coloring of the hotel name (first slot of table 2) shows the classification of each hotel based on the average grade.

Hotel	Price per single room	Location	Room/ Employee
Wambuku hotel	1400	Moi road	0,375
Kilimore Hotel	1000	Moi road	0,2
Lakeside Hotel	2000	Moi road	0,3
Pyramid Hotel	1000	Moi road	0,23
La Belle Inn	4500	Moi road	2,86
Ken Vash Hotel	3500	Moi road	0,19
Panorama park	6400	Hillside	1
Jane Guesthouse	3000	Hillside	0,6
Olive Resort	4000	Hillside	1,25
Masada Hotel	6000	Lakeside	0,43
Lake Naivasha resorts	6000	Lakeside	1,13
Sweet Lake hotel	6000	Lakeside	1,16
Salewa Lodge	14000	Lakeside	2
Sopa Resort	14900	Lakeside	2,09

Table 2: Classification of the different hotels in low (yellow), middle (orange) and high class (red)

Source: own figure

Figure 10 shows the spatial distribution of the different classes of hotels within the study area of Naivasha town and the lakeside. In the central business district of Naivasha town are many so called “Logdes”. Most of the guests are people who are only staying overnight due to transit aspects (for example truck driver) or due to short-time work. These “Lodges“ do not provide accommodation for tourism guests and therefore do not contribute to the tourism industry. “Lodges” are not considered within the further presentation of the results. Most of the low class hotels are within Naivasha town, along the Moi Road – the main road of Naivasha. These hotels mostly provide accommodation for domestic overnight and conference tourists. Within Naivasha town, but at a more privileged location – at the hillside with a view at the Lake – some middle class hotels are based. They are target for conference tourism as well as for domestic and little international tourism. More middle class hotels are located at the lakeside of Naivasha (Moi South Lake Road). There they are coexisting with high class hotels. All high class hotels with quite large areas of land and direct access to the lake are based at this part.

They are also providing facilities for holding conferences. Especially international tourists are coming to these high class hotels.

Concerning the duration of the stays, most people are coming only for the weekend. Because of the short distance to Nairobi, particularly people from there like to spend their leisure time within the nature around the lake. Also a notable part of the international tourists are staying for few nights or even only for one night. They are passing through Naivasha on their way to other national parks or back to Nairobi and doing a day trip at the surroundings of Naivasha.

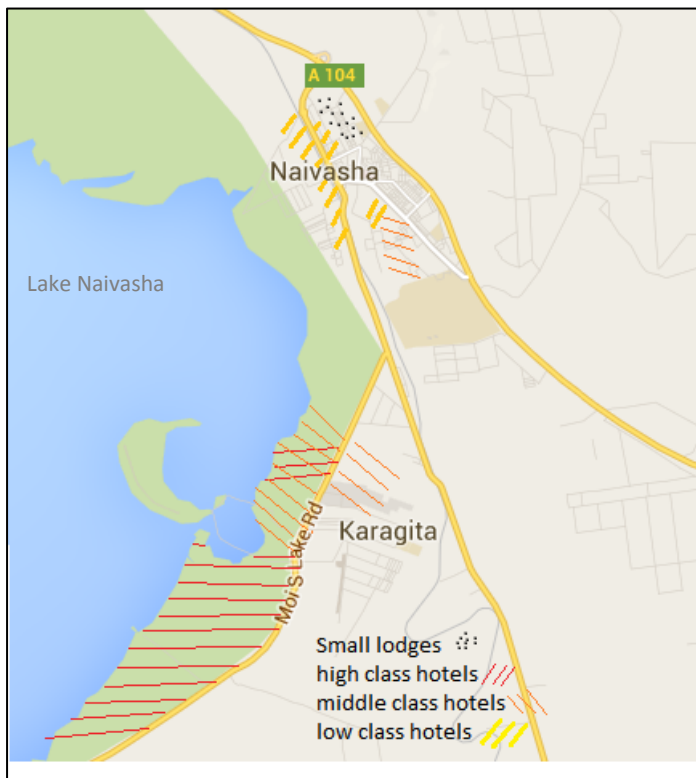


Figure 10: Spatial distribution of hotels in Naivasha town and the lakeside

Source: data: google maps; own editing

3.4.2. Employment and supplier system within the tourism sector

Employment

It seems that there is a correlation between hotel class and number of employee. The higher the standard of the hotel, the higher is the number of workers. This fact is probably caused by the hotel size (room numbers) and additional offered activities. As a consequence, high class hotels provide more employment. But most employees are not local because they cannot fulfil the expectations in terms of qualification (special

trainings) and working experience. These hotels are looking for staff at national and international level and are offering accommodation with the hotel. During their working period workers do not leave the area. If the workers are coming from far away Kenyan regions, they are saving their holidays and weekends for spending a longer time at home. The average salary that high class hotels are paying is higher at every working position compared to middle and low class hotels. But it is important to consider that the described situation only counts for high class hotels within the area of Naivasha and that the number of interviews within these hotels is relatively low.

Except for some middle class hotels which employ non-local workers for special tasks, most low and middle class hotels provide employment for the local population. Due to the aspect that low class hotels are paying a low salary compared to middle and higher class hotels, there is a high fluctuation of employees within this low salary sector. Almost everyone is looking for better working conditions and payment.

All in all tourism provides directly employment for local people and especially low class hotels operate with the local labour market.

Suppliers

All low and middle class hotels have local suppliers. Foods and other goods are directly purchased from local retailer or farmer of the region. Even some services like laundry are outsourced and done by local services. Beside the employment aspect, tourism is also beneficial for local economy in terms of services and supply chains. High class hotels are an exception. Some are delivered by local producer as well, but most hotels are getting their goods from Nairobi. There they can get better quality and exclusive products. Moreover all activities (for example wildlife watching) are provided by their staff or own tour operators. No external services are needed and hotel internal souvenir shops, which are getting their products from Nairobi, are excluding the local economy of Naivasha.

Altogether, hotels are contributing to the local economy because of their engagement of using local service provider and supplier. Some hotel manager of low and middle class hotels even underline the support of local suppliers and the contribution to the local economy as their specific aim. The exception are high class hotels. Figure 11 summarizes the results of the chapter 4.2.

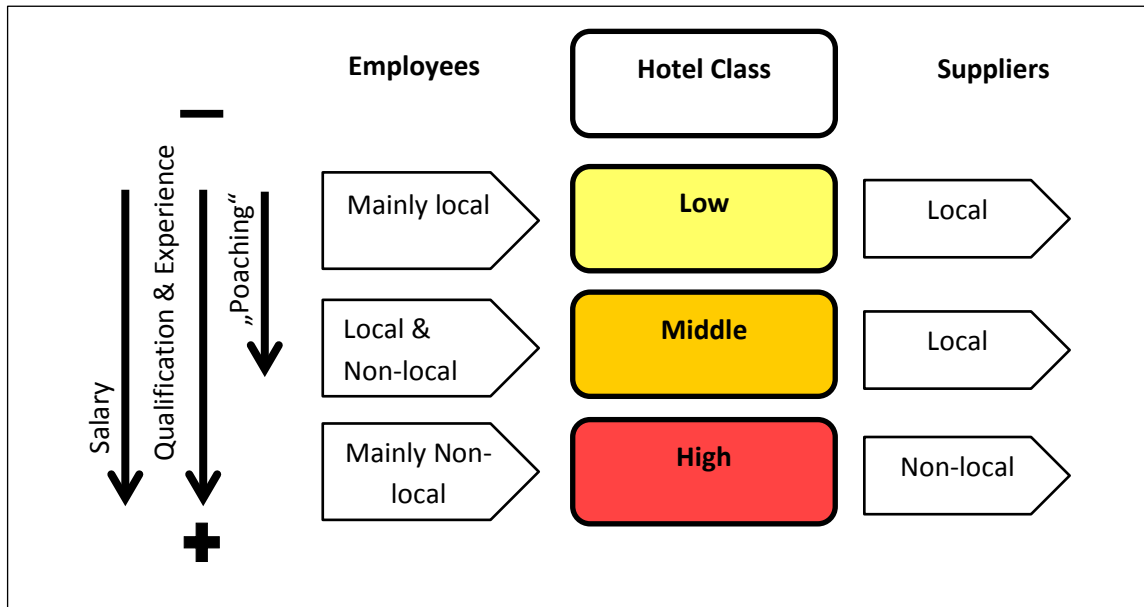


Figure 11: Origin of worker and supplier, increase of salary, required qualification and poaching

Source: own figure

3.4.3. Challenges within the tourism sector in Naivasha

Security and competition are the mostly mentioned current challenges of the tourism sector at Lake Naivasha. Especially hotel manager have considered the issue of security or rather insecurity (terrorism) and the negative impact on the tourism industry overall Kenya. But compared to the current situation in Mombasa and the tourism development break down, Naivasha seems to be in a good position.

On a local level, especially hotels located in Naivasha town are competing for range and facilities with hotels at the lakeside. These hotels have more space, special attractions for their guests (like boat trips or wildlife watching) and have a nice view to the lake. Hotels within Naivasha town are limited in their diversity of offers, in contrast hotels at the lakeside have the opportunity to extend the hotel complex within their property. They can use this advantage for strengthen their competitiveness. As against hotels within Naivasha town are struggling to keep and to improve their attractiveness for tourists in terms of amenities.

From a workers perspective the small salary in the low and middle class hotels is a challenge, workers are facing in the tourism industry. To get an employment with higher salary, it is necessary to change the workplace often, for gather experience. Many workers are “looking for the green pasture” that is to say that they are looking for a better job or position with higher salary. Poaching of labor could be problematic for the

workers as well as for the hotels, because they have to search for qualified and cheap staff again and again. Depending on the location of the hotel – the working place – some worker also named the way home as a further challenge or difficulty. Due to the shift system and extra hours, they are leaving late, so they have to pay a taxi for coming home safe. Some hotels are paying extra money for leaving late, but most likely the workers themselves have to compensate the additional expenditure from their salary.

