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A new subway in Amsterdam

*Research to the social consequences of the
 Noord/Zuidlijn*



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Summary

This article examines the social impacts of a new subway, the Noord/Zuidlijn in Amsterdam, the Netherlands. The main question is why there was so much controversy among the citizens of Amsterdam about the new subway. The theory the research is based on is Social Impact Assessment. The structure of the article is as follows: how was the decision-making for the project, what problems occurred, what the social impacts on the community were and how the government responded to that. The research is based on interviews, primary documents and secondary information about the Noord/Zuidlijn. It resulted in that there was no proper Social Impact Assessment integrated in the project. Action groups themselves did the research work and after a period with lots of protests from the community, the government tried to resolve the problems, which otherwise could have been prevented.

Introduction

Motive

Since 1922 the municipality of Amsterdam had ideas for planning a subway in the city centre of Amsterdam. After a period of renewed interest in the 1980s, finally the municipality of Amsterdam decided in 2002 to build the subway. The 9.7 kilometres tube connects the northern and the southern part of the city, where the financial centre the *Zuidas* (southern axis) is situated.

The main reason for a subway is that the city must be accessible (Gemeente Amsterdam, 2012). The subway is built for the daily transport of 185.000 people and the time to travel from the north to south of Amsterdam will be 31 minutes. Because in the future the subway will be extended to the province, it will be an alternative for car traffic and therefor can ease the traffic in the city. That is why the project is beneficiary on national level.

However the subway can provide benefits to the city and the citizens, before and during the construction the plan caused a lot of uproar among the citizens of Amsterdam. This was especially about the costs of the project, the threat for the historical centre which is partly world heritage and the nuisance for the local residents and business.

Niekerk & Arts argued in 1996 to implement SIA at an early stage in the decision-making process, in infrastructure projects in the Netherlands. This was a year before was decided the *Noord/Zuidlijn* should go on. In 2009 Rowan argues that developers and government authorities are more aware of the importance of SIA in infrastructure projects. But still SIA is not implemented in the planning process. Therefore the case study of the *Noord/Zuidlijn* can provide insight in how infrastructure projects in the Netherlands are decided and if there is attention for the consequences.

Problem

The aim of the study is to find out what the social impacts are of the construction of the *Noord/Zuidlijn*. In the Netherlands it is not common to examine the social impacts of an infrastructure project. With a lot of big infrastructural projects, much attention is paid to the costs and the benefits it will eventually offer. The impacts on the local residents often have less priority. However residents can be of big influence on the success of the project. For future projects it is therefore very important to give attention to the social impacts. Not only for the sake of the people, but also for projects.

The research question is:

Why was there so much controversy among citizens of Amsterdam on the construction of the Noord/Zuidlijn?

The sub questions are:

- a. How was the decision making about the planning of the *Noord/Zuidlijn*?
- b. What problems occurred during the construction of the subway?
- c. What were the main reasons for protest against the *Noord/Zuidlijn* and how did citizens express themselves in that?
- d. How were the problems solved?

Structure

In this article the social impacts of the construction of the *Noord/Zuidlijn* on the citizens are examined and discussed. The article starts with a description of the decision-making of the *Noord/Zuidlijn*. Next, the problems which occurred will be described. The third chapter described the actual social impacts on the community. In the last chapter the solutions for the problems and impacts are discussed.

Theoretical framework

The theory on which the research will be based is Social Impact Assessment (SIA). “Social Impact Assessment (SIA) includes the processes of analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions. Its primary purpose is to bring about a more sustainable and equitable biophysical and human environment” (Vanclay, 2003). Thus, it is an assessment of the social impacts, but also has a broader goal to make the world a better place. In the case of the *Noord/Zuidlijn*, the accent is on its context and the social impacts.

SIA stems from the broader Environmental Impact Assessment. “Environmental Impact Assessment (EIA) is an anticipatory, participatory, integrated environmental management tool which has the ultimate objective of providing decision-makers with an indication of the likely consequences of their decisions relating to new projects or to new programmes, plans or policies” (Wood, 2003).

