INTERVENTION STRATEGIES FOR RENOVATION OF SOCIAL HOUSING ESTATES

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THE RESEARCH SET UP

INTRODUCTION TO THIS CHAPTER

This chapter provides a general overview of the research in this thesis. It is structured into four Sections. Section 1.2 describes the problem of the ageing housing stock in Europe and in Italy. It also introduces the current Dutch context. Section 1.3 discusses the research design and describes the problem definition, the aim, the main research questions, the relevance and the applicability. Section 1.4 gives information about the methodology used, whereas Section 1.5 explains the structure of the research. Finally, an introduction to the second chapter is provided.

1.1) BACKGROUND

1.1.1) EUROPEAN LEVEL

EUROPEAN LEVEL

Most of the European social housing stock was built after the WWII. The demand for housing in the post-war period necessitated the rapid production of large numbers of dwellings with less emphasis on qualitative aspects (Andeweg et al., 2007). This massive housing stock now decays fast, not only physically but increasingly functional performances deteriorating as well.
Since the production of new dwellings generally decreased to an annual European average of below 1% of the existing stock, demolition on a large scale will be a less obvious option. Improvement of existing dwelling quality by renovation will become the main approach (van der Flier et. al., 2004).

Housing organizations need to periodically refurbish their housing stock and the demand for *sustainable* refurbishment is high: from the European Commission, the member states and the associated states (SUREURO)[1] is high.
Many European countries investigate and apply intervention strategies in order to intervene in deteriorated housing estates and dwellings. New technologies have been developed, but have not yet been brought into practice, were ad-hoc implemented or focused on limited factors. Consequently, these strategies only have limited impact on urban environments (Andeweg et al., 2007).
A special problem is the large prefabricated post war housing estates in Central and Eastern Europe. Typically, refurbishment strategies are not integrated with sustainability and lack sufficient participation of residents. Indeed, many refurbishment projects only focus on technical issues and initial costs (SUREURO).
International comparative research is dominated by social, spatial and economic surveys like the European funded Restate project (Restructuring Large-scale Housing Estates in European Cities: Good practice and Visions for Sustainable Neighborhoods and Cities). Generally, comparative studies addressing the physical level are lacking.
The European funded research program CostC16 provides an overview of common problems affecting large housing estates in Europe and applied solutions in renovation of social housing estates. In this study, common problems were grouped into design, technical and social aspects and tabulated against common design aspects like monotony of building layouts, large number of small flats, lack of diversity in dwelling types, lack of dwellings

1 SURERURO stands for SUstainable Refurbishment EUROpe. It is a European research project into the housing environment. The objective of the research group is the introduction of environmental friendly energy supplies to large housing sates and the creation of an efficient and healthy environment (www.sureuro.com).

meting contemporary living standards, and a low flexibility of apartments. Poor aesthetics value, in terms of lack of identity, is important as it contributes to in residents. Both residents and experts consider thermal insulation as the most urgent technical problem. Regarding the social aspects, a common problem is ghettoization (frequently caused by high immigration levels and unemployment) resulting in social segregation. It is very important to involve residents in improvement of their buildings, since this increases satisfaction and greater responsibility for maintenance of the buildings and the surroundings (Andeweg et. al., 2007).
Physical solutions for renovation generally imply improvement of the initial quality of the housing block. Some countries, like the Netherlands, intervene in existing housing supply by applying transformations like moving walls or adding new volumes to (like dwellings on the top floor, the so-called "optoppen") (Brandes et. al., 2000).

Improving the quality of (urban) building envelopes should be a major issue in Europe. According to the "Building Decay Surveys" issued by the Federal Government of Germany, 80% of all European building decay is found in urban building envelopes itself (roof, walls, foundation). Moreover, it has been calculated that maintenance costs are mainly occurring in (urban) building envelopes and that the quality of the envelope itself often fails to meet current demands and standards (Andeweg et al., 2007). Consequently interventions of the existing building envelope are a great challenge in the physical renovation of social housing estates.

The European residential sector, currently accounting for about 27% of energy consumption in Europe, offers a great potential for reducing CO2 emission by energy efficient housing (Cecodhas[2]). Sustainable renovation of social housing estates is indicated not only because the high potential for energy savings, but also for social reasons. Energy efficiency of housing for lower income groups is important, because the current and future increases of oil prices especially affects these vulnerable residents. Since 2000, the European Commission has undertaken a number of initiatives. One is the stimulation of enhanced energy savings by means of the Energy Performance Building Directive (EPDB 2002/91 CE) (Czischke et. al., 2007)3. The directive introduces measures to improve the energy performances of new buildings and buildings under renovation.
In view of the European focus on energy efficient housing, a renovation strategy for existing housing stock that is directed at the envelope, offers the highest potential for energy saving, since the building facade ranks among the highest in energy consumptions (super glazing, roof and façade insulation offer the highest potential for energy saving - EPA[4]). .

However, although the potential of envelope directed renovation strategies is recognized at an European level, there is a lack of approaches integrating a range of possible physical solutions. This is not surprising considering the lack of knowledge of renovation based approaches in general (van der Flier et. al., 2004). However, to reach the maximum value for money, it is essential to integrate all the factors influencing urban building envelopes and look at it in a broader scope (Andeweg et al., 2007). A renovation strategy that addresses the building envelope might also improve the livability of post-war social housing. These neighborhoods are now among the most deprived neighborhoods and typically deal with livability problems. Improving building facades in a way that compares to the innovative and experimental character distinguishing social housing from the '60s might reduce livability problems. To this end, alternative strategies of intervention for local authorities, housing organizations, owners, and specialists (like architects) are indicated and this research aims to provide a framework for an integrative, innovative renovation strategy.

2 Internet sit e of Cecodhas www.cecodhas.org, section Energy, visited in 2007.
3The directive developed four types of measures: establishing a common strategy for calculating the energy performances of buildings, drawings up minimum energy performance requirements for new buildings and building under renovation, setting up a certification system and ensuring that these certificates are on public display, inspecting and assessing boilers and heating and air conditioning systems (Czischke et. al., 2007).
4 This information refers to a report about energy saving potential in the existing housing stock in the Netherlands (EPA)

1.1.2) NATIONAL LEVEL – ITALY

NATIONAL LEVEL IT

Like most European countries, the social housing stock decays in Italy as well as in other countries like the Netherlands. In particular, the part of this stock realized between the 1960s and the early 1980s with prefabricated concrete technologies suffers from significant physical and functional problems.
Italy is far from those European countries like the Netherlands, Poland, Sweden and Denmark where social rented housing forms is between 15% and 28% of the total available housing (Regular National Report on Housing 2005 in Marcet, 2006). The Italian social housing sector, in fact, only covers about 4% of the total housing stock (Mezzetti et. al, 2003) and particularly concentrates in the bigger cities.

Most of the social housing stock in Italy is owned and managed by more than hundred housing institutes all over the country. The majority of these organizations do not substantially invest on (strategic) renovation. Interventions are mainly focused on maintenance of the current building quality, not on an improvement. Very often, like in ATER Roma (the single housing institute in the city of Rome), interventions are driven by an "emergency approach" that aims at maintaining the quality at the minimal acceptable level. Measures are directed to solve circumstantial and urgent problems. Consequently, the technical and functional quality of the housing stock decreases over the years.