3.5. Conclusion and outlook

Beside the flower industry, tourism is an important sector for the local economy of Naivasha because it provides opportunities for the local labour market and the local supplier (goods and services). The short distance to Nairobi and the attractive settings and surrounding (Lake Naivasha, various national parks, etc.) are a great advantage and can be a profitable potential for the future development of the tourism sector. For a prospective development the kind of trajectory that the tourism sector takes is also important. Beside most of the high class hotels, which are not really contributing to local development and the local labour market, tourism influences the local development in a way of generating jobs and supporting local suppliers and the local economy. The expansion of this specific hotel sector would not be favourable for the local population. Other possible development trend can be towards ecotourism. There are a few hotels following the guidelines of the ecotourism scheme already. This includes specific standards for social and environmental issues. The development to a more sustainable tourism sector could be beneficial for the people and the environment around the Lake Naivasha.

3.6. Discussion

Due to the limited time frame, the chosen methods generated a good overview about the current situation in the tourism sector in Naivasha. For a deeper and more detailed insight a higher number of interviews would be necessary. Beside the generated findings, information from the governmental or institutional section (p.e. Ministry of tourism or Kenya tourism Federation) could be interesting for the broader context.

It is disputable if the interviewed persons had replied honestly to sensitive questions about their salary and the working conditions while staying at their working place. Therefore the reliability of the answers has to be questioned. The hotel manager has

been asked about the salaries, the hotel is paying as well and answers from both sides can be compared.

It was useful to create guidelines for the semi- structured interviews to ensure that results are comparable. But it could be also useful to adapt the questions to the particular living environments. For example it could be valuable to adjust questions about the salary to the position of the employees.

3.7. Annex

Hotel manager

Hotel:

How is the hotel organized?

When was this hotel founded?

Who is the owner (local, foreign...)?

How is this hotel organized?

What capacity (number of beds)?

What is the size of the hotel area?

How much of your capacities are occupied?

How much do you charge per night?

Are there high and low seasons?

What is the average of nights?

What is your target group?

Do you offer special activities or attractions?

Who are your main suppliers for food and services?

Employment:

How many staff do you have? What for? Men or women?

Where are the workers from?

How do you choose your staff? Are there some special precondition (education/ trainings)?

What do they earn? It is differentiated by position?

Are they permanent or casual workers?

Where are they accommodated?

Are you struggling getting qualified staff?

Challenges:

What are the current problems /challenges?

What kind of challenges are you facing?

What kind of changes have you experienced after the post election violence?

What is your opinion about tourism industry at Lake Naivasha?

Hotel workers:

What is your position?

Female/ Male

Are you permanently hired?

How long have you been working here?

Do you need any qualification to get the job?

Why do you wanted to work in this hotel?

Where are you from?

Are you accomodated in this hotel? Where do you stay?

How many people are working in this hotel?

What is your salary?

Below 5000

5000 – 10 000

10 000 – 15 000

15 000 – 20 000

Above 20 000

Do you have other sources of income?

What time do you report to work and what time do you leave?

Is it different in the peak and the low season?

Are you satisfied? Are you facing any challenges?

Is it something you want to do for long-term?

4. Current developments of fishing at Lake Naivasha

Johannes Dittmann, Antony Ogolla, Frida Salge, Johannes Baumeister

Abstract: This research report considers fishing at Lake Naivasha regarding direct and indirect impacts on this economic sector through current developments and challenges of the aforementioned region. Lake Naivasha and the people profiting from it in terms of water usage or fishery are facing ongoing challenges caused by local developments in Naivasha region like economic growth, population growth and human encroachment, poaching as well as dynamics of the local ecological system. Especially the recent economic growth followed by population growth induced a causality chain of various processes that affect fishing in Lake Naivasha. The student research group which conducted this field study utilized different methods of qualitative social research like observations, qualitative semi-structured and narrative interviews as well as expert interviews. The inquiries took place near of the informal settlements Kihoto and Karagita at the shores of Lake Naivasha. The results were presented within the scope of a meeting local representatives i.e. of fishery in Lake Naivasha attended.

4.1. Introduction

Lake Naivasha is nationally recognized for its important role of fish in terms of food security, employment and creation of income. 1000 people profit directly from fishery at Lake Naivasha and another 3000 people profit indirectly as estimated. In the past this was different. All the fish species of Lake Naivasha are invasive or introduced. In the 1960s first fish, black bass, was introduced to Lake Naivasha for sports fishing. Fishing activities were mainly pursued by descendants of white settlers and tourists. The Maasai and Kikuyu communities that lived in the area of Lake Naivasha, were either pastoralists or cultivators so they had no interest in fishing or were missing the required know-how. In the next decade fishery in Lake Naivasha started to become commercial due to migration of people of the Luo community from Western Kenya, who practice fishing traditionally. One decisive pull factor for this migration was a huge restocking project pursued as a reaction to a huge fish dying in the mid-1970s, which was caused by natural changes of the lake's ecosystem. In the next two decades fishing activities at Lake Naivasha increased until in 2000 fishery almost collapsed because of overfishing.

Since that time many different and interrelating developments took place in Naivasha and are still going on which have various impacts on fishing activities. That is why the research group came up with the following key- and guiding questions:

Key question:

How do current developments in Naivasha affect local fishing?

Guiding questions:

- a) How is fishing at Lake Naivasha organized?
- b) How is fishing at Lake Naivasha affected the by population growth of the region?
- c) How are current developments influencing the lake's ecosystem?
- d) How are illegal fishing activities related to legalized fishing?

4.2. Methods

Hence fishery at Lake Naivasha depends on fishermen, fish traders and the local fishery authority, these very actors represented the focus of the investigation. To ease the access to the field in an up to this point almost unknown area and pressed for time the research group chose flexible methods of qualitative methodological approaches which are relatively easy to adapt to changing circumstances.



Figure 12: Conducting semi-structured interviews at Central Beach Lake Naivasha

Source: J. Baumeister

The whole data collection was mainly based on qualitative Interviews and observation. 16 qualitative Interviews were conducted at different locations where most of the observations took place too. 13 interviews have been conducted at the fisher sites (11 at Central Beach, 2 at Karagita Beach). They were mainly semi-structured with fishermen, boat owners and fish traders and had an open character. That is why narrative passages played an important role during implementation which was very crucial for an historical perspective. In Naivasha town there was only one Interview conducted with a fish seller. Apart from those semi-structured interviews the research group also conducted very fruitful expert interviews in the local fisheries department and in the fisheries research center. The observations at the fisher sites and on the local market of Naivasha Town were very decisive to understand the processes and the chain of fish trade as well as the relations between different actors which are involved in fishing activities.

4.3. Findings

The following chapter presents the findings of the conducted research at Lake Naivasha concerning fishing activities. It starts by giving an overview about its organization and localization and ends after this more descriptive delineation by describing in detail the aforementioned interrelating processes with respect to each other and sorted by the defined guiding questions. They have also been summarized in a visualizing complex interactive structure that has already been created during the field school.

4.3.1. Localization and organization of fishing activities at Lake Naivasha

Localization

Fishing at Lake Naivasha is officially a legal, registered and controlled economic activity. There are four fishing sites around Lake Naivasha where fishermen are allowed to store their boats, go fishing and berth again namely Central Beach, very near to Naivasha Town and the informal settlement Kihoto, Karagita Beach, next to the informal settlement Karagita, Tarambete Beach, at the north-western part of the lake near Kasarani and Kamere Beach at the southern part of the lake (see figure 13). Fishing is allowed almost everywhere in the lake beyond 100 meters from the shoreline except of four marine protected areas which serve as retreats for the fish population. Kamere Beach is the most important fishing site because the main part of the fish from Lake Naivasha is brought and traded there and the place is rather easy to access by a road.

The roads which lead to the other fishing sites are in a very bad shape so they are mainly accessible by feet or motorbike. Although Central Beach and Karagita Beach are rather difficult to access with a vehicle there are also very important places for fish trading because they are near the Nakuru - Nairobi Road. Hence the fish can be brought rather quickly to Nairobi, Nakuru or Naivasha Town.

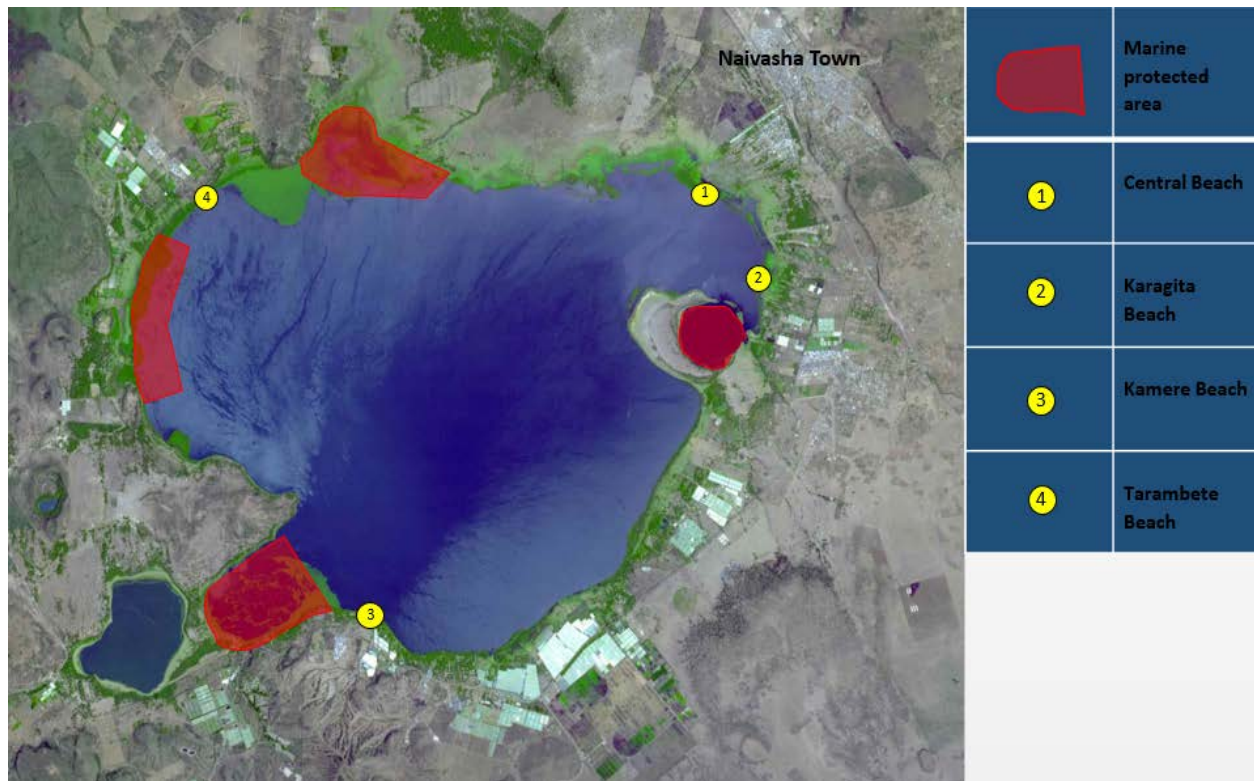


Figure 13: Localization of the four landing sites of Lake Naivasha

Source: satellite image: www.jpl.nasa.gov/spaceimages/images/largesize/PIA10625_hires.jpg; editing : J. Dittmann