In the Netherlands SIA is not implemented by law. So was there any research to the consequences to the neighbourhood, and how did this evolve during the project? Gunningham (2004) explains that sometimes corporations are forced to meet the needs or expectations of the people who experience the consequences of a project in order to let succeed the project. He calls this concept the ‘social license’. So if there has not been any SIA in the case of the *Noord/Zuidlijn*, was the municipality forced to meet the expectations of the local community? This is being examined in four stages by the sub questions.

Methodology

To answer the main research question a combination of primary and secondary sources are used. Primary data is acquired by interviewing key informants and several citizens of Amsterdam living nearby the *Noord/Zuidlijn*. By interviewing, rich in-depth and qualitative data can be acquired (O’Leary, 196). In this way, insight can be gained into direct experiences of those involved in the construction of the *Noord/Zuidlijn*. An interview is taken from a person of each actor, respectively the residents, the municipality of Amsterdam, the protest group, and an entrepreneur group.

Secondary data provides good background and understanding of the formal procedure. The municipality of Amsterdam has on its website a lot of records and reports that are freely accessible. A good insight into the state of affairs give the *Kwartaalverslagen*. Here the main developments in each quarter of a year are stated.

The two most important reports in this subject are *Bouwen aan verbinding* (Veerman, 2009) of the Veerman Committee the *Rapport van de Enquêtecommissie Noord/Zuidlijn* (Gemeente Amsterdam, 2009). After rising costs of construction and the fact that there were many exceeds, former Minister Cees Veerman was asked by the College of the City of Amsterdam to prepare a report on how to proceed with the *Noord/Zuidlijn*. Also *Rapport van de Enquêtecommissie Noord/Zuidlijn* is the result of financial setbacks. In March 2009 it was decided that a council investigation was opened into the preparation, decision-making and the implementation of the *Noord/Zuidlijn*. This report has a good insight into the decision by the government.

Finally some newspaper articles are used to get insight in the reaction of the media to the project, for example the local newspaper of Amsterdam *Het Parool*, but also other Dutch quality newspapers such as the *NRC Handelsblad*, *De Volkskrant* and *Trouw*.

Conceptual model



Fig. 2. Conceptual model

The conceptual model (Fig. 2) is an image of the hypothesis. When the construction of the subway started and there has been no SIA, this could lead to (negative) impacts on the community and will lead to protest. Then two things can happen. The municipality can do nothing and don't meet the needs of the people (what leads to a lack of social license to operate), then the project will fail. But the municipality could also decide to do something with the comments of the community. Then it is more likely that it leads to a successful project. Also when SIA would be applied properly, there would be impact and resist of the community. But when SIA would be executed, this could lead to acceptance of the community and eventually to a successful project.

1. How was the decision making about the planning of the Noord/Zuidlijn?

A history

The plan for a subway that connects the north and the south of Amsterdam has a long history. Nowadays the public transport in Amsterdam consists partly of trams and busses. The first idea for a subway in Amsterdam that connects the north and south of Amsterdam dates from 1928. This project turned out to be 21 million guilders too expensive. Therefore it was not executed. Later, in 1968 a new comprehensive plan for a metro network in the city arose. A part of the track was being built, the *Oostlijn* (Fig.2). A lot of buildings in the *Nieuwmarktbuurt* had to be demolished to execute the tube of 5.3 kilometres beneath the city centre. There was a lot of protest among the citizens. Especially because there was a shortage of houses in the seventies in the Netherlands. Also the costs of the project were very high. The city council decided in 1978 to stop further building of the subway. (Gemeente Amsterdam, 2009)

In the late eighties again, there was interest in constructing a subway in Amsterdam. On a symposium organised by the *Kamer van Koophandel* in 1988, named 'Amsterdam, erop of eronder' ('Amsterdam, above it or beneath it', is also an expression for 'all or nothing') there was renewed interest in the subway. At this symposium some experts found that a rail connection in the city was technically possible and economically desirable. (Gemeente Amsterdam, 2009). Then the municipality of Amsterdam investigated the possibilities for different variants of a subway in the city. This investigation looked into six variants of a subway. Here, less deep variants were examined, that could be constructed from ground level, and therefore were easier to construct and relative cheap. Also deep variants of the subway were examined. For this deep variant drilling beneath the city centre was needed to be done, and therefore this construction method had more risks and was also less cheap (Fig.3).