Like other European countries, the Italian government does not financially support the social housing sector any more, as they did in the past. In 2001, decision-making and economical power was transferred from the State to the Regions, the so-called "devolution process". Since then, Italian Regions autonomously decide on their local (housing) policies and the State is charged with macro-programming activities and co-finances projects. This political shift transformed social housing from a public affair sector into private organizations controlled by local political power. The housing institutes accordingly adapted their business model with different legal forms across the country.
In some cases, the shift did not resolve former deficits like financial problems, management of maintenance/renovation processes and new construction. In 2005, a report by Federcasa (Federazione Italiana per la Casa, *Italian Housing Federation*) showed that, on the average, the housing institutes manage a limited maintenance strategy and low investments (Pozzo, 2005).

The Italian social housing sector is diminishing while the number of people in need of affordable housing is increasing. Between the 1980s and the 1990s, 826.000 units, corresponding to 3% of the whole social housing stock, were put into the private market (Tosi, 1996; Mezzetti et. al., 2003). For economic reasons, in fact, most of the institutes are progressively selling parts of their stock without replacing them with new construction. Since the regulations impose selling the dwellings below 30% of their market value, this strategy is insufficient to balance the financial conditions of the institutes. As a consequence, some of them drastically decreased expenses on maintenance level (the majority far below 20%, Pozzo, 2005). With some exceptions investments are low as well.

Most of Italian social hosing estates suffer from problems at different levels. The whole deterioration process might be explained addressing three aspects that are physical (technical and functional), social and economic (Priemus, 1985).

PHYSICAL DECAY

- The diffused *physical decay* is mainly caused by a lack of maintenance over the years. It develops on the building envelope, in the shared spaces (building entrances, inner corridors, cellars and garages) and within the single dwellings.
  Main defects are caused by the technical characteristics of the building envelope. At that time of construction, insulation layers were very poor or even absent, therefore the façade often does not meet the current minimum thermal and acoustic requirements (Andeweg et al, 2007). Frequently, also basic protection from atmospheric agents is not provided any more. Naturally, all aspects are highly important but thermal insulation acquires particular relevance in view of energy building regulations that will be compulsory from 2009 onwards.

  The current *functional* quality at the urban and building level is the result of the national standards for social housing fixed in the 1960s. These standards are still valid until today

but are obsolete and muddled. To control the minimum living quality, design and construction were regulated by strict norms based on requirements of that time.
With respect to housing standards, for example, dwelling size, number of rooms, windows surfaces and projections (like terraces) were controlled. Over the years, the composition of the family nucleus, living requirements and use of facilities has been changed. Yet, regulations on housing standards are not adapted accordingly to these trends.

- In a number of cases, low-income residents living in social housing neighborhoods are marginalized and subjected to ghettoization. The negative reputation of the quarter is frequently strengthened by the media. In spite of the recent efforts of some local municipality by means of urban and social renewal programs, the *social context* is frequently troublesome.
  Squatting and rent arrearage are not seen as a "crime" and the authorities do not have the legal rights to intervene. In a number of neighborhoods have high number of unemployed and illegal people, which in turn decrease the general social safety. It is considered an urgent problem (Pozzo, 2005). In some cases, partially due to multiple repetitions of identical building layouts, residents do not feel much attached to their district; vandalism and crimes are frequent. However, some neighborhoods have more social coherence, especially in the North of the country.
  Although being frequently directed by personal interests, social cohesion and participation might be present. It is not rare that tenants join local networks of inhabitants facing problems with social housing or cooperate together with the Municipality in developing plans for renewal of their neighborhood.

SOCIAL DECAY

- On the *housing market*, the local demand has been changed over the last years and the housing supply needs to be re-adapted to the new requirements. People in need of housing are currently not only low-income people but also all of those who can not access affordable houses such as the disabled, the elderly households, immigrants, young couples, single parent families and students. This phenomenon is particularly evident in the biggest cities.
  Therefore, there is a need of more dwellings, for a wider target group, with housing layouts meeting current living requirements and diversified prices in order to increase chances for affordable dwellings and extend free choice.
  This consistent shortage reflects the current *housing emergency* affecting the city of Rome and it partly due to another problem in Rome. The local politics, with outdated regulations (indirectly) allows about 10.000 people with medium-high income living in social dwellings. Consequently, people in need of social housing are looking for a house in the private sector. However, since housing prices have been rising in the recent years (Ball, 2005), this group has substantial difficulties in finding affordable housing, even within the numerous recent residential expansions.

HOUSING EMERGENCY

1.1.3) NATIONAL LEVEL: THE NETHERLANDS

The Netherlands has a longstanding tradition in social housing, with a large share of social housing sector on the total housing stock (the highest in Europe). A considerable transformation of the stock[5] (restructuring of deprived neighborhood) ranks high on the government's agenda for the coming years (VROM 2007) requiring large investments by housing associations[6] (Ouwehand & van Daalen 2002).
Housing associations were introduced in the middle of the nineteenth century (Ouwehand & van Daalen 2002). They are nowadays the second party involved in construction of new dwellings in the Netherlands, after private developers.
In 2001, 99% of the not-for-profit housing stock, being 36% of the total housing stock, was managed by housing associations (almost 2.5 million dwellings) (Ouwehand & van Daalen 2002; Ministry of VROM 2002). This makes the Netherlands one of the countries with the

5 The National Housing Agreement signed by the secretary of the State, Aedes (the Association of the Housing Associations), the VNG (Association of Netherlands Municipalities) and the Nederlandse Woonbond have been laid down objective for restructuring and new construction in the period 2001-2005. Demolition of 20.000 dwellings per year, merging of 16.000 small housing units into 8.000 housing units, improvement of 65.000 social rental dwellings per year, investments in sustainability and in the quality of residential environment (Ouwehand & van Daalen 2002)
6 In 2000, profits in excess of € 860 million were made from the sale of house property alone against that more than €360 million has been invested in unprofitable investments (Ouwehand & van Daalen 2002).

largest social rented housing sector together with Poland (29%), Sweden and Denmark (28%) (Marcet et al., 2006).

As in many other Western-European countries, the Dutch government reduced its financial support of social housing (Boelhouwer, 1996; Smith and Oxley, 1997). After decades of strong central government intervention in the housing market, the Dutch national government policy embraced the reinforcement of market principles in social housing. As part of this policy, housing associations gained much more administrative freedom.
The new policy context has set considerable challenges for the asset management of Dutch social landlords. Being transformed from operational, task-oriented organizations towards 'social entrepreneurs', they have to operate in a more strategic, market-oriented way. As a result, there has been wide interest among the associations in methods and tools to support asset management in a more systematic and business-like manner (Gruis et al, 2007).