Organization

Fishery at Lake Naivasha is officially organized and regulated since 2001. After a huge fish dying in the year before almost all the fishing activities in Naivasha collapsed. After this, fishery became monitored by the government for the purpose of maintaining a stable status of food security in the area of Naivasha and a sustainable ecosystem of the lake. Today this very important sector is regulated through the local fisheries authority, which provides regulations and controls for conserving fishery as a sustainable activity. However, the capabilities and facilities of the department are limited or absolutely inadequate. This is why the Beach Management Units (BMUs) and the Fish Levy Trust Fund (FLTF) were implemented. The FLTF was founded to finance controlling fishery in the lake and is funded by fishing boat owners. The main function of

the BMUs is to act for co-management in fishery and to support the department in monitoring and controlling fishing activities at Lake Naivasha. Every landing beach has its own BMU. These units are organized by fishermen and boat owners of the respective beach. There are 100 boats licensed for Lake Naivasha but in fact there are 108 boats working officially as fishing boats. On every boat there are 3 fishermen working for the boat owner so there are around 324 licensed fishermen in Naivasha. For Central Beach there are 36 boats licensed. The fishermen are employed by boat owners to go fishing. The boat owners provide boats, nets, an engine and fuel to the fishermen. It depends on wealth, know-how and gender what position one takes in the value chain of fishery. There are only fishermen at Lake Naivasha but no fisherwomen. The interviewees were not able to state a reason for this but they assume that this is the current status because fishing is hard work and not non-dangerous. There are female and male boat owners and traders. Their occupation relates more to wealth and know-how. In fact procuring and maintaining boats and engines is relatively expensive so it is only possible to keep a boat when one is able to afford seed capital. Fish traders usually have a lot of know-how about calculating, bargaining and fish prices and very fruitful connections which were established through rather time-consuming developments of social capital. Money and know-how about fishing are usually no assets that young people who are looking for job opportunities are able to provide. This is why they are likely to become fishermen if their applications for employment on a flower farm are rejected. Two times a day, in the evening and in the very early morning the fishermen put out to lake from Central Beach. They have to go beyond 100 meters from the shore to be allowed to fish, because the fingerlings of the different species in Lake Naivasha are living in the shoreline and have to be protected. When they reached the spot where they have dropped their nets, which must have a minimum mesh size of 4 x 4 inches, they empty and drop their nets back into the water. When all the nets that belong to the respective boat owner are emptied they return loaded to the beach. After berthing, the fishermen leave their boats trying to not get in contact with water or mud by climbing from boat to boat till the distance to jump on the beach is short enough. At the beach the boat owners already wait for their boats, fishermen and fish.



Figure 14: Berthing fishermen at Central Beach

Source: J. Dittmann

The so called “beach boys” bring the fish which is mostly packed in synthetic fiber bags from the boats to the beach. The beach boys, mainly very young men, are paid with a fish for their service. The beach boys empty the bags and put the fish on the ground in front of the boat owner. Then the fish is graded and a price is calculated by number, weight, size and species. The boat owners can earn relatively much money in one day if they are lucky. They earn up to 10.000 Ksh a day but usually their weekly income is around 20.000 Ksh. One trader told that on some days she even earns up to 20 000 Ksh. When the fish arrives, there are already many fish traders, the so called “brokers”, at the beach waiting to make good business.



Figure 15: Bargaining traders and boat owner at Central beach

Source: J. Dittmann

After bargaining with the boat owners about an adequate price the traders buy fish. The traders cannot be regarded as a homogeneous group, because they use different trade routes and have different clientele. Some of the traders have a relatively small scattered clientele in Naivasha. They deliver for example to large hotels and restaurants in town, or even in some cases mainly to private households. Some traders combine their business with cooking so they established some kind of fish dishes delivery service. Most of the traders, who also make the most money, are those who have a wide circle of customers in Nairobi, Nakuru, Kericho or Nyahururu. Customers in the named cities pay more money for fish from Naivasha than the local residents, as the traders say. The respective traders usually have a car or use public minibuses. There are not only fish traders but also net traders bargaining at the lake site. Every day one net trader sells 2-3 fishing nets to boat owners at twice the price for which he has bought them. Business for net traders is very fruitful at Lake Naivasha, as they say. Two net traders are even coming from Lake Victoria in Tanzania every week to do business. When the fish is sold at the beach the fishermen receive their money from the boat owners. 60 % of the revenue belongs to the fishermen of one boat and 40 % to the boat owner. Sometimes the fishermen are not able to catch any fish at all. In this case they do not have to starve because the boat owners pay them a minimum of salary for their work, which is an effort induced by the implementation of the BMU and its regulations. The fishermen can also choose to be partly paid in fish as many fishermen do because some prefer to prepare their fish by themselves after work at the landing site using small fireplaces. Most of the fishermen and beach boys live in Kihoto or Karagita. Some of the traders and boat owners are relatively rich so they can afford to live in houses in town. Officially, the caught fish which is in fact only brought to the landing site of Central Beach, has to be brought to a place called "banda" (Swahili for hut, workshop or place where things are sold). There all the fish is registered by representatives of the local fisheries authority and should also be sold by boat owners. In reality, very few fish reaches this place because most of it is already sold at the landing site. This is why the fisheries authority's statistics about the caught fish in Lake Naivasha are not meaningful at all. The authority's representatives only take data from the banda but not from the landing site of Central Beach. The reason why the banda is underutilized is that the encroachment of the water hyacinths on the lake forced the fishermen to replace their common landing site. This landing site of Central Beach is normally located a few hundred meters to the North-West from the current landing site. Officially it is not allowed to sell fish before it is registered at the banda. Anyway the boat owners state that the distance from the current landing site to the banda is too long and the costs for transport are too high, so it is not

worthwhile to accept. They prefer to sell the fish at the landing site because the traders come there anyway. Therefore it is more comfortable to sell the fish directly without registration by government representatives. It is not investigated yet whether there might be another advantage to sell the fish without registration. Anyway, the current conditions lead to no registration of fish at the current landing site of Central Beach and rather non-meaningful registrations at the official place for fish sale. At the so called banda one can see that the place is meant to be a market for fish because one can find grounded tables and counters for selling. There are also the counters of cooks and fireplaces where fresh fish can be prepared for eating. Many of the counters are abandoned at the moment because the fishermen moved. Only a few cooks stayed but they are doing bad business because the main part of their constituency left their regular landing site. Street vendors who sell small snacks and drinks to fishermen and traders moved from the banda to the current landing site. They are still profiting indirectly from fishery because they were able to adapt to their dynamic clientele. However, they are participants of the action that takes places every day at the landing sites just like the motorcycle taxi drivers who earn money by transporting mainly traders and bought fish.



Figure 16: The almost abandoned „banda“

Source: J. Baumeister

Only a small amount of fish is sold in Naivasha Town. At the local market there are more than ten fish vendors who buy the fish directly at the beach to sell it in town to customers. Furthermore there are two small fish restaurants which employ three people each. Apart from this most of the other restaurants and hotels which do not directly

relate their services to fish dishes like the fish restaurants also offer fish dishes. It is most likely that those hotels and restaurants receive their fish from Lake Naivasha as well. In contrast to the fish traders on the local market the hotel and restaurant owners receive their fish from the brokers of Central Beach who are very reliable in terms of delivering. Fish is delivered when asked for it. Of course the brokers are more expensive than the boat owners – too expensive as the restaurants' owners say. Sometimes the hotels' and restaurants' operators buy their fish from poachers because it is much cheaper.

4.3.2. Interrelated developments at Lake Naivasha and their effects on local fishing activities

Population growth and fishery in Naivasha

The increase of fishing activities at Lake Naivasha is strongly embedded in - and caused by various interrelated developments around the lake. The economic sector is growing rapidly with an upward trend which is automatically followed by different social and ecological changes. Since the flower farm industry has developed in the 1980s and is growing ever since, a lot of people had to yield to an industrial settlement and give up their livelihoods in order to make place for the big new flower green houses. Furthermore, a lot of people were not only attracted by the job opportunities on a local and national level but also on an international level. The immense influx of jobless people resulted in growing informal settlements like Kihoto and Karagita, as well as continuing unemployment. The expectation of finding a job couldn't and can't be fulfilled for such a huge - and still rising - amount of people. Coming to the relation of population growth, poverty and fishery at Lake Naivasha it is the people looking for an alternative opportunity to secure their livelihoods and thus being involved in fishing activities. Some talked about having started in a flower farm but shifting to fishery because it is better business for them. However, some use the peak season of flower farms to earn some additional money, but keep their fishing activities as the main source of income. Young men from Western Kenya migrate to Naivasha because they heard about good job opportunities at the flower farms but even if they get a position as a flower farm worker they notice after some time, that fishing or trading fish is more profitable. The involvement in fishery affects in particular younger and middle aged people, observing that it is almost exclusively men that go catching and trading fish. New jobs are being created, like e.g. so called "beachboys" that are supposed to carry the fish from the boat

to the shore, only to give them at least something to do and to earn little money. And of course it is not only the higher demand for work that arises out of population growth, it is also the higher demand for fish that has and wants to be supplied. When the interviewees were asked about the impact of population growth on fishery their answers were mostly related to positive effects. It seems that people involved in fishery at Lake Naivasha take population growth as an opportunity to extend their market, because the demand for fish is accordingly increasing. Interviewing employees at the fisheries department and at the fisheries research center one gets the impression that those institutions experience a big challenge regarding the relation between population growth and fishery. Overfishing and water pollution are to be expected as long as there are no further measures in terms of conservation of fish populations taken into consideration.