Decision-making

The decision-making is namely based on this research and is thus based on technical and financial aspects. The research of these different variants of the subway was presented in three parts (1989, 1990 and 1991). The first part was about technical aspects like the construction method, consequences of the construction for existing buildings, consequences for the traffic and costs. The second part concluded that the subway is an essential part in the development of the regional public transport (Gemeente Amsterdam, 2009).

In the third part of the research a preference was made for a deep tunnel variant from the *Damrak* to *Rokin* to *Vijzelstraat* to *Vijzelgracht*. For this variant no trees had to be cut down and buildings demolished. Based on the experiences of the construction of the *Oostlijn* earlier, this was an important condition for the construction. The municipality wanted to avoid protest of the citizens and wanted to stimulate that the life in the city could go on normally. Another important reason for this variant was that the daily traffic in the city and the life in the city could go on normally and there would not be nuisance.

However, there was not extensive research of the consequences of this method. For example, there was no research to possible prolapses or cracks in walls alongside the future subway line. Furthermore, there was not investigated what the financial consequences were when deep drilling would be used. But the choice was made; the deep drilling variant. The research that was done dates back to 1989, after that there has not been any research till the decision was finally made in 1996 by the municipality to build the track (Veerman, 2009).

No SIA

In 1996 Niekerk & Arts advocate for inputting impact assessment in Dutch infrastructure projects. According to them, Impact Assessment can contribute to the transparency in the planning process, fair decision-making and better projects. They researched the construction of a new highway in the province of Drenthe, The Netherlands. Based on this case study, they argued that there should be more information in the field of the environment, social-economy and traffic. Whether a project gets a go or no go, is often decided at operation level at a very early stage. Therefore Impact Assessment is not done often. So their article is a plea for early integration of SIA in the planning-process.

Before the decision to construct the subway was made, there has not been any research to the social consequences of the construction. As Niekerk & Arts stated in their article, the decision to construct the subway was made quickly, without having all the proper knowledge. When the decision was made, no research was done to the impacts of the community. This caused a lot of adverse consequences, which will be explained later in this article.

Final decision

Five years after the research, the municipality took the first decision that the subway would be constructed. But at that stage part of the citizens of Amsterdam already protested against the subway. Mainly the drilling of the tunnel beneath the historical centre caused a lot of resistance. A lot of citizens were afraid that the old buildings in the city centre would be damaged. Therefore in 1997 a referendum was among the citizens of Amsterdam. By doing so, the plan for the subway could still be stopped. At the referendum 65 % of the people voted against the plan. Because not enough people voted, the referendum was invalidated. However a lot of citizens of Amsterdam were against the project, the construction of the subway started in 2003 anyway.

In 2000 the first preparations for the project began. Three were cut down and a tram station was removed (Gemeente Amsterdam, 2000). Besides the drilling, at several places in the city there had to be build new underground subway stations. In the case of the *Vijzelgracht* and the *Vijzelstraat*, where this article is mainly about because the problems were worst at these streets, the construction of the new station had a lot of impact. For building this new station there is now a construction site, which is 300 by 60 by 38 metres (length x width x depth) (Fig.4).



Fig. 2 Construction of the Oostlijn, Nieuwmarktbuurt, Amsterdam

Dwarsdoorsnede tracé



Fig.3. Track of the Noord/Zuidlijn (red line) 9.7 km. Seen to the west



Fig.4. Construction site at the Vijzelgracht

2. What problems occurred during the construction of the subway?

The completion date postponed and rising costs

During the years the costs of the *Noord/Zuidlijn* were ever rising and the completion date was constantly postponed. In 1996 the project should cost 1.5 billion euro and would be finished in 2005. However in 2009 the costs were estimated at 2 billion euro and finished in 2017. The main reason for this was disappointing technical aspects of the project during the construction. However the project was initiated by a collaboration of the municipality and the national government, the municipality paid relative more than the national government. The part of the costs for the municipality tripled from 317 million in 2002 to 900 million euros in 2009. The remaining costs were paid by the national government. When the costs arose however, they stated that they would not donate more money to the project. (Baetens, 2012)