Restructuring of social housing estates is on the agenda since the late '90s. Dutch housing associations have been developing strategies to deal with renovation on neighborhood and building level. In particular, since they have to operate their stock without (direct) financial support, they developed effective processes to manage renovation projects. A number of housing estates from the 1960s and the 1970s have already been subjected to renovation. Some of these initiatives are considered good examples of renovation as appears by their nomination for the National Renovation Prize (NRP), a well-known prize awarding successful renovations in the Netherlands (see www.nationalerenovatieprijs.nl).

Physical renovation on the building level often includes readapting the existing housing supply. Transformation types like combination of existing units and addition of new dwellings (on the top floor, at the bottom, at the building head) are common solutions in the Netherlands (Brandes et. al., 2000). From a technical point of view, improvement of technical performances is obtained by new technical equipments, better thermal and acoustic insulation, new claddings-windows and frames-glazing. Reorganization of existing accessibility (to the building, dwellings and shared spaces) by means of, for example, new elevators or addition of galleries, are common solutions as well.

However, many districts are still facing an increasing decay (Aedes, 2003). Frequently, people do not feel related to their neighborhood. As soon as they can, they will move elsewhere and in these neighborhoods it might be difficult to find new tenants. In view of this, transformation of the existing neighborhoods and improvement of the quality of life (livability) are still key factors in creating attractive places to live in.

Based on "thinning-out" and building concentration criteria, demolition, new construction and renovation of the existing housing stock, rental and homeownership housing is stimulated. Over the coming years, social housing organizations will invest billions of euros in the transformation of deprived neighborhoods. It is expected that 200.000 dwellings will be constructed and 600.000 improved (Aedes, 2003).
Local authorities, tenants and other stakeholders are working together to draw up plans to improve the quality of life by focusing on:

- improving the quality of housing (technical conditions, dwellings' facilities, dwellings' appearance, insulation and floor plans)
- improving the quality of the living environment (management of public spaces, maintenance of green areas, pavements, combating vandalism and decay)
- improve the composition of the area (differentiation in terms of age and income of tenants)

There are three main reasons for selecting the Netherlands as a reference country for Italy, Rome, in this research on renovation practice. First, the long Dutch tradition in the social housing sector, the organizational structure and the amount of money invested in it that makes The Netherlands a guiding country. Secondly, the improved part of the social housing stock gives a broad view of the various initiatives undertaken so far. Finally, the actual range of physical solutions applied might be well transferred to other local contexts.
Furthermore, in addition to a general overview of the local context in the Netherlands,, it is important to understand why and how these renovation projects could be implemented. The latter is particularly important when analyzing the conditions that allow Dutch physical solutions to be transferred to Italy, and Rome in particular.

1.1.4) CITY LEVEL: ROME

According to Federcasa (the Italian Association for Housing), housing institutes in Italy can be grouped into three categories according to maintenance and investment strategy: 1) profound maintenance reduction and zero investments; 2) moderate reduction of both maintenance and investments; 3) moderate-high maintenance and investments (Pozzo, 2005). This research focuses on one of the biggest Italian housing institute, ATER that belongs to the first group. ATER Roma (Azienda Territoriale per l'Edilizia Residenziale pubblica, *Territorial Institution for Social Housing*) is the only housing association in the city of Rome and one of the seven in the Lazio Region.

ATER Roma was chosen for two main reasons. For ATER, it might be beneficial to analyze its structure and provide directions for improvement on the basis of the Dutch model, since the institute is in severe financial and bad managerial conditions However, recommendations might apply to other institutes as well. Secondly, it is one of the most urgent Italian cases in need of solutions regarding both processes and products. This aspect is particular important because there is currently a huge housing shortage in the city of Rome and this situations is worsened by the decaying conditions of the stock managed by ATER Roma.

Because of an intervention approach based on the "emergency approach", most of the housing stock owned and managed by ATER Roma is in poor conditions. The low maintenance level implemented over the last years is the cause of a decrease in both technical and functional quality of the stock. An update to nowadays requirements is needed as well.

The strategies so far applied by the housing institute and the local municipality are insufficient to solve the mentioned problems. This might be explained by two factors. Firstly, there is a general *lack of knowledge* in terms of successful methods and tools for renovation of social housing estates. Secondly, there are no *(strategic) management strategies* for renovation processes.
This situation worsened due to the recent change in legal form as housing institutes were forces to change from "public housing organization" (organizations with public function financially supported by the government) to "economic public company" (companies with public function) (see Chapter 3, Section 3.1, General developments in Italy). After the mentioned 'devolution' process, the company was unable to adapt its structure to these legal changes. It is now incapable to develop and implement maintenance (and renovation) strategies. To support a more strategic decision making, tools and methods are very much needed.

1.2) RESEARCH SET-UP

1.2.1) THE PROBLEM

This research concerns processes and interventions strategies for renovation of deprived large social housing estates. In particular, it focuses on the residential blocks built between the '60s and the early '80s with prefabricated concrete technologies; the so-called panel multifamily blocks.

Description of the problem

At the European level, renovation of deprived social housing estates is often conducted on an ad hoc base, rather than occurring in an integral intervention framework. The recently set energy saving goals of the European Committee requires innovative strategies for the improvement of energy consumption of the existing stock..
The significance of the building envelope has been widely recognized as relevant in energy consumptions, building decay and expenses for maintenance. Unfortunately, despite its clear

potential, there is a lack of approaches integrating the range of possible envelope-related physical solutions.

In Italy, renovation in general is far from being implemented in the life-cycle of dwellings. With a few exceptions, the most common approach focuses on maintenance at the minimum acceptable quality, i.e. the original quality when newly constructed.. In case of Rome, interventions tend to be driven by the "emergency approach": temporary and superficial physical measures to solve severe and extended problems. The technical and functional qualities of the social housing stock worsen over the years, especially of those estates realized between the '60s and the '70s of the former century. The housing institute is at the same time in severe financial and managerial conditions. There is a need for a more strategic renovation approach and for tools to improve effectiveness of decision-making. Such issues are particular important given the current housing shortage in Rome.

Dutch housing associations have been developing strategies to deal with renovation on neighborhood and building level. They developed effective processes to manage such projects. A number of housing estates from the 1960s and the 1970s have already been subjected to renovation. Some of these initiatives, although far from being envelope directed approaches, are considered good examples of renovation. This is extensively shown in the site of the National Renovation Prize (NRP), as stated a well-known prize awarding successful renovations in the Netherlands, just having awarded the 11the edition of the biannual prize.

Insight into the Dutch context could be necessary to understand 'why' and 'how' such renovation projects are being implemented to end up with recommendations on possible intervention strategies for ATER Roma in particular, and to the Italy in general.
Summarizing the described situation, the **problem definition** might be described as follows:

The housing shortage and decaying condition of the post-war social housing stock owned by ATER Roma stem for poor and ad-hoc maintenance and investment decisions and this situation might be improved by an innovative intervention strategy that might be developed after the framework of the Dutch renovation strategies.

1.2.2) AIM OF THE RESEARCH and CENTRAL RESEARCH QUESTIONS

This research refers to a broader concept of renovation that according to Thomsen is a "transformation (process) of the physical, functional, financial, architectural and ecological characteristics of a building product or project (product) to realize a comprehensive and useful extension of the life span" (Thomsen, 2001).