Ecosystem of Lake Naivasha and fishery

The involvement of more people in fishery has huge impacts on the ecological system of the lake, like polluted water and a high pressure on the fish population. Already in the year 2000 fishing activities have completely been abandoned by governmental institutions because some species have been over-exploited and the lake has seriously been overfished. Restocking by the department did only take place for three years from 2011 to 2013 as funds were exhausted. Even the BMUs started restocking but the only did it once to convince the county governor of Nakuru that there is no need for a closed breeding season in summer since the BMUs are caring for a sustainable fish population. Today the storage of seeds and fish is stabilizing but as the pressure is estimated to keep increasing you cannot say what the upcoming years are going to bring – either an increasing, stabilized, decreasing or even no amount of fish.

The existing fish species in Lake Naivasha were either introduced into the lake or found their way from dams or fish ponds around the catchment. Currently, four fish species that are of significant commercial importance, are the following:

- a) Carp (Common and Mirror Carp),
- b) Tilapia (*Oreochromis niloticus*, *Oreochromis leucostictus* and *Tilapia zillii*),
- c) Clarius (Catfish)
- d) Crayfish and
- e) Largemouth Bass (Black Bass).

They are caught by different fishing methods, like e.g. by rod, line, dip nets or traps. In the 1960s the Largemouth Bass was introduced as the first fish into Lake Naivasha. It was mainly used for sport fishing by tourists and descendants of white settlers. The

Black Bass had to give way to the other fish species in Lake Naivasha, so today they are not being caught very often. After the Black Bass, Crayfish was introduced to serve as fodder for the sport fish. Crayfish is a crustacean which is about to get a more important role in fishery than at the moment. It is only preferred by very few people although it has very delicious meat. The problem is that there is a lack of strategy for marketing because many Kenyan communities are not used to eat this kind of animal. However, it is the second most expensive fish and thereby very important, especially for fish traders who sell crayfish to the big tourist hotels.



Figure 17: Haul from Lake Naivasha. From the left to the right: Common Carp, Tilapia niloticus, Catfish and Tilapia leucostictus

Source: J. Dittmann



Figure 18: Crayfish tails (left) and a rare Black Bass at Karagita Beach

Source: J. Dittmann

Tilapia was probably introduced during the 1980s and 1990s when people noticed the advantages of fishery as an economic sector for employment and food security. Tilapia is the most expensive and most favored edible fish in Naivasha. However, it is not really competitive and thus decreasing in number. Perhaps the greatest danger for the tilapia population is not polluted water, overfishing or poaching, but the increasing population of the Common Carp. Common Carp was registered in 2001 for the first time. It is believed that during severe flooding caused by El Niño rains it escaped from fish ponds, which were located near the tributaries of Lake Naivasha and came to the lake. Carp is very competitive, because it breeds throughout the year and can actively protect its young. It also eats, as well as catfish which also came to Lake Naivasha accidentally, as a fish that feeds from the bottom the pups of tilapia. Carp is currently the most common and cheapest fish you can buy at Lake Naivasha. Its population is stable and not in danger. It is therefore from the Fisheries Research Centre recommended to cancel the recovery period for the carp in order to recover tilapia stocks. Apart from fishery there are also natural predators that could in combination with fishery and poaching become a serious threat to the fish population of the lake. These predators namely are pelicans and cormorants. These birds' populations increased rapidly in the last years. Especially pelicans eat up to 4 kilos of fish per day. Regarding their estimated number of 2000 in Naivasha the population of this bird species can be decisive for the future of fishery.

The total fish production has increased from 100MTs to 623MTs between 2002 and 2014. The production increase in 2014 has different reasons. On the one hand it is attributed to an increase of licensed fishing boats from 50 to 100 due to necessity of employment and restocking of fish which took place between 2011 and 2013. The restocking has improved significantly tilapia production both in terms of quantity and size. Additionally, there are Marine Protected Areas which are important for fish breeding and are protected by law. On the other hand the governmental institutions failed for the first time to implement the fishing closed season which used to be implemented in the previous years. It was justified by the findings and declarations of scientists which argue that the dominating carp has never been overfished anywhere in the world and thus there would no longer be reason for an annual closed season. Another factor was also the consistent rainfall, which lead to higher water levels and consequently better breeding conditions.

Contradictory, a lot of fishermen that have been interviewed have observed that the fish population is drastically decreasing. One fisherman summarized the influencing factors as the following ones:

- a) Human encroachment in the riparian zone
- b) Flower farms using pesticides
- c) Overfishing
- d) Poaching
- e) Population growth
- f) Amount of farms and their use of lake inflows for irrigation

As already mentioned, pollution is another threatening factor for the ecosystem of the lake. Not only surrounding flower farms but also small scale farmers are polluting the lake by using pesticides and other chemical substances. The small scale farmers are becoming a serious factor as they are coming closer and closer to the shore. Growing settlements and the water level either force them to give up their agricultural activities or to cultivate closer to the water. Consequently there is a high pressure on the riparian zone and substances that are used penetrate directly into the lake. In times of decreasing water levels they are not only blamed for it by taking the water for irrigation but also for carrying soil into the water, ending in higher erosion and evaporation rates. During flood times the rising water level results in transporting fertilizers and pesticides into the lake.



Figure 19: A farmer of the riparian land using chemicals on his field

Source: J. Dittmann

As investigated, one can find chemicals, heavy metals and pesticides in the lake's water, plants and even fish. This pollution is not only caused by farming in the riparian land but also by farming along the tributaries in the whole catchment area of Lake Naivasha. Fertilizers the farmers use, lead to a rising amount of water hyacinth which is a floating plant endemic to Lake Naivasha. If it comes to a growing vegetation of hyacinths and simultaneously a decreasing water level the oxygen rate of the lake decreases as well. Due to eutrophication this can have hazardous impacts on the fish population. Eutrophication did already take place in the past due to natural changes of the ecosystem but now that Naivasha is facing population growth and pollution of the lake by pesticides, fertilizers and sewage, the risk of another eutrophication is becoming ever-present. The presence of hyacinths is also limiting the mobility of fishermen and impeding their fishing activities. Consequently, they change landing sites about every 3 months due to the localization of the hyacinth because it can cover hundreds of meters of the water surface and thus hinders fishing activities, destroys nets and increases fuel consumption. On the other side it is a very important breeding place, but most of the fishermen see it as the biggest challenge regarding their business although it is needed to secure their livelihood basis. Therefore KARI Agricultural Center started a project for introducing a special kind of beetle that eats the water hyacinth and thereby reduces its covering. However this was not very successful because the beetles' population is not big enough to have a significant impact on vegetation.



Figure 20: Water hyacinths

Source: J. Dittmann

Apart from this, nobody knows how the ecosystem will react to removing a big amount of water hyacinth considering that at Lake Victoria researchers found out that vegetation is crucial for breeding fish and the best way to restore fish is to restore papyrus, not only because of its filtering effect but also due to providing food and shelter for fingerlings.

Relation of legal and illegal fishing activities

The fisheries research center of Naivasha assumes that people are in total taking three times more fish out of the lake at the shoreline, and thereby illegally, than beyond 100 meters by licensed fishermen using legal methods. Keeping in mind that only 100 boats are licensed to fish but the number of people being involved in fishing activities is constantly increasing, illegal fishery is a serious and major problem at Lake Naivasha. The initial intention of topping up the licensed boats from 50 to 100 and the number of nets per boat from 4 to 10 in order to enclose illegal fishing activities has led and is still leading to the contrary development. With a lack of capital, capacity and control from the governmental side fishermen find their ways to start and continue their illegal fishing activities. The high number of illegal, unregulated and unreported (IUUs) fishing vessels is related to the fact that anyone can bring a boat to the lake in the name of providing boat rides. But it is not only these unregulated “tourism activities” at Lake Naivasha which contribute to increased illegal fishing activities. It is somehow also the system that stands behind licensing boats, boat owners and fishermen. If you cannot get a license for a fisher boat it is way too easy to just get a license for a tourism boat with which you can easily practice illegal fishing activities. Another illegal way is to fish without a boat by staying close to the shore and using illegal techniques like the so called “saining”.



Figure 21: Saining poachers

Source: J. Dittmann



Figure 22: Structure (left) and mesh size (right) of poaching nets

Source: J. Dittmann

When “saining”, poachers enter the lake by feet, start to circle the fish and force them into their nets. This is a very effective method because the respective area is exploited almost completely. It is declared as illegal because – as already mentioned – the shorelines are important breeding places and the fish is forced to swim in nets. The poachers use nets whose net size is 2 x 2 inches and thereby too small so poachers even catch fingerlings. Catching young fish not only hinders the population growing, it is also not profitable.

“Saining” is especially hazardous to the Tilapia population in the lake because the fingerlings live in the shallow waters near the shoreline. This has already led to a decrease of tilapia catches by fishermen. Still, tilapia is the most favored fish coming from the lake, thus traders who cannot buy enough tilapia from legal fishermen begin to look for alternative sources for the delicious food fish. In this way the traders even increase the demand for poached tilapia from the shoreline and thereby make a natural rehabilitation of the species’ population as good as impossible. Because of that, a lot of poachers keep the fish that has been caught for themselves to secure their livelihoods. One has to keep in mind that most likely also licensed fishermen carry out illegal fishing activities by using more than the permitted number of 10 nets and/or the ones of 2 x 2 inches mesh size.

Relying on the statements of some legal fishermen there are no conflicts between legal and illegal fishers. It often happens that nets that have already been put into the water are being robbed but in their opinion you cannot blame exclusively poachers for these thefts. One of the experts told us that if you abandon illegal fishery, theft as well as the encroachment of the riparian zone is going to increase.

As mentioned by one expert, all departments that are involved in the control of fishing activities at Lake Naivasha are facing the same problem to implement policies in terms of funding. For example, the county neglected the Fisheries Department to get two patrol boats, so sometimes they are going on patrol themselves but they are dependent from receiving financial support. Control is also limited by “a sense of humanity” as every normal human being would not be capable of putting someone into jail who is fighting just to live for another day. Accordingly, not only more regulations and limitations and their control to secure a sustainable development at Lake Naivasha - but also alternative jobs for the growing population are needed.