Technical problems

Since the beginning of the construction a lot of technical problems arose. This caused a lot of worries among the citizens. Since the beginning there were at several different places leakages in the sheet pilings of the excavations. In 2003 a tram rail prolapsed. According to the project office, this was possibly caused by the construction of the subway (Baetens, 2012). Next in 2004 the first buildings prolapsed at the *Vijzelgracht* (ANP, 2004). The buildings prolapsed about 15 to 18 millimetres as a result of leakages at the excavation. According to a spokesman of the project office there was no damage to the buildings because the prolapse was evenly. Then in 2006 again there were leakages at the excavations, this time at the Central Station (ANP, 2006). The subway station (of the *Oostlijn*) was full with water and the firemen had to pump it away.

In 2008 again there were leakages at the excavations, this time it caused a lot more damage. Four buildings, namely *Vijzelgracht 22, 24, 26 and 28*, prolapsed five to six centimetres (Bockma, 2008). People could not get into their homes because doors could not open. The municipality decided to stop the construction at the *Vijzelgracht* because it was not considered save. The people of the prolapsed houses had to leave their homes at request of the police. About three months later, on the 9th of September the municipality decided the situation was save again. The construction could continue. But just one day later, on September the 10th, six buildings prolapsed, this time three to twenty-three centimetres (Beusekamp, 2008). Again it was caused by a leakage in the excavation. Through this, the water underneath the buildings leaked into the excavation and took sand with it. This time it was about three buildings with a status of national monument – the *Wevershuizen* – and one nineteenth-century building (Fig. 8).

The research office *Deltares* also stated that old concrete together with bad reinforcement of the concrete were the reasons for the leakage. A driver, who transported concrete for the construction, told a national newspaper that several times 'old' concrete was used. Liquid concrete can be conserved only a few hours. But the construction workers yet ordered him to pour the concrete at the site (De Swart, 2009).

Changes in the daily life

The technical problems caused a lot of pressure on the daily life of the people living at the *Vijzelgracht*. The residents of the houses that prolapsed had to leave their homes at request of the police. There was no time to pack some stuff or clothes. They immediately had to leave their homes and had to go to hotels. One resident however went quickly into his home to get some stuff. He saw the rooms of his house were full of dust and grit and the walls were totally skew (Beusekamp, 2008). The people were transported to hotels by police vans. That did not felt appropriate, people complained. A taxi would be more appropriate in this situation. It made people feel they did something wrong and more importantly, it did not feel as if the municipality took their situation serious.

For these people a period full of uncertainties started. People could not get into their homes for months because of the recovery of the buildings. They had to stay with family and friends for a few months (ANP, 2008b). The damaged buildings caused a lot of costs to the owners. Some people wanted to sell their houses, but it was very difficult to get a mortgage for a new house. For the people who wanted to recover their houses that would become very expensive.

Also the construction caused a lot of daily nuisance. People with children were warned before 2003 that the construction could cause a lot of nuisance and that therefore it would not be an appropriate place to life with little children. Because of that the municipality advised these families to move. However, people without little children were not informed about the nuisance. Local citizens around the *Vijzelgracht* and *Vijzelstraat* complained that the construction continued till 10 o'clock in the evening. Also the daily traffic halved from a counting of 28.000 per day (pedestrians, cars and bikes) to 14.000.



Fig.5. Construction site at the Central Station, Amsterdam



Fig.6. Construction workers are drilling

3. What were the main impacts of the construction of the Noord/Zuidlijn and how did the local community expressed themselves?