The **aim** of this study is to *recommend on directions for the improvement of the intervention strategy of ATER Roma for its post-war housing stock.*
In particular, the objective is to provide a framework of physical measures for renovation directed to the building envelope to support decision making of the housing association and other parties. This will be achieved by structuring a matrix addressing strengths and weakness of each physical measure.

To meet the aim of this research, three **research questions** are formulated:

RQ 1) What solutions to improve renovation of social housing estates in Rome could be identified in the Dutch housing management model?

RQ 2) What envelope directed physical measures have been applied in good examples practices of renovation of social housing estates in the Netherlands?

RQ 3) What might be strengths and weaknesses of implementing Dutch physical measures for renovation in the Roman context?

This research does not adhere to the idea of physical determinism often claimed by people and architects in particular: 'technical improvements to the dwellings will automatically make the residents happier' (Priemus, 2005). Rather, the fundamental assumption is that physical renovation alone (technical and functional) cannot succeed in improving the quality of deprived social housing estates. To be successful in renovation, physical, social and economic factors have to be integrated. With this in mind, this study mainly focuses on physical and managerial problems.

1.2.3) CONTENTS AND PURPOSE

As said in the previous section, the aim of this study is to recommend on directions to improve the intervention strategy of ATER Roma. To provide these directions the Netherlands is taken as a reference country. Two types of investigations will be considered: insights into the Dutch managerial model and into good examples and best practices of renovation. Both investigations are considered relevant to recommend on the possibilities and limitations of transferring Dutch practices to particularly Roma, and the Italian context in general. Therefore, this research combines design and managerial aspects.

However, ATER Roma is not an isolated case in Italy, and therefore the output of this research might be of use for other housing institutions as well. This could be particularly true for all of those institutes investing more money maintenance and renovation..

Information collected in this research might be seen as a reference for managers of housing associations and other institutions dealing with renovation of social housing in Italy. However, since it also based on physical aspects of renovation, is directed to architects as well. Numerous floor plans and pictures of Dutch renovations projects are provided in two of the eight chapters.

The research intends to integrate best practices of renovation in the Italian context. Often, in fact, parties involved in the process ignore the range of solutions they could think about and do not sufficiently discuss how to put these solutions into practice. Knowing that physical actions have been actually realized in other countries could serve as a stimulus to go beyond standard approaches.
Plans and pictures comparing initial and final situation of the blocks are considered an effective tool for communication because the measures will be visualized. Visualization should be among the first steps in re-stimulating experimentation in the social housing sector and will raise interest and debate on ways to deal with housing shortage and decaying conditions of the social housing stock.
The lack of Italian scientific and non-scientific publications on this subject might pinpoint at a decreased interest. With few exceptions, in fact, the country does not contribute to international research on social housing renovation.

This research also has an historical dimension. Both the background of Dutch and Italian local context will be described to explain the initial conditions of the deprived large social housing estates. This will enhance understanding of current renovation approaches in the Netherlands and Italy and partially determine final recommendations on implementation.

More in general, this study is but one first step in a longer process contributing to the improvement of renovation practice in Italy and in Rome in particular. Furthermore, it is expected that investigations within the Dutch practice might identify factors to be improved in the Netherlands as well, since innovative energy saving measures will be considered as well. This could be the beginning of further research into a new perspective on social housing renovation.

1.3) THE STRUCTURE of the RESEARCH and THE METHODOLOGY

The structure of the present research is based on three thematic packages (P1, P2 and P3) corresponding to the three main questions (RQ1, RQ2 and RQ3) (see table below).

THEMATIC PACKAGE	SUBJECT	QUESTION	METHOD
P 1	SOCIAL HOUSING RENOVATION: ITALY NETHERLANDS	RQ 1) What solutions to improve renovation of social housing estates in Rome could be identified in the Dutch housing management model?	Tools: interviews, questionnaires, scientific literature and site inspections. Case study: ATER Roma
P 2	EXAMPLES OF RENOVATION: NETHERLANDS	RQ 2) What envelope directed physical measures have been applied in good examples practices of renovation of social housing estates in the Netherlands?	Tool: interviews, questionnaires, site inspections, plan analysis Case studies: 10 Dutch renovation projects; Florijn Noord, Amsterdam - Rochdale housing association.
P 3	TRANSFERABILITY	RQ 3) What might be strengths and weaknesses of implementing Dutch physical measures for renovation in the Roman context?	Case study: Laurentino38, Roma Expert meetings

A case study is a method used to get insights into the current practice implemented in both countries. The Dutch case study has been selected in Amsterdam Zuidoost (the renovation of the Florijn Noord managed by the housing association Rochdale in Amsterdam South-East). The Italian case study has been selected from Rome (the current approach in Laurentino38 by the housing association ATER Roma). An overview on renovation practices in the Netherlands is provided in the analysis of 11 additional projects.

The tools used to gather information about the two main case studies are interviews and questionnaires with the parties involved in the process (director of housing association, architects, and, in the case of Rome the municipality and some inhabitants as well). Information on details about the 11 renovation projects stem from the site of the NRP, the European funded research project Cost 16 and additional material provided by architects.

Two major sources were consulted to identify relevant literature on the subject (texts and conference papers) and European and national internet sites (European funded research projects and architecture bureaus).

The physical measures extrapolated from the 11 Dutch renovation projects have been structured into a matrix. The matrix qualitatively addresses strengths and weaknesses of each measure with respect to four items: physical aspects (technical and functional), appearance, social aspects and feasibility. The evaluation is based on the personal comments

of the author (based on literature and comments of people and experts interviewed) and professionals (Dutch and Italian experts).
Depending on the intended level of physical transformation in a residential block, the corresponding renovation approach is suggested. Each approach can be implemented applying a combination of physical measures from the respective toolbox. According to the four listed items, weaknesses and strengths of each measure can be checked using a matrix.

The research is structured into nine chapters. The first chapter deals with the study design. The second summarizes the relevant knowledge concerning renovation of large social housing estates. The third Chapter introduces the Italian and Dutch context with respect to social housing and provides directions for solutions transferable from the Dutch to the Italian housing management model. The fourth chapter introduces the physical aspects of renovation. It provides examples of renovation projects recently realized in the Netherlands and a study of possible intervention strategies for a deprived social housing block in Rome.
This fifth and the sixth chapter deepen insights into a best practice example of renovation in the Netherlands, the Florijn Noord in the Bijlmermeer (Amsterdam South-East). The seventh chapter describes large social housing estates in Rome. It provides information on a deprived neighbourhood from the 1970s and then focuses on the case of Laurentino 38 to explain problems in a part of the social housing stock in Rome.
Finally, in the eighth chapter the matrix of physical measures is discussed. Then, major recommendations for improvement of intervention strategy of ATER Roma are presented.

The table below shows the main relationship among the three packages (P1, P2 P3), the three main research questions (RQ 1, RQ2 RQ 3) and the chapters in which the answers are provided.