4.4. Summary

To sum up one can say that fishing in Lake Naivasha is facing many challenges even though it is estimated that there will be enough fish in the future to maintain the fishery sector. This is mainly related to the constantly high population of the Common Carp which contributes to food security in the area. All the described processes that influence fishery are less likely to have the effect of a complete closure of fishing, but rather a less biodiverse ecosystem and a less differentiated haul. We think that the main challenge for fishery at Lake Naivasha is the uncontrolled removal of huge amounts of fish due to poaching and its hazardous methods. Population growth has led and will lead to an increasing pressure on fishery in terms of demand and an increasing number of poachers. Without well-organized restocking and controlling by the Fisheries Department poaching will become more common and currently one can say that the capacities are absolutely insufficient. People involved in fishery told us about the strong collaboration with the Fisheries Department and that they are doing good work. But this does not necessarily mean that the department stands up for fishery in an effective and sustainable way. It quite certainly means that the department director allows fishermen, boat owners and traders to modify regulations and to let people do what they want, as we know from a source.

The impact of flower farms as investigated may not be very influential but the impacts of poaching and farming in the riparian zone are very crucial for ongoing developments and need to be subjects of investigation in the future. To close this report we would like to quote a researcher at the Fisheries Research Center stating the most challenging questions for them regarding fishery in Lake Naivasha: "How can we convince fishermen and poachers not to do saining and not to use more than 10 nets? What shall we do with poachers who are poor men looking for a way to make a living?"

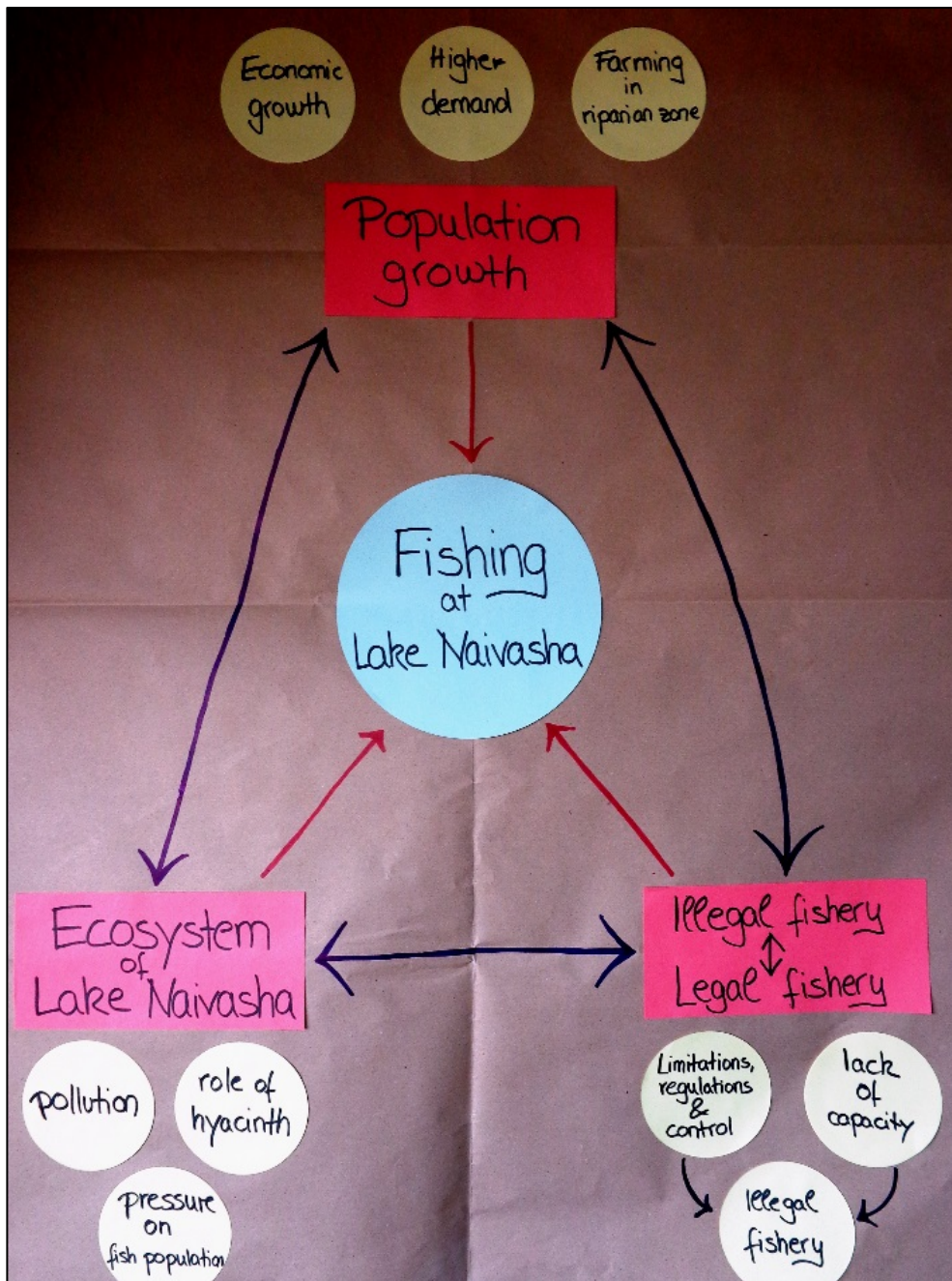


Figure 23: Interrelated Developments concerning fishing at lake Naivasha

Source: own figure

5. The Naivasha local market

Matthias Nostadt, Moritz Ochsmann, Yannick Strasmann, Stephanie Ragot

5.1. Introduction

The town of Naivasha in western Kenya is undergoing fast and diverse development due to local and translocal economic, social and environmental processes taking place in the town itself, in the surrounding region of the Kenya Highlands, but in a global context as well. One major change over the past decades is for example the establishment of several big flower farms on the shores of Lake Naivasha, which is located close to the town. These flower farms are the product of international trade and globalization, brought to Kenya by salesman and investors from Europe, Asia or the U.S., but they affect the area of Naivasha also on a regional and local scale. In July and August 2015 a joint field school from the universities of Nairobi and Bonn took place in the town of Naivasha to investigate some of the changes and their consequences which are taking place and make Naivasha a “development hub” in Kenya. One group of two Kenyan and four German Students took a closer look at the local market of Naivasha with the following question:

Key Question: How is the Naivasha local market affected by local and translocal factors?

To answer that more general question, the research work was split up in four guiding questions:

Guiding Questions:

1. How is the market organized?
2. What products are sold in the market and where do they come from?
3. Where do the customers and traders come from?
4. Have there been any changes in the market and what are they?

To gather the information needed in the field, methods of social research were applied:

Methods: semi-structured interviews, expert interviews, mapping, observation

The group went to the market and spoke to a lot of traders, authorities and customers. Semi-structured interviews were mostly used to collect information concerning the

guiding questions 2 and 3, some of the people interviewed could also give some information concerning question 1 and 4. But the most important information for the questions 1 and 4 was drawn from the expert interviews with some local authorities, namely the market master, a security guard and some people engaged in the management of the market. By observation the gathered information could be proved and complemented. Also mapping was done to locate the various processes and keep an overview over the study area which divides into a central bigger retail market and a small wholesales market outside the main area.

5.2. Field work

The major part of the field work was done in four days, which the whole group spent on the market during its opening hours. Challenges that occurred during the field work were especially language barriers, as most people speak a mix of English and Swahili and could express some information only in Swahili, cultural differences, like some local people felt uncomfortable or insecure talking to “westerners”, and the fact that some expected incentives for their answers. Another problem occurred when important interview sources like the market master was not available and the research was running out of time. Obviously it was a major issue to find out on which days there were activities in the market and on during what time. On the first day a security guard of the County of Nakuru was interviewed by Esther Muiruri, who was able to get a lot of detailed information from Mr. Newton Sunguri due to her ability of speaking Swahili. Mr. Sunguri has been working on the market for 34 years and could share important information about the market’s organization and its development since that time, which could be used to answer guiding questions.

During this first expert interview the group was able to find out that the retail market is divided into a market for clothes and a food market, both opened four times a week on Tuesdays, Wednesdays, Fridays and Saturdays. On Sundays there are no market activities at all, because most people are going to church. On Mondays the market is closed due to cleaning. Most stalls on the retail market are open spaces, not permanent structures. This part is also called Open Air Market. Traders can choose any place to sell their products but it’s only allowed to sell either food or cloth in one place, never both. One exception is the permanent green building in the market which sells also food and is opened seven days a week. Inside that building traders can rent a locker to keep their goods there safe overnight for 220 KSh per month. For sale in general, traders are charged 360 KSh per month on the clothes market and 20 KSh per day on the food stall market. Customers and traders come from different places around Naivasha, like Nakuru,

Limuru, Nyandarua and Kiambu. The interview with Mr. Sunguri revealed also information concerning guiding question 4 and the key question. As there is no railway connection to Naivasha any more, all products sold in the market are transported by vehicles from different places. Several years ago (no exact date was told) the price for one luggage carrier used by traders on the market was 2 KSh, now its about 50 KSh. This example was used to demonstrate how “life became expensive” for people in Naivasha. Business is also not running well since there is a growing lack of customers, especially during the rainy seasons, when many people use rainwater to grow their own crops at home. A major change to the market is on the other hand the growing number of people in Naivasha and of traders on the market due to migration. As a result, new structures, especially permanent ones are developing and driving out the temporary stalls. A raising number of hotels become important customers for the food market, as they buy groceries for their kitchens there. The semi-structured interviews with local traders were held by all members of the group to collect basic information about their origin and the origins of their products, answering guiding questions number 2 and 3. Although the answers were quite diverse, a certain pattern could be drawn which will be presented in the results part. Chatting with the traders delivered some additional information about the market’s organization and its development. It was said that almost all traders are women, a fact that could easily be proved during observation on the market. No trader was concerning about the new “Buffalo Mall” shopping centre in Naivasha, because only “rich people” go there and it doesn’t draw customers from the local market away. Hawkers approaching people in the streets around the market are an issue, because they possibly keep customers from entering the market at all when they can also buy products from the hawkers. This influences business, because most customers buy more products than they came for when they at the retail market which has a bigger scale of products than hawkers do. Traders also gave the informal information that retailer’s stalls located nearby the wholesale market are in advantage, because more people are passing them by. Compared to products from other regions the food sold in the Naivasha local market are very cheap due to high supply. The mobility of traders and products is organized by lorries, mkokoteni and motorbikes. Since the shutdown of the railway the Nakuru-Nairobi-Highway became an important infrastructural factor as it enables the transport of goods using lorries, connects to new areas like Machakos and Kirinyaga and shortens transport times. Concerning changes in infrastructure, one woman selling vegetable gave an impressing example by telling that the transport of her goods from Kisumu to Naivasha was shortened from 12 hours in 1994 to six hours now.