The first protest

Already before the actual construction began there was a lot of protest among the citizens. In 1995 *Platform Metro* was established, which was a collaboration between neighbourhood committees, community centres and urban organizations from different parts of the city. They mainly protested against the drilling variant of the subway (Fig. 6). They thought this was old fashioned and preferred a less difficult and expensive way of a connection between the north and south of Amsterdam (Baetens, 46, 2012). Next in 1997 the *Platform Metro* pleads for a referendum to gauge the opinion among the citizens and hoped yet to stop the project. From the 123.198 votes, 79.861 people (65%) were against the project and 42.961 (35%) voted for the project. There had to be a minimum of 154.935 votes in order to validate the referendum. So not enough people voted and therefore the referendum was not valid (Baetens, 2012).

Sense of community

De problems as discussed in the previous chapter had impact on the sense of community. Mainly the delay and the daily nuisance of the construction of the new stations had a lot of impact on the people, says a street manager of the *Vijzelstraat*. The local community felt shafted, because at the beginning the project would take six years and now it looks more like 17 years. People indicate that when they would have known it would last this long, they would have moved. So now they feel like a hostage in their own environment. Sometimes several times a day trucks with concrete drive along their houses. That causes a lot of noise. They are confronted daily with this nuisance. Also people – especially elder people - do not feel safe in the streets and they rather avoid the place (interview with entrepreneur representative/street manager, 17-05-2013).

Economic prosperity

For the entrepreneurs along the project the construction had big negative economic consequences. The *Vijzelstraat* and the extended *Vijzelgracht* are both broad streets with a lot of traffic. In the streets there are is a variety of a lot of shops and entrepreneurs, ranging from supermarkets, snack bars, coffee shops, restaurants, cafés, wine merchants, antique shops, till the French Consulate. A lot of shops in those two streets depend on passing by pedestrians, tells the street representative. But since the construction site in the street was placed, the daily traffic halved from 28.000 in 2002 till 14.000 now (interview with entrepreneur representative/street manager, 17-05-2013). Thereby their

sales decreased. Some shop owners moved before the construction began. Now for a lot of buildings it is difficult to find a tenant, because the place became a less attractive location for shops. Mainly for cafés and restaurants, which are dependent on daily pedestrians, it is not a good location because for example there is no place for a terrace. Also shops have difficult accessible for supply trucks.

Damage to the heritage

An important consequence of the construction was damage to the national heritage. The three monument organisations *Genootschap Amstelodamum*, *Bond Heemschut* and the *Vereniging Vrienden van de Amsterdamse Binnenstad* and citizens of Amsterdam were worried about the historical buildings in the street (Van Bennekom, 2009). The historical buildings are part of the image of the city and what makes Amsterdam attractive to people. A lot of buildings in this street belong to the national heritage and are thus protected. Among the prolapsed buildings were the *Wevershuizen* (Fig. 8). Also the *Vijzelstraat* and *Vijzelgracht* cross the seventeenth-century canal districts, which is world heritage. So the construction happened at a very vulnerable and important place.

Then there is another aspect which makes the place extremely vulnerable. The historical centre of Amsterdam is built on wooden poles. The poles need to be under the level of groundwater, otherwise oxygen can affect the poles by rotting. When by leakage water and sand streams away, the buildings can prolapse, this also actually happened. But also before the construction began, people were worried about this should happen. So already in 1998 they let a water-engineer research the fundamentals of the buildings along the track. Out of this research came that all the buildings needed extra fundamentals to prevent damage. Though the research initiated by the municipality stated that 95 % of the building did not need extra reinforcement (Baetens, 2012). In the end, the buildings did not get any pre-emptive reinforcement.

Health impact

Also the construction had impact on the quality of the air although not a lot of people are complaining about that. This impact is of course also less noticeable. The *Stichting Gijzelgracht* together with the project office *Noord/Zuidlijn* initiated research to the quality of the air around the *Vijzelgracht*. It resulted that there were some substantial overruns of toxic substances (Csikós, 2010).