SUBJECT	QUESTION	CHAPTER
P 1) SOCIAL HOUSING RENOVATION: ITALY NETHERLANDS	**RQ 1)** RQ 1) What solutions to improve renovation of social housing estates in Rome could be identified in the Dutch housing management model?	**3**
P 2) EXAMPLES OF RENOVATION: NETHERLANDS	**RQ 2)** RQ 2) What envelope directed physical measures have been applied in good examples practices of renovation of social housing estates in the Netherlands?	**4 – 5 - 6**
P 3) TRANSFERABILITY	**RQ 3)** RQ 3) What might be strengths and weaknesses of implementing Dutch physical measures for renovation in the Roman context?	**7 - 8**

INTRODUCTION TO THE SECOND CHAPTER

The second chapter provides an introduction to the theoretical background of this research. In particular, over fours sections, it describes the historical background of deprived social housing estates in Europe, presents theoretical models describing the process of change and decay of neighborhoods. This chapter also provides an overview of underlying factors of decay and renovation by means of life cycle extension and open building theory.

CHAPTER 2)
THEORETICAL BACKGROUND

INTRODUCTION TO THIS CHAPTER

This chapter deals with the relevant knowledge supporting the subject of the research. In five sections are described the historical background of deprived social housing estates in Europe, briefly explained few theoretical models describing the process of change and decay of neighbourhoods, given explanations of image as an underlying factor for decay and outlines of renovation by means of life cycle extension.

An introduction to the historical background of post-war II social housing estates is necessary to place the current task of renovation of those blocks into their actual context of time. This section, together with the second one, introduces and partially explains major problems affecting the case studies presented in the following chapters. In particular, these problems will be further explored with respect to the Dutch case study.

The third section focuses on examples of international studies undertaken to explain change and decay of neighbourhoods. It provides an overview on the debate about the following issues: what factors contribute to neighbourhood deterioration? How and where does the process start? In what way do the factors reinforce each others? Are there any factors more relevant than others? The aim of this section is not to give answers to the problems but frame physical building renovation within a broader context.

The fourth section focuses on image as underlying factor in explaining the decay of neighbourhoods, therefore of housing estates. Its role is highlighted because it is often pointed out by various authors and even depicted as one the keys for revising the process.
Image becomes more and more the compelling factor for renovation of deprived neighbourhoods and estates in northern Europe. In this section will be explained why it has been decided to focus this section on one factor, image.

Finally, the least but not last section, introduces the renovation approach at the base of this research. It is not explained how to extend life cycle of a building, how to measure it and so on. The purpose of this section is just to place envelope directed strategy into its theoretical framework explaining what might be advantages and motivations for keeping the bearing structure and change the remaining building elements.

Conclusions of all the three sections are provided at the end of this chapter.

2.1) HISTORICAL BACKGROUND OF SOCIAL HOUSING ESTATES IN EUROPE

Most of the social housing neighborhoods in Europe have been realized after the Second World War (van Beckhoven et al, 2005). After collapses in construction and damages caused by the war conflict, economic migration, and rapid increase of the population, there was an enormous shortage in the housing sector, characterized by a lack of sufficient and adequate dwellings (Andeweg et al, 2007). The baby-boom in the 1950s is an additional factor that increased the need of many European countries for improvement of dwelling conditions. Consequently, many European countries initiated a reconstruction process and large housing estateswere realized (van Beckhoven et al, 2005).

Most of the buildings were completed after the 1950. The majority was built between the 1960s and the 1970s. This was possible thanks to the new building techniques that allowed fast realization at lower costs of especially large housing estates[1]. Due to the necessity to produce large number of dwellings in a short period, many countries experimented with new building methods and non-traditional building materials (Andeweg et al, 2007). During the 1960s, the construction of high-rise[2] flats predominated in many European cities, culminating in a high-rise boom that in most of the Western countries lasted for no more than 10 years (Wassenberg, 2004).
Since the demand for housing necessitated the rapid production of large numbers of dwellings, the emphasis was put on quantity, instead on quality. Dwellings in multifamily blocks were supplied with minimum but sufficient equipments. Consequently, the current European housing stock originating from that period is, according to today's standards, insufficient on both technical and functional performances. After about sixty years, the quality of some of these buildings has decreased and the standard of what was considered as functional quality at the time, has changed significantly (Andeweg et al, 2007). Therefore, technical and functional quality of the existing stock needs to be adapted to the current housing standards.

The idea behind the plan of these neighbourhoods was the concept of idealistic housing characterized by spacious and well lightened dwellings in multifamily blocks in wide green areas. Notions of rational, efficient, healthy and functional buildings found their way right in the layout of large-scale neighbourhoods (Wassenberg, 2004). The separation of residential, employment and transports was a key concept (Turkington et al, 2004 and Hall et al, 2005 in Van Beckhoven et al, 2005). The neighbourhoods were defined as independent areas furnished with educational, commercial and business facilities, often located per estate. However, it happened that these additional functions were realized after the completion of the states. With the ideas of the 1930s and the techniques of the 1960s, many new areas were developed. These were to be modern alternative for the stuffy and narrow tenement in the inner cities (Wassenberg, 2004).
The building lots areas were often located on the edge of the city, occupying free land. The neighbourhoods were realized following strict urban developments plan that did not allow freedom in the design and imposed repetition.
It seems that a great influence to the development of this idealistic neighborhoods has been given by the thoughts of Le Corbusier who, right in this period, introduced his well-known Ville-Radieuse concept as the solution to the European housing problem at the third 'Congress International d'Architecture Moderne' (CIAM, 1930) (van Beckhoven et al, 2005).

Nowadays, the large housing estates represent an important part of the cities all over Europe. It has been estimated that in Central and Eastern Europe, excluding the former URSS, about 34 million people live in large prefabricated estates (Van Kempen et al, 2006).
In most of the European cities, many people do not have many choices in the urban housing market because other parts of the market itself are too expensive or unattractive and these estates have an important function in the urban, and regional, housing markets (Van Kempen et al, 2006). In addition to the mentioned problems related to the building quality, many estates also suffer from negative image, a stigma (Wassenberg, 2004), and are often viewed as major problematic areas within the cities.

1 In this study I will refer to large housing estates according to the definition of the RESTATE project. Large housing estates refer to a group of building that is recognized as a distinct and discrete geographical area. They are also estates
2 In this study I will refer to high-rise according to the definition proposed by the PRC, Bouwcentrum International The Netherlands, 2005. 'High-rise dwellings' are residential buildings consists of multiple housing units and have more than 4.PRC Bouwcentrum International The Netherlands (2005) Sustainable Refurbishment of High-Rise Residential Buildings and Restructuring of Surrounding Areas, report for European housing ministers' conference held in Prague, Czech republic,14 - 15 march 2005

2.2) PROBLEMS AFFECTING LARGE POST-WWII HOUSING ESTATES

Initially, these large housing estates functioned well on their perspective on the local housing market and residents were satisfied with their dwellings and neighbourhood (van Beckhoven et al, 2005).
In later years, some large housing estates lost their favorable position on the housing market they occupied in the beginning. Neighbourhood stigmatization played a role in this process (Wassenberg, 2004). Gradually, satisfaction made place for complaints about the dwellings and the neighbourhood and the surroundings and most of the estates were confronted with deterioration problems.