Others reported that it took up to one week to transport goods from the Tanzanian border to Naivasha in former times, and nowadays only one day.

The most important interview source was Daniel Kuria who has been working as market master of the Naivasha local market for the County of Nakuru for five years and who could tell especially a lot about the market organization, about changes and the wholesale market. The market master collects the revenue and reports to the revenue offices of Nakuru County. This information was mainly used to answer guiding questions 1 and 4. In opposite to the retail market mostly men work on the wholesales market, which is also called mother market. It is located about 100 meters from the retail market and sells groceries like fruit and vegetable. To sell in the wholesale market, traders have to pay an entrance fee depending on the size of their luggage. Lorries delivering to the wholesale market pay 1000 Ksh per ton. Traders are able to buy products directly from the lorries, which are charged 500 Ksh per market day. On the wholesale market itself there are around 60 traders. The retail market is much bigger and counts approximately 200 food traders and 550 cloth traders in the Open Air Market area and another 50 traders inside the green building selling food. The collected money is used to pay for cleaning, toilets and security. There are 20 cleaners, 9 clerks, two security guards and two person of toilet staff employed in the whole local market. The wholesale market was established during colonial times and represents the “old market” of Naivasha which supplied the town until 2007. In 2007 the retail market separated due to its enormous growth, established as the new retail market and split up into a food and a cloth section. The retail market continues to grow; everyday new stalls are built and with two traders leaving the market, five new start their business there. Customers and traders buy at the wholesale market to resell the products inside and outside of Naivasha town. Most hotels buy food there in a bulk. Only very few farmers sell on the wholesale market due to its small commodities. This report represents the main information that was gathered by using different methods. In the following part, the results are sum up and presented.

5.3. Results

How is the market organized?

As mentioned above, the Naivasha Market is subdivided into four different Markets, which differ in size, number of traders, number of marked days and product variety. They are also separately regulated and fee-required. All Markets and the 875 traders are supervised by the Market-Master who reports directly to the Revenue-Office.

As presented in Figure 1, the four Markets are located in the centre of Naivasha Town nearby Mbaria Kaniu Road. Caused by a lack of space, some Traders are allowed to erect their market-stalls at the exterior of the Markets, beside this exemptions, all market-transactions happen inside clearly separated areas which are surrounded by walls or fences. Each trader can clearly be allocated to a certain market.

The Wholesalers Market is separated from the rest of the Market. It is located in the old market-area (used as Market before 1963). Around 60 Traders are offering their products in larger quantity units (not per piece but in kg) to other Traders. The Market is open from Tuesday to Saturday. Fees, paid from the traders vary a lot since they depend on the product sold, its quality, quantity and quantity unit.

Surrounded by solid structures and mainly roofed, the Old Market Hall is the first part of the larger market area that was established due to a first growth of Naivasha Town in the decades after Kenyas Independence. Here, 55 traders are renting stalls for a fee of 220 Ksh/month. Food but also second-hand clothes are sold at this part of the Market on seven days a week. At the north-eastern corner of the hall, the Market-Master has his office.

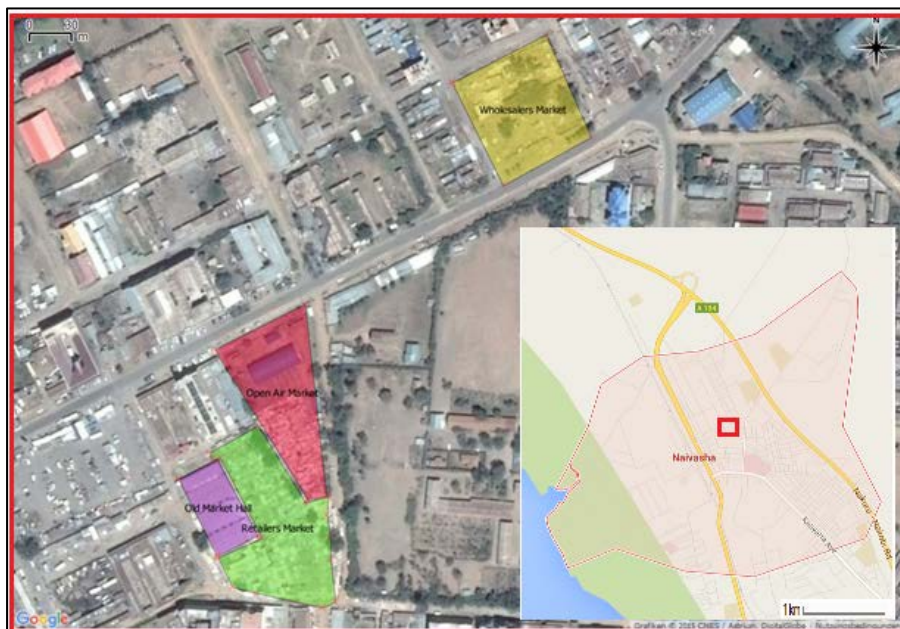


Figure 24: The The location of the Wholesalers Market (yellow), Old Market Hall (purple), Retailers Market (green) and Open Air Market (red)

Source: data set: google maps; own editing

The Retailers Market is the largest Part of the Market, 550 Traders are selling new- as well as second-hand clothes from their semi-permanent stalls. The Retailers Market is open all week. The Fee per Stall per Month is 360 KSh.

The Open-Air Market is a place mainly to sell food from non- or semi-permanent stalls (open halls to cover at least some of these stalls are currently under construction). The 220 listed traders are paying a fee of 20 KSh per Day. Just as the Wholesalers Market the Open Air Market is open from Tuesday to Saturday.

What products are sold in the market and where do they come from?

The supply chain of products sold at Naivasha market is pictured in Figure X. The supply chain shows the three main product categories sold at Naivasha market: Food, New Clothes and Second hand clothes. These product categories were identified by observation and mapping. At the Retail Market mainly Clothes (New Clothes and Second Hand Clothes) are sold. The Open-air market is the sales area for different types of Food. Furthermore, Food is sold at a Market hall located at the Retail market.

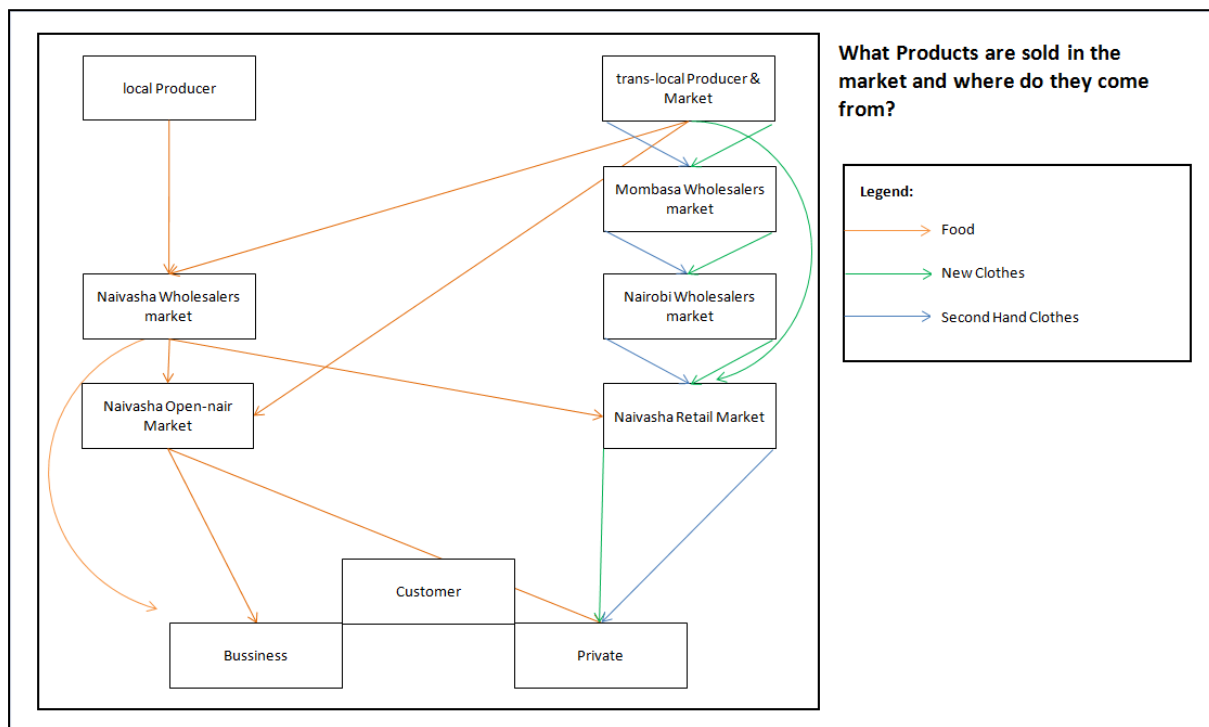


Figure 25: Supply chain of products sold at Naivasha market

Source: own figure

Supply chain of food

The food sold at Naivasha market is mainly bought at trans-local markets. Just some products are produced locally. This Food is transported to Naivasha and sold by local

Traders on the Naivasha wholesalers-market. Traders at Naivasha market are buying their products at this wholesalers market. Then they are sold to business and private Customers at the open-air market and in the Market hall.

Through Interviews with Traders and Customers certain variations from this usual supply chain could be recognized. Some Business customers, like hotels, are buying their products direct on the Wholesalers market to avoid higher costs at the Naivasha market. Also some Traders at the Open-air market buy their products direct from trans-local markets. For that purpose the Traders pool together, thereby they can share transportation costs.

Supply chain of clothes

On the Retail market New and Second hand Clothes (both also including shoes) are sold. None of these clothes, except some fabric, are produced in Kenya. The entire Retail market is dependent on trans-local markets. Clothes are not produced or dealt in and around Naivasha. Clothes are imported and sold to Kenyan traders in Mombasa. Then they are distributed at Wholesaler markets in Nairobi. Traders from Naivasha buy the clothes individually in Nairobi and sell them at the Retail market to private customers. Just a few Traders from Naivasha could be identified that are buying new clothes direct from other trans-local markets then the Wholesaler market in Nairobi.

Where do the customers and traders come from?