Fig.7. Prolapsed historical buildings, Vijzelgracht, Amsterdam



Fig.8. Prolapsed weavershouses, Vijzelgracht, Amsterdam

4. How were the problems solved?

Community groups

Gunningham (2004) argues that community groups play an increasingly important role in the pressure on companies. The foundation *Gijzelgracht* meant a lot in negotiating between the municipality and the local community. In 2009 the foundation was established by a few people (local citizens and entrepreneurs) who were extremely concerned about their place (*Vijzelgracht* and *Vijzelstraat*). The action group was financially supported by the municipality, whereby there was also money for one paid employee. He helps duped residents and businesses with the compensation and has a lot of contact with the municipality. Although the municipality did no research to the SIA, this community group did it in short themselves as part of a redesign project. They presented their research in two parts: *Grijsboek* part I (2006) and *Grijsboek* part II (2007). Also the association did some important recommendations to the committee Veerman (interview with action group, 13-05-2013).

Research

After a long period with a lot of trouble, the municipality decided something had to change, in order to finish the project successful. There were three different independent investigations into how the municipality acted in this project. First there was the research of the Ombudsman of the municipality. He researched the case of the prolapses houses at the *Vijzelgracht*. He paid attention to how the Project Office *Noord/Zuidlijn* and the *Dienst Milieu en Bouwtoezicht* (in English: service environment and construction supervision) acted to the community. Next there was the *Enquêtecommissie* (in English: Committee of Inquiry) in 2009. The Committee of Inquiry did research to the preparation, decision-making and implementation to the *Noord/Zuidlijn*. Also in 2009 the Committee Veerman was established. He was from 2002 till 2007 the Minister of Agriculture, Nature and Food Quality. This committee did research to the future of the subway and how to get the project to a desirable end for all actors.

All three reports indicate that the communication to the citizens was bad and had to be improved. In the report by the Ombudsman it is stated that residents were not taken seriously, when they encountered serious nuisance before the actual prolapsing happened. Also according to the Ombudsman the municipality could not find adequate care for the residents. The Ombudsman advises to:

Provide balanced, timely and systematic information to the residents, businesses and other stakeholders in the construction of the North / South line on the progress of construction. This

also applies to the risks that can manifest. Make an explicit consideration of the report of this to residents (Gemeentelijke Ombudsman, 2008).

Also the Committee Veerman (2009) advised for open, fair and fullest possible communication. Also better communication with the local community about the risks was necessary. A lot of times people did not know what was going on in the street, therefore feeling unnecessary unsafe. With better communication this could be prevented.

The action group representative tells the recommendations of the committee Veerman improved the situation a lot, but still it is not easy for people to get a financial compensation for example (Interview with action group representative, on 13-05-2013). Also the entrepreneur representative thinks the solutions the research initiated are not helpful on the long term (Interview with entrepreneur representative/street manager, on 17-05-2013).

Social licence

To make the project a success in the end, the municipality had to meet the needs of the citizens. People complained about and protested against the *Noord/Zuidlijn* a lot and the project was almost only in a negative way in the media. The social licence states that the social license can be enforced in three different ways (Gunningham, 2004). First, businesses want to keep their reputation high and therefor want to do 'good business. That is why a company can choose for measures doing well to the environment, to gain the 'trust' of a local community.

Second, businesses can meet het social license legally. That can be achieved via more strict measures but also via legal cases (Gunningham, 2004). In 2008 several people of the local community accused the municipality of Amsterdam. They thought the working hours at the construction site were too long. People worked there till ten o'clock in the evening, whereby the residents had nuisance till that time. Also on Saturday there was being built. The judge however decided that the residents are not equal, because the *Noord/Zuidlijn* eventually would be completed earlier by the longer working hours (ANP, 2008a).

Miller & Buys (2012) argue that by doing SIA in spatial projects in urban contexts, legal cases can be avoided. They examined the decision of the judges in ten cases in Australia in urban contexts and compared this to SIA measures. They conclude that the measures of the judges are very similar with the measures that were otherwise done by doing SIA. In the case of the *Noord/Zuidlijn*, when there was some sort of SIA, there probably would not be as much cases as there are now. For example there is the case of the owners of the prolapsed buildings in 2011. These people were having problems with selling their old house and buying a new house. Also it was difficult for them to

get a mortgage. The decision of the court was that the municipality has to help the people with a mortgage, by financing it themselves or guarantee for the residents. The municipality could also have concluded that themselves. That is relatively a small amount of money, comparing that the total project costs 3.1 billion euro (Veerman, 2009).