All single estates are more or less different, but many common characteristics across Europe can be identified. According to Turkington and colleagues, the problems affecting post-WWII large housing estates can be identified. They can be grouped into three main classes that are: housing stock, management and residents' related problems (van Beckhoven et al, 2005).
In the first group there are included problems related to the construction methods (structural problems because of poor materials), to the housing layout (problems caused by poor internal design), to the competition with other estates with better market position and image and, finally, to the inadequate urban design.
In the management group there are clustered problems related to legislation, finance/exploitation and management itself.
Finally, in the residents related group there are incorporated problems caused by the internal social environment (like anti-social behavior and noise pollution) and the so-called wider socio-economic aspects (like high unemployment, poor schooling, drug- and alcohol-abuse) (van Beckhoven et al, 2005).

Nevertheless, a number of positive elements have been inherited from the large housing estates model. Many people are positive about the design of the estates themselves and the large amount of green public spaces. Separation of functions is sometimes mentioned as a good measure in favor of safer traffic and prevention of pollution from industries. Moreover, besides being affordable, dwellings in these estates are very large, bright and sunny (van Beckhoven et al, 2005). They are often located close to the city or to natural areas; it also happened that due to their good accessibility system, some neighborhoods become business centers (Dekker and Van Kempen, 2005).

2.3) MODELS DESCRIBING NEIGHBORHOOD CHANGE AND DECAY[3]

Until the 1990s, the research was not so much focused on the changes in these neighbourhoods. The political attention was concentrated on renovation, and sometimes on demolition, of pre-war housing estates, and especially on the realization of new housing estates elsewhere (Priemus, 1991 in van Beckhoven et al, 2005). Since the 1990s, the attention to the post WWII neighborhoods increased at an European level, especially concerning large housing estates, mainly because the problems in these estates increased (van Beckhoven et al, 2005).
Recently, a number of researchers have studied the present character of post-WWII large housing estates, their position on the housing market and their current physical, social and economic developments (such as Power, Murie, Skifter Andersen, Turkington, Musterd and

[3] *Most of the Information in this paragraph are strongly based on Van Beckhoven, E., Bolt, G., van Kempen, R. (2005) Theories of neighbourhood change and neighbourhood decline: their significance for post-WWII large housing estates, paper presented at the ENHR-conference "Housing in Europe: new challenges and innovations in Tomorrow's cities", Reykjavik, 29 June – 2 July 2005 and on Priemus, H. (2005) Decay of large housing estates revisited Keynote speech at the RESTATE Conference "Restructuring large housing estates in Europe: policies, practices and perspectives", Ljubljana, May 21, 2005*

van Kempen). Also, specific in-depth studies have been carried out within several European projects, such as UGIS (Urban Governance, Social Inclusion and Sustainability), ERBEX (The Spatial Dimensions of Urban Social Exclusion and Integration: A European Comparison Urbex) and RESTATE (Restructuring Large-scale Housing Estates in European Cities: Good Practice and new visions for sustainable neighborhoods and cities) (van Beckhoven et al, 2005).

Theories and models developed by the researchers of the Chicago School in the 1920s (Park, Burgess and Hoyt) are considered the precursors in the long list of models to explaining change and decay of neighbourhoods. Three main approaches can be distinguished in the investigation of the neighborhood change processes, and decay in particular, that are the human ecology, the subcultural and the political economy approach. These approaches are at the base of the models based on the American situation (Grigsby and colleagues, Temkin and Rhoe) and on the European situation (Prak and Priemus, Power, and Andresen). The latest are focused on the situation of the post-WWII social housing estates in Europe. Nonetheless, despite the all-embracing character of the models developed until now, they always seem to stress one or a small number of factors as the most important ones (van Beckhoven et al, 2005).

It has not been clarified jet how and where the neighborhood deterioration process starts (Priemus, 2005). Grisby and colleagues, state that ageing of the housing stock is not the primary cause of neighbourhood decline. On the other hand, it is recognized that the change is someway a circular self-feeding process. In this respect, Prak and Priemus introduced the concept of the three, internal fortifying, *spirals of decline* (social, economic, and technical decline) and Andersen introduces the decay as a “self-perpetuating process”.

However, physical decay seems to be a factor that needs more investigation. In particular it is considered a cause for neighbourhood change (Power, 1997), a consequence (Grisby and colleagues), or even a concomitant factor affecting the change itself together with others (Prak and Priemus) (van Beckhoven et al, 2005).

The importance of the *initial quality* of the neighbourhood, and the stock in particular, is stressed by the model developed by Park and Priemus. The quality of the housing stock can be forceful determinant of its later situation, physically as well as socially; no matter what can be done, if the initial situation is low, deterioration may start quickly and continue rapidly (van Beckhoven et al, 2005).

Besides their crucial role, *environmental problems*, like energy consumption and pollution, are not considered into these models. Probably, at the time they were developed, the cultural background was not ready jet to weight the importance of their position in the neighbourhood changes. In 1993, this important item has been elaborated and introduced by Heeger into the model of Prak and Priemus (Priemus, 2005).
The *reversing* process of decline is seldom considered. Power suggests that the key to reversing the spiral of decline is winning the support of the residents. Unlike other researchers, Power inserted the revising process of decay within the model itself (van Beckhoven et al, 2005). In this respect, local management turns out to be an important factor.

Reputation, or the so-called image of an area, that is “the idea people within and outside the area create about the neighborhood itself” (Wassenberg, 2004) gives a picture of resident’s satisfaction. Together with the local housing market, rent level and amenities, physical appearance is considered by Andersen as a given circumstance contributing the circular of neighborhood decay. Only Power stresses the importance of the estates’ appearance in the revising process. Since it can stimulate again the forming of a social network, it can be a trigger to for improvements as well (van Beckhoven et al, 2005).

However, according to van Beckhoven and colleagues, the Model of Housing Decline by Prak and Priemus (1984; 1986) includes most of the elements that are considered to be of influence on the situation of post WWII large housing estates: it is the most all-embracing model developed until now. Although it was development in the 1980s, the model is still relevant for explaining neighbourhood changes and decay in particular.

The model traces progressive decline of post-war estates, in which all the negative factors and their causes are present. It explains why the decay spirals continue its downward trend.

According to Prak and Priemus, the decline can be social (related to tenants), financial (related to the financial management of the estate) and technical (related to the property). The three types of decay are interrelated and influence and reinforce one other (Priemus, 2005). They were grouped into three blocks under the name of tenants, financial result and estate.
The 'tenants' block indicates that a downturn in the demand for housing can lead to an inflow of socio-economically weaker households (those with virtually no prospects on the housing market like low-income groups, unemployed, singles and immigrants). They may have an anti-social behavior that might strengthen the feeling of insecurity, lead to a declining social control, increase the poor reputation of the neighbourhood and solicit mobility. The spiral of social decay also reverberates on the operational costs and, consequently, on the quality of the estates.
Residents' mobility leads to vacancy and vandalism of the empty dwellings, that together with pollution?? and low residents' participation undermine the quality of the stock (technical decay). The declining quality combined with unfavorable price/quality ratio compared with other estates stimulates further mobility and problems on the operational bills of the landlord. Demolition is then the last resort.
Social and technical decay have an impact on the operational costs of the landlord. The income from the rents dwindles because of the vacancies while the costs rise because, for example, of the increasing demand for maintenance. The landlord might try to be less selective in the allocation of vacant dwellings with further influxes on the social level. He could also decide to lower the costs by saving on maintenance but this will again undermine the quality of the stock and make the estate even less popular on the housing market (Heeger, 1993 in Priemus, 2005).