The customers are mainly coming from around Naivasha. But some are also just passing by the market while they are having a connecting time at the Naivasha matatu station. Naivasha is located at a highway which connects Mombasa through Nairobi, Nakuru and Kisumu with Uganda. This makes the Naivasha market to a very well accessible market for traders from all over the country. We met traders, for example from the Kisumu region, who were selling fish from Lake Victoria. Traders told us that they sell their goods in certain towns over the week. If they would stay in just one town, there will be often just one or two market days where they can sell their goods. By using the highway, traders are now able to reach many market towns in a short period of time.

Have there been any changes in the market and what are they?

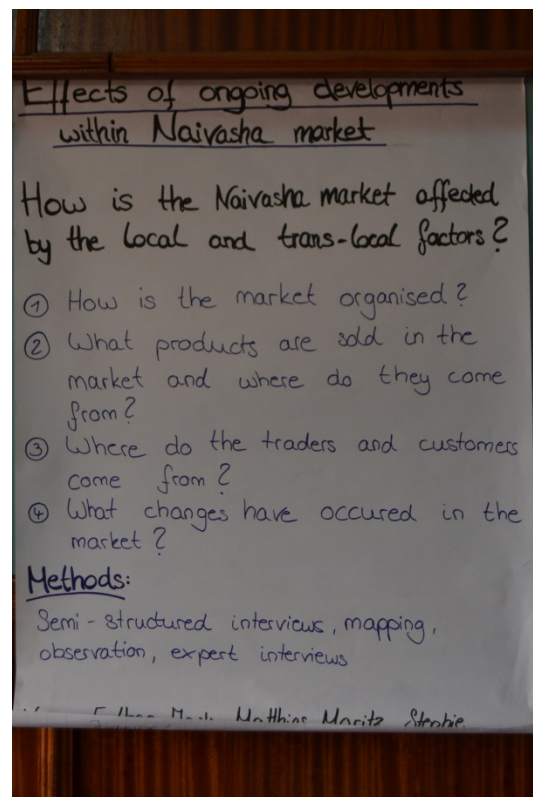
As mentioned above, the highway involves many advantages for the market in Naivasha. While the highway, which connects the coast and Nairobi with Uganda, many

years just passed by Naivasha, it is now going through the town. This brought more traders from upcountry to the market of Naivasha, as well as a broader variety of the products.

Another point which brought changes to the market are caused by the wholesalers market which were established at the old market place. The main market moved to a bigger area beside the matatu station. The market was now able to grow and got new customers from the matatu station.

Actually there are three new market stalls under construction. Market halls are much more attractive for traders than the open market space. This newest development most likely will bring more changes within the market.

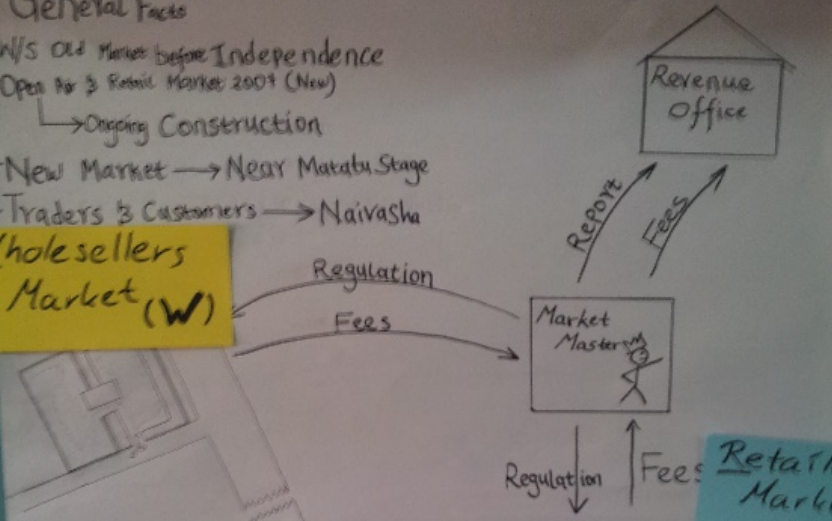
5.4. Annex



General Facts

- W/S Old Market before Independence
- Open Air & Retail Market 2007 (New)
 - Ongoing Construction
- New Market → Near Matatu Stage
- Traders & Customers → Naivasha

Wholesellers Market (W)



Open-Air Market (O-A)

Retail Market

Market Building (B)

	W	O-A	R	B	Part of B
Traders	60	210	550	55	875
M.-Days	4	4	7	7	
Fees	50-1000 Ksh	20 Ksh/Day	360 Ksh/Month	220 Ksh/Month	
Projections		67,200	198,000	12,100	277,300

6. Access and Supply of Water in Naivasha

Eva Müggenburg, Claudia Meintzinger, Johanna Götz

6.1. Introduction

Water, as a challenged resource all over Kenya, also plays an important role in Naivasha. The town is located in the Great Rift Valley of East Africa in Nakuru County, Kenya. Internationally known as a port of flower industry around the lake, water-related conflicts have been discussed during the Kenyan-German-joint field school in August 2015. The increasing urbanization is further stressing the situation of a limited resource: gaps within the water supply infrastructure , missing waste water treatment as well as land use change are challenging water as a resource (Republic of Kenya 2011). Within the scope of the field school, this essential issue was set in focus and was the subject of the present study.

6.2. Organization of Research

In order to investigate possible water related issues, research topics were brainstormed and explored. Due to reoccurring water challenges in the Naivasha region (Republic of Kenya 2011), the overarching topic “Access and Supply of Water in Naivasha Town” has been developed. In the following, the topic has been narrowed down to the following key and guiding questions:

Key Question: How is access and supply of water organized in Naivasha Town?

Guiding Questions:

1. How is social and spatial distribution of water sources in Naivasha Town organized?
2. How do water prices differ depending on various factors?
3. What are challenges regarding water access and supply?
4. What roles do the institutions play in water access and supply?

In order to get a more holistic picture, the research was conducted in areas with different socioeconomic backgrounds. Since time and capacity did not allow covering all areas of

Naivasha Town, three pilot districts were chosen: Kihoto as a low income area, Lakeview as a high income area and the Central Business District (CBD) in order to cover the commercial part of the city.

As the research team consisted of different nationalities (Kenyan, Rwandan and German), tasks were distributed in 'mixed' groups. Thus, advantages regarding different backgrounds (e.g. language, educational and cultural background) helped to conduct the present study.

6.3. Methods

Standardized Questionnaire

In order to answer the presented research question, several research methods were used. First of all, standardized questionnaires at household level in high and low income areas helped to explore the different sources of water, their prices and volume as well as challenges regarding water access (e.g. distance to the water sources and time spent). Secondly, an adapted questionnaire was created in order to obtain information of water access and supply in different shops and businesses within the CBD. To gather further information about water supply, water vendors, representing the supply side, were questioned. While 12 questionnaires were conducted in every district, 15 vendors were asked all over Naivasha Town.

Expert & Informal Interviews

An informal interview with a representative of the local Water Resources Management Authority (WRMA) was carried out giving an insight into the way water in the Naivasha region is managed.

An expert interview has been conducted with Naivasha Water, Sewerage and Sanitation Company Ltd. (NAIVAWASS) to get an overview over their main tasks, the way they are organized as well as information concerning water supply and their pricing (distribution network, sources of water, etc.).

6.4. Findings

The results of the conducted study aimed at answering the question of water access and supply in Naivasha Town. The following chapters are structured along the guiding questions.

6.4.1. Guiding Question 1: Spatial Distribution of Water Access and Supply

The results of the present study show that access and supply of water varies spatially within Naivasha Town.

NAIVAWASS² draws its water from 12 different boreholes, which are located in six different production sites. The water is pumped into storage tanks where it is treated biologically. Afterwards, the water is distributed into the connected areas. Figure 1 shows the zonal distribution areas in Naivasha Town. It can be seen that almost all parts of the city are covered, whereas the density of the network is not reaching all households. The low income area of Kihoto is not yet connected to the distribution network. Further connections are planned. For example, Kihoto might be connected by the end of the year. Tanks have already been installed for future connection and distribution (NAIVAWASS 2015).

According to NAIVAWASS (2015), there are no limitations in the overall quantity of available freshwater, however, infrastructural scarcities are the reason for supply shortages. While the current water extraction rate lies at 10.000m³/day, only 3.000m³/day can be distributed with the existing network.

The findings of the questionnaires show that the water sources within Naivasha Town depend on the area of the city where people live (figure 26). For example, in the high income area of Lakeview, households have a greater variety of water sources. They claim using municipal piped water (~38%) the most, followed by water from trucks (~19%) or handcart vendors (~19%). Other water sources are rainwater (~13%) and water directly extracted from boreholes (~13%). In comparison, in the low income area of Kihoto, the majority of the people get their water from boreholes (~45%) and handcart vendors (~41%), followed by rainwater (~10%) and water from trucks (~5%). The shops in the CBD mainly use water from boreholes (~33%), municipal piped water (~29%), bottled water (often from water shops) (~29%) as well as water from handcart vendors (~5%). The amount of water also varies. Concerning the amount of water bought per month per household, households in the high income area averagely buy three times more water (~1000l/ month/ household³) than the households in the low income area (~300l/ month/ household).

² Information obtained during the expert interview with NAIVAWASS (2015).