The third way to meet the social license is by changing the social needs of the community into new legal rules (Gunningham, 2004). At the case of the *Noord/Zuidlijn* there has not been made such new legal rules. But, as an interviewee indicates, since the *Noord/Zuidlijn* there is much more attention in the Dutch world of infrastructure planning for the 'surroundings management' (action group representative, interview on 14-05-2013). This was part of the plan of the Commission Veerman and means caring of accessibility, liveability and safety. The surroundings mean all the actors that are part of the project (Gemeente Amsterdam, 2009).

Measures

According to Rowan (2009), investors, government agencies and developers are also becoming more aware of how social issues affect the acceptance of a project and therefore the final cost of the project. At the *Noord/Zuidlijn* this resulted in more measures to compensate to local community. The measurements mainly focused on mitigating and reducing the nuisance. The project office carried out practical measures, to the advice of the committee Veerman (2009), to minimize the nuisance. For example, windows are patched, noise barriers are constructed, Christmas decorations and planters are hung and achievements are celebrated with residents (Interview with government representative, on 16-04-2013). But according to the street manager who is also the entrepreneur representative states that kind of measures does not make sense very much. What did help was changing the working hours from 10 o'clock to 7 o'clock in the evening (Interview on 17-05-2013). Also a lot of technical construction work has moved to other places outside the city and a lot of work is done now underground to reduce the noise. With these measures the liveability has improved a lot according to the action group representative (Interview on 13-05-2013).

Since 2009 the project *Noord/Zuidlijn* is doing a lot in terms of communication to involve residents in the project, a government representative says (interview on 16-04-2013). The project sends letters to residents with information on the progress in construction, there are 'kitchen table conversations' with local residents and regular discussions with residents, where under the direction of the project manager the activities are discussed in detail. Besides that the Project Office visits the construction sites in order to know what is going on at the place. Also the website hierzijnwij.nu and Facebook are important means to communicate with the community and interested persons. Finally there are 'visitor centres' where people can go under the ground level, in order to have a look at the

construction site and get a guided tour. This is working very well and there already have been a lot of visitors.

Measures to help the owners of the prolapsed houses focused on financial compensation and restoring. The municipality decided to pay for the restore costs of the buildings. In seven cases the municipality bought the buildings from the owners, because they had problems selling it (Damen, 2009). Also a special and independent 'damage bureau' was established. People can go to this bureau when feel they need financial compensation as a consequence of the construction, for example entrepreneurs with decreasing sales or owners of prolapsed buildings. There they can get the paperwork that is needed for the compensation. The difference after the research of the Committee Veerman is that the bureau is now 24 hours a day open. A government representative states that the compensation is more generous now than at first (interview on 16-04-2013).

Compensation

Even though these compensation measures may look nice, in practice it turns out to be a lot of work and compensations are not as generous as stated by the Project Office, the action group representative tells. This person helps the owners and entrepreneurs with their claims. House owners for example had to prove the cracks in the walls were caused by the construction. It is very difficult to prove that officially, but very clear to say. The action group made a change in this and now the municipality has to prove the cracks are not caused by the construction. Also for shop owners the compensation at first was not that easy and generous. Only the shops settled before 1998 at the *Vijzelgracht* or *Vijzelstraat* get the full compensation. Shops that settled between 1998 and 2002 only got half the compensation. In this case again the action group *Gijzelgracht* has ensured that also shop owners who settled between after 1998 got a full compensation (interview on 14-05-2013)..

Although the government states that the financial compensation is more generous now, the action group states that still compensation is not very easy to get or generous (Interview with action group representative, on 13-05-2013). For example all the claims are reviewed by a 'damage committee' whom you have to pay a visit, existing of a judge, real estate agent and an accountant. They review the claim and make a judgement in every little detail. A restaurant owner for example had to cut down the costs on cloth napkins and instead had to buy paper napkins, decided the damage committee. But the owner thought this did not fit the concept of his restaurant. So he did not get the claim he hoped for.