2.4) IMAGE AS UNDERLYING FACTOR FOR NEIGHBORHOOD DECAY

As mentioned before, Heeger extended the list of factors responsible for decay identified by Prak and Priemus. He introduced environmental (like energy consumption) and spatial planning related problems (like high density, massiveness, orientation, and urban design) and moved the factor reputation-image from social decay to a separate category (Priemus, 2005). Neighborhood reputation-image was introduced because the literature often mentioned it as an important factor. A bad image is both a result of and a cause for decay.
Heeger points at that repeating effect of a negative image: a stigma worsen the already existing problems and a stigma of one block can radiate to a block nearby and even to the whole area (Heeger, 1993 in Wassenberg, 2004)

Power conducted a study of mass housing estates in North-Western Europe and identified a range of factors that determine their poor position on the housing market. It emerged that unpopular design and management difficulties lead to low demand and social stigma and end up with ghettoization. The interrelation of the factors is crucial (Power, 1997 in Wassenberg, 2004).

Elsinga and Wassenberg tried to expand on the fact that it is hard to point to where the decay starts. On the basis of large survey on crime and flats, they place the factor of a decreasing image amidst an ongoing process of decreasing living quality, a process that started after a poor introduction of the estate on the housing market (Elsinga and Wassenberg 1997, in Wassenberg, 2004).

According to Wassenberg the factors affecting the image-reputation of neighborhood can be clustered into physical (technical, environmental, spatial), social (behavior, characteristic of inhabitants, norms and values, incomes, schooling, integration…) and management and organization factors. Besides these, there are also endogenous elements linked, for example, to the societal developments and the national-politic making. Both the start (housing features and quality, quality of the surroundings, ratio price/quality and location) and the ongoing developments (decreasing attractiveness of housing types, and fail of physical quality) strongly determine the present image of a neighborhood (Wassenberg, 2004).

According to Hortulanus, people look at the visible features of the surroundings; in particular, amongst the physical aspects, they look at the appearance, the built environment and neglect of buildings. As a result of many studies on neighbourhood satisfaction, Hortulanus and Prakes concluded that housing satisfaction and the general appearance of an area were the two main factors affecting neighborhood satisfaction. Renewal should at least include these elements (Prakes, at al 2002 in Wassenberg, 2004).

Both resident's involvement and housing preferences play a fundamental role within the renovation process, but they are often underestimated by the parties involved. Many architects and building firms exaggerate the efficacy of technical intervention (demolition, renovation, upgrading the living environment). Many are still guilty of adhering the idea of physical determinism: technical improvements to the dwellings will automatically make the residents happier. If people are satisfied with their own house they will feel more attached to the neighbourhood and the level of social safety might increase (Priemus, 2005). Therefore, since the appearance of the built environment affects neighbourhood satisfaction, the study of the factors influencing the preferences of the inhabitants is relevant. This lies in the field of environmental psychology that is commonly labeled *environmental aesthetics*. It concerns the visual quality of architectural exteriors seen alone or in relation to their immediate surroundings (Nasar, 1988). Relevant researches demonstrated that environmental preferences are stable over time (span of 23 years) and different countries (Stamps, 1999).

Some studies, based on stimuli in terms of physical material and spatial relationships, showed the role of the building façade in the preferences of people (like Stamps; Groat; Krampen; Elsheshtawy; Heath, Smith and Lim) (in Stamps, 1999). In particular, Stamps made investigations about physical determinants of preferences for the residential envelope. He found out three geometric characteristics (surface and silhouette complexity, and façade articulation) that are relevant in predicting preferences of people. Heath, Smith and Lim investigated the variation of the visual complexity of tall buildings that make up the urban skyline according to the degree of silhouette complexity and façade articulation. They found that the strongest influence on preferences is the degree of silhouette complexity (Heath, 2000 in Stamps, 1999).

Since the building envelope contribute to the appearance of the built environment, factors improving appreciation by the residents for the building exteriors should be much more considered within the renovation process. Wassenberg suggests that image of neighbourhoods can be actively promoted, just like a commercial product; thus the improvement of the aesthetical quality of existing deprived estates might contribute to the marketing of the whole area. According to Priemus, the improvement of the aesthetics appearance by means of interventions directed to modernizing envelope and roofs is among the technical factors that may be geared together to improve the market position of the dwellings.

Some of the mentioned authors stress the importance of the image (Heeger, Wassenberg, Power) in the explanation of the neighbourhood change. They associate to the word "image" the concept of reputation-stigma at neighborhood level. According to Wassenberg the renewal of the image of a neighbourhood is only possible by improving all the factors that determine that image. Physical aspects (amongst the others, housing features and its quality) play an important role on neighbourhood level.

However, descriptors like image, reputation and appearance should be clarified more precisely especially in their relation to the estates. A good distinction may come from the study of Gravin, "managing the quality" (Garvin, 1988 in de Jonge, 2005). He introduced the concept of dimensions of quality for industrial products, thus buildings included. He distinguishes ten dimensions: performance (size-layout), features (optional services), conformance and durability (structure-type), reliability (fitting and finishing), serviceability (maintenance), customer care, aesthetics (image of the building) and reputation; and that they are determined by product characteristics as "perceived by the customer".
Vogtländer (Vogtländer, 2001 in de Jonge, 2005) clustered all those descriptors into three major categories: product quality (size and layout, structure, type, fitting and finishing), service quality (maintenance, customer care, optional services) and image (aesthetics and reputation). Accordingly, the *image* of an estate is one of the dimensions of quality. It is described by *aesthetics*, which is the (physical) external appearance of the buildings (how a

product looks), and by *reputation*, the quality perceived by the people[4]. Besides functional and technical quality can be quite easily quantified, the assessment of aesthetical quality is much more complicated.

2.5) RENOVATION AS EXTENSION OF LIFE-SPAN

Improvement of technical and functional quality contributes to the prolongation of the life span of a building. Unlike the life span of human beings, in fact, life span of dwellings can technically be endless (van der Flier, 2006).
Vroman describes *decay* of buildings as a linear process where lifespan of a building can be prolongated by means of maintenance or renovation actions. He describes decay as "the gradual loss in the course of time of the initial (physical) performance capacity, the theoretical amalgam of the building's technical and functional qualities" (Gruis at al, 2006).
The building gradually lost its initial performance quality over the years. *Frictions* occur when the qualities fall far below the expectations and exceed the minimum level of acceptance of the users. In this case, the "real service life", that is the period in which a dwelling actually meets the demand (Awano 2005), comes to the end.
Since it has been demonstrated that life-cycle extension of existing dwellings is (often) a more sustainable choice than replacement by new construction (De Jonge, 2005 and Klunder, 2005 in Gruis at al, 2006), demolition has to be the very last resort.
Actions to prevent frictions and thus extend life span can be the improvement of performances by short-term technical maintenance, long-term renovation on supply side, or change of users on the demand side (Gruis at al, 2006). However, prolongation is subjected to decisions of the owner (van der Flier, 2006). There is no single standard solution (Priemus, 2005).