³ As the sample size is not sufficient, the numbers only represent an approximate value

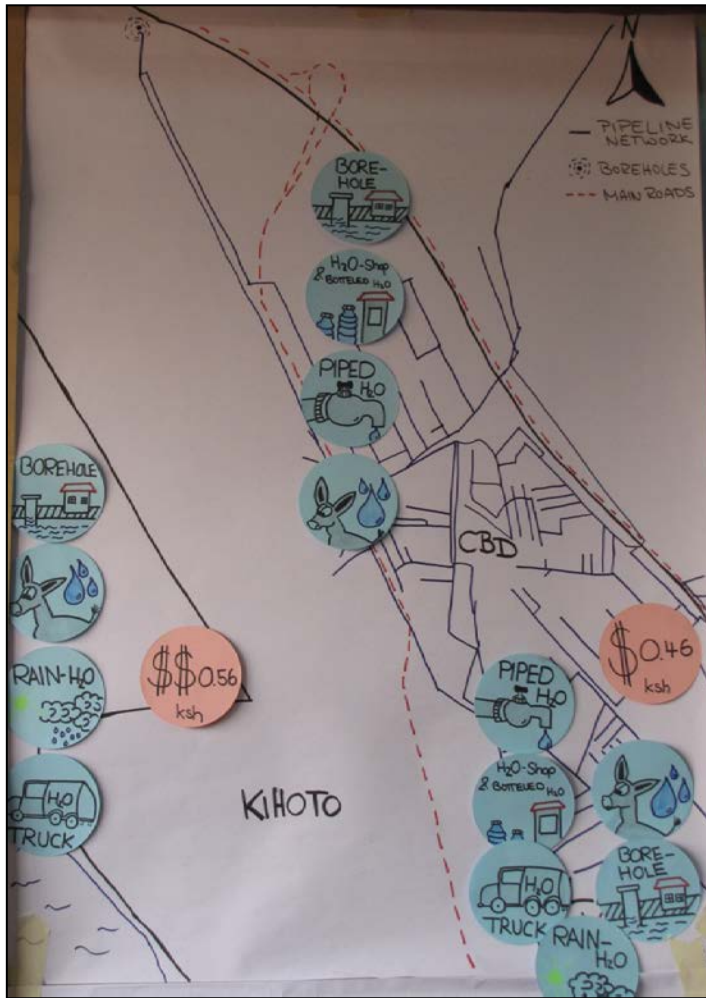


Figure 26: Spatial Distribution of Water Supply (Borehole, Handcart, Truck, Rainwater, Piped Water, Water Shop) in Naivasha Town

Source: own figure

6.4.2. Guiding Question 2: Water Pricing

Prices in municipal piped water do not vary regarding their location within Naivasha Town, however, distinctions are made depending on the monthly amount of water abstracted. Table 3 shows the variation in price. As NAIWASS assumes that consumers of high water consumption tend to be within the higher income class, they are charged more per m^3 water. This implies that “rich should help poor” (NAIWASS 2015). While prices have not changed within the last couple of years, an increase in production cost as well as additional staff costs have led to a proposal of higher water prices. This still has to be confirmed by the regional institution in charge of pricing. While the new rate is meant to match the income and expenses of the company, it should also help to expand the current distribution network.

Abstraction Range [m ³]	Price [KSh/m ³]
0-6	33
>6-20	50
>20-50	65
>50-100	80
>100-300	100
>300	130

Table 3: Pricing system of water from Naivawass

Source: own table

Differences in prices can be seen at some of the kiosks selling NAIVAWASS water. While untreated water is sold at 2 KSh/20l, treated water (bone-char method) costs 3 KSh/20l. The respondent mentioned that even though untreated water should only be used for washing, cleaning etc. people cannot be forced to only use treated, more expensive water, for drinking (NAIVAWASS 2015).

The questionnaires show that due to the use of different water sources, the average prices per liter vary within different parts of town. While the households in the high income area averagely pay less per liter than the ones in the low income area, the quality of the water is higher (table 4). The findings in the low income area are mainly related to the price of drinking water since most households use borehole water for cleaning and washing, which is of poor quality but can be obtained at no charge. While the questionnaires did not reveal any information about whether or not households in Kihoto possess an official permit, the representative from WRMA (2015) mentioned the complex and expensive process of getting an authorized permission for private boreholes. Even though installing and legalizing the borehole requires an initial high payment, prices are relatively low after implementation

During the study it became evident that while most households in Kihoto (low income area) were aware of the exact amount of water they use for drinking within a certain time period (day/week), no exact figures could be obtained within Lakeview (high income area).

	Average Price ⁴ [KSh/l]	Water Quality
High Income Area	0.46	+
Low Income Area	0.54	-

⁴ As the sample size is not sufficient, the numbers only represent an approximate value

Table 4: Water Prices and Quality in High and Low Income Area

Source: own table

6.4.3. Guiding Question 3: Challenges in Water Access & Supply

There are several challenges that need to be faced in regard of water access and supply. In the following, challenges are presented which are faced by shops in the CBD and households in the high as well as in the low income area. The water quality is a main issue as naturally high occurring fluoride levels are a problem in Naivasha Town (WRMA 2015). As water treatment (e.g. Water Guards, Aquatabs) is very expensive, not everyone is able to afford treatment methods. Pricing in general is a challenge, as water with drinking quality (e.g. bottled water) is relatively expensive. Considering that many people store rainwater, reliability becomes an issue. Additionally, being dependent on water vendors, their reliability is very important and not always given. A lack of finances leads to infrastructural scarcities which represent a challenge for NAIVAWASS.

Furthermore, households in the low income area are facing additional challenges: The time they need in order to access water takes much longer (approximately 30 min. – 1 hour) than in the high income area of Lakeview. Moreover, they struggle with water related diseases such as cholera and typhoid. Social disruption is another problem as they need to leave their children at home while getting water.

Besides the above mentioned infrastructural gaps, NAIVAWASS is facing additional challenges: Firstly, an increasing population needs to be supplied with water. Secondly, reoccurring illegal connections lead to water losses. In order to face this challenge 'enforcement officers' are employed to find them and take legal action. Also, production costs are high, compared to regions where water can be abstracted directly from rivers or other surface water sources. Additionally, high levels of fluoride represent a problem in NAIVAWASS's water sources. While, the limit is set at 1.5 ppm, fluoride levels above 50-60 ppm occur in Naivasha (WRMA 2015). As treatment methods are relatively expensive, boreholes with low fluoride levels are searched for and preferably used by NAIVAWASS. However, treatment with bone char is provided at kiosk level. This method can remove up to 90 % of the fluoride. Due to high costs, no centralized treatment system is affordable. Therefore, untreated water is also distributed. A treatment at household level is possible for those who can afford it (NAIVAWASS 2015).

6.4.4. Guiding Question 4: Main Tasks and Institutional Organization

One of the main actors regarding water supply in Naivasha Town is NAIVAWASS⁵. The private company was established in 2005 as a result of the implementation of the Water Act in 2002. The company is divided into two departments: the technical as well as the commercial one. While the technical department is in charge of the water distribution and the construction of pipelines, the commercial department takes care of the marketing and collects the money of the customers among others. Both departments are jointly planning the expansion of the distribution network (NAIVAWASS 2015).

Another important actor is WRMA. Their main mandate contains water allocation as well as monitoring. Furthermore, they are in charge of giving out licenses for water abstraction from boreholes and water quality management (WRMA 2015).

6.5. Discussion and Uncertainties

The results of the field study gave a first impression of how water supply and access is organized in Naivasha Town. In order to answer this research question, some main conclusions can be deduced from the investigated guiding questions. The results obtained within the field study showed first patterns of spatial distribution of different water sources across town. Comparing high and low income areas, it became obvious that water supply is spatially distributed differently regarding the various sources of water. The most striking difference could be observed in the distribution of municipal piped water, which was not available in all parts of town. In Kihoto, for example, no possibility existed to access municipal piped water, since no connections were available. Therefore, this part of town is excluded from this water source, which is generally treated and thus of comparably high quality. Furthermore, in Kihoto the main sources of water came from private boreholes (not treated) as well as handcart vendors (partially treated). The latter was not used as frequently in the high income area. A factor that needs to be considered in further research is the quality of the different water sources. While the low income area tended to use mainly water from unsafe water sources, the high income area drew its water from safer sources. This is, however, based on qualitative data (information obtained during survey and expert interviews) not on a quantitative investigation.

⁵ Currently, NAIVAWASS has 62 employees, while last year the staff consisted out of 40 people (NAIVAWASS 2015)

First assumptions regarding the social distribution of water sources could be deduced from those observations. For example, the fact that no connections of municipal piped water were existent in the low income area Kihoto raised the question whether this is the result of a general social distribution in Naivasha Town. However, those are merely first assumptions that need to be considered in further research.

Concluding, it can be said that while spatial distribution of water access and supply in Naivasha Town shows general patterns across the city (e.g. different shares in the use of specific water sources), no valid statements can be made regarding social distribution.

The questionnaires revealed that prices vary depending on the water source as well as between the high and low income area. While in the high income area it could be observed that the quality of water seems to be better, the average amount spent per liter [KSh/l] is however lower than in the low income area (cf. table 4). A reason for the averagely higher water prices in the low income area of Kihoto might be that the value chain is generally longer than in the high income area of Lakeview. Therefore, with each additional intermediary, water prices might raise. Exemplary, in the high income area many people claimed to use piped water which is usually cheaper on average. However, mainly households which can afford a connection are covered by the distribution network, households in the low income area are not connected and therefore excluded from the cheaper, safer municipally piped water. Furthermore, in the high income area many households have a private on-plot borehole, while in the low income area water for drinking often needs to be extracted from (public) boreholes and further distributed by trucks to tanks and handcart vendors to households.

While the findings of the field study showed that there are some overall challenges in accessing water (e.g. vendors' reliability, water quality, pricing), the low income area has to face additional problems (e.g. social disruption, water related diseases). This could be a further indicator of inequalities regarding water access in Naivasha Town. While in the low income area the questioned households knew the exact amount of water used, further studies could investigate whether this is connected to the water source used as well as the available part of the income spent on buying water. Additionally, as rainwater is an unreliable source (esp. during dry season), it is nearly impossible for the households to plan and indicate the available amount of it. Further, it has to be considered that this might also have an influence on water prices.

While water institutions do exist and play an important role in the supply of water, there are still gaps, which need to be overcome (infrastructural, water quality, etc.). As can be

seen in the fragmentary distribution network, especially the low income area is not (yet) connected to the municipal piped water provided by NAIVAWASS, power relations could be scrutinized. How did the privatization after the Water Act 2002 affect the access and supply of water? How were power relations reformulated after 2002? Those questions could be subject of follow-up research. Since the infrastructural scarcity cannot be overcome, water vendors play an important role in water supply in Naivasha Town. As a representative from WRMA (2015) stated: “[...] we can’t just stop [the handcart vendors], because that would mean stopping people from getting water”. This quote highlights that the issue of water supply (and its lack) is also reflected within the institutions.

6.6. Conclusion

As the present study showed, water access and supply in Naivasha Town is organized around various influencing factors (different water sources, varying prices, institutional power relations, and infrastructural setup). It becomes evident that many questions remain unanswered. For the future, it needs to be evaluated how the challenges between the infrastructural scarcity and the water quality can be balanced. This is especially important in the low income area, which is barely connected to the distribution network. Concluding, there are challenges that need to be faced, possible ways should be found to solve or ameliorate them for the benefit of the residents.

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