Mitigation

All these measures the municipality initiated focus on mitigation. This is often experienced as necessary measurements, but enhancement measures are less usual (Joao et al, 2011). More

importantly, Joao advocates for enhancement measures. These are reinforcing or enhancing measures that can improve the project design, but above all the environment as a whole, and thus have a wider impact. Joao states that the emphasis needs to be more on the positive aspects of a project. Also Rowan & Streather (2011) argue that enhancement measures can cause more acceptance of the project. Although the municipality takes a lot of practical measures and communicates more and better with the local community, still this does not make up for the impacts. For example the sense of community in the neighbourhood around the *Vijzelgracht* and – street are affected. People do not feel safe around the construction site and rather avoid the place. That is why the association *De Vijzel* organised together with the Project Office a party in the streets so the entrepreneurs, local residents, the municipality and construction company could meet each other. This had to bring the actors closer to each other and make the sense of community stronger. These measurements make the bond stronger for a short time. But on the long term it makes no sense because these kinds of measures do not stop the daily nuisance (interview with entrepreneur representative, 17-05-2013).

Vulnerability

Human vulnerability must be the focal point of SIA (Rowan, 2009). However at the *Noord/Zuidlijn* there has been no SIA, the municipality tries more and more to think from the perspective of the local community. They do that by means of communication and therefore have two themes: sensitivity and realism. With sensitivity is meant listening to the community and think from the perspective of the community. Realism means honest and open communication about the building process and its risks. The interviewee indicates that they think from the perspective of ‘the neighbour’ and what consequences the construction would have for him. In this way, the vulnerability is taken into account.

Conclusion

Why was there so much controversy among citizens of Amsterdam on the construction of the Noord/Zuidlijn.

What can be concluded is that there has not been any attention for the consequences for the local community during the decision-making process of the *Noord/Zuidlijn*. Niekerk & Arts argued already in 1996 for an implementation of SIA at an early stage in infrastructure projects, but in the Netherlands there has been very little attention to this. In the case of the *NoordZuidlijn* the research for the decision to build the subway, was based mainly on technical aspects of the construction. The consequences of the subway were mainly about the existing buildings and the traffic. The government only focused on the positive consequences, mainly the improved public transport.

During the construction period from 2003 till 2009 a lot of technical and financial problems arose. This caused a lot negative social impacts on the local community. People felt less at home in their neighbourhood or even felt not safe any more, the economic climate of some streets changed negatively and there was a lot of daily nuisance that affected the daily life of people.

Like Rowan (2009) states, there is more attention for SIA and the importance is being acknowledged by developers and government authorities. As can be concluded in the case of the *Noord/Zuidlijn*, first there have to be problems before the government takes notice of the social consequences. Since the most severe damage in of the buildings in *de Vijzelstraat* in 2008 it was clear to the municipality something had to be done in order to complete the project successfully. Thus, in order to succeed the project, the social licence to operate (Gunningham, 2004) had to be met.

Next the municipality did not know how to solve the problems properly. In this case the municipality tried to reduce the negative social impacts by means of communication, although this had little effect. The municipality initiated practical solutions which focused on mitigation of the nuisance.

The local community took action themselves by establishing action groups. They helped people with sagged houses and disadvantaged entrepreneurs with the claims for the municipality. The claims cost the municipality a lot of money and negative publicity. But this could have been prevented by doing SIA as Miller & Buys (2012) argued.

So when the municipality would have done first SIA before starting constructing the subway, a lot of nuisance and harassment could have been prevented. For future big infrastructure projects it is recommended also look aside to the people that are affected, and use SIA in order to get

acceptance of the local community. In the Netherlands SIA is not implemented in the law. But some aspects of SIA should be considered to be legally a mandatory set for infrastructural projects. Not only for the affected communities, but also for the success of the project itself. In case of the *Noord/Zuidlijn* there was too much a 'tunnel vision' and decision makers did not look to the sides where the people stand. But there is light at the end of the tunnel, because a subway is definitely needed for the growing city.



Fig. 9. The subway tunnel

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