The OECD whitepaper emphasized the need for sustainable use of the building stock (SUBS), where life-cycle extension is a key issue. However, current practice is still overwhelming opposed and the awareness of SUBS is still a far cry (Gruis at al, 2006).

Some authors describe the life-cycle of buildings as a cyclic revolving process of building initiative, design, construction, utilization and redevelopment or destruction/recycling (Löngberg-Holm and Larson 1953, De Jonge 2006 in Gruis at al, 2006).
Different actions lead to different extensions of the actual lifespan of a building. Interventions, in fact, can *maintain* the lifespan of estates and dwellings, by means of maintenance actions, or *extend* it, by means of renovation or updating (van der Flier, 2006).
All buildings consist of sets of parts and elements with different functions and consequently, different life-cycles. With this respect, maintenance can be defined as repair and replacement of parts with short life-cycle while renovation as an overall physical and functional improvement resulting in a life-cycle extension of the whole building (Gruis at al, 2006).
According to life cycle approach, demolition is meant as the very ultimate action in order to terminate the lifespan (van der Flier, 2006).
Being this research centered on how to improve the quality of existing housing blocks in a 'sustainable' perspective, renovation refers to the following definition provided by Thomsen. "Transformation (process) of the physical, functional, financial, architectural and ecological characteristics of a building product or project (product) to realize a comprehensive and useful extension of the life span" (Thomsen, 2001).
This definition constitutes the reference for evaluation of the Dutch projects submitted to the National Renovation Prize (NRP), a well-known prize awarding good examples of renovation in the Netherlands.

Life-cycle perspective leads to a clear distinguish of "renovation" from other words to describe the interventions on the existing housing stock at different scales, like 'refurbishment', 'restructuring', 'retrofit', 'restructuring' and renewal. Alanne argues that the concept of ''renovation'' usually refers to one of the following sub-concepts: retrofit and refurbishment. ''Retrofit'' is generally used to identify actions that are required to bring a building into the framework of new requirements while ''refurbishment'', to bring the building

4 See definitions provided by Jonge, 2005 and Wassenberg, 2004

back to its original state (Flourentzou, 2002) in Alanne, 2003). According to PRC (Bouwcentrum International the Netherlands)[5] *refurbishment* is a "comprehensive renovation work (repair of all defects) of (high-rise) residential buildings". R*estructuring* is one step further refurbishment, at least in terms of scale. It covers "all activities aimed at the improvement of the living and working conditions in (high-rise) neighborhoods and districts, including new building, demolition and infrastructural works". According to Ouwehand and van Daalen (2002) renewal is a radical approach at neighbourhood level where dwellings are made available for middle and higher income households.

The definition of renovation provided by Thomsen refers to renovation as an extension of building life-cycle in terms of physical, functional, financial, architectural and ecological aspects. Therefore, a study of the life-cycle, should concentrate not only on their physical performance but also on their functional and (micro) economical performance as underlying factors about continued use, transformation or destruction (Gruis at al, 2006).
According to the model of "sharing layers of change" developed by the American architect Stewart Brand, who is specialized in recycling building, (Brand, 1994 in de Jonge, 2005 and Leupen, 2006), the building can be stratified into six layers. Each has its own life-cycle and, consequently, a specific length of useful life. The layers are the following: site (earthworks), structure (load-bearing elements), skin (covering and projecting membrane), services (heart), space plan and stuff. Leupen added another category that is the access system (stairs, corridors, galleries and lifts), such as are found in large residential buildings. The life span of the building structure that includes, for example, foundation and bearing elements, ranges from 30 to 300 years. The skin, that comprises all the elements of the exteriors, can be 20 years (even if motives related to fashion, technology and energy might influence the span). Space plan and the interiors can (exceptionally) reach 30 years (de Jonge, 2005).
Life cycle of building elements can be clustered as follows: long-cycle more than 25 years (bearing structure); intermediate life-cycle between 15-25 years (installations, inbuilt, gutters/flats roof and envelope) and short life-cycle (finishes, interior decoration ICT and demotic) less than 15 years (de Jonge, 2005). Therefore, a renovation approach based, for example, on the entire substation of existing building envelope could extend life-cycle up to 25 years.

However, to appraise the best solution a *diagnosis* has to be formulated for each case (Priemus, 2005). Such an action might lay in the building pathology that studies the causes of decay and collapse of buildings and building components (Gruis at al, 2006). Such initial investigation could be particularly true for envelope directed renovation that requires, for example, a diagnosis of the structural capacity of the block as a starting point for assessing potentials of transformation – the therapy.
Diagnosis on the structural capacity of the block for envelope renovation has to be focused on the long-cycle elements, the bearing system, what in Dutch is called the "casco" structure (Leupen, 2006).

CONCLUSIONS

From the four sections presented in this chapter, five main considerations can be made.

- Deprived European large housing estates built after World War II have common problems: the quality of the stock, asset management and residents. The urban layout, the number of people living there and their function on the housing market are relevant problems as well.

- Despite theories and models developed by researchers to explain the process of change and decay of neighbourhoods, it has not been clarified jet how and where the process starts (Priemus, 2005). The Model of Housing Decline by Prak and Priemus (1984; 1986), is still valid and considered the most-all embracing (van Beckhoven et. El., 2005).

5 PRC Bouwcentrum International The Netherlands (2005) Sustainable Refurbishment of High-Rise Residential Buildings and Restructuring of Surrounding Areas, report for European housing ministers' conference held in Prague, Czech republic,14 - 15 march 2005

- Some authors mentioned the importance of neighbourhood image in explaining the process of decline (Heeger, Power and Wassenberg). A good image can stimulate social network again and be a trigger to for improvements as well (Power, 1997 in van Beckhoven et al, 2005). Therefore, image improvements should deserve a lot of attention. Amongst physical aspects, in fact, people look at the appearance, the built environment and neglect of buildings (Hortulanus, 1999 in van Beckhoven et al, 2005).

- According to the OECD, there is a need for sustainable use of the building stock, where life-cycle extension is a key issue. Therefore, an integrated renovation should be approached as a "transformation (process) of the physical, functional, financial, architectural and ecological characteristics of a building product or project (product) to realize a comprehensive and useful extension of the life span" (Thomsen, 2001).

- A renovation approach directed to the building envelope based on preserving the casco structure and substitute the façade could be seen as a strategy to give the building a "new youth". Actually, as an extension of about 20-25 years being it based on substituting intermediate and short life-cycle elements.

INTRODUCTION TO THE THIRD CHAPTER

The third chapter deals with an introduction to the Italian and Dutch national contexts with respect to social housing, the social housing stock and the housing institutes charged with manage social housing. It provides an overview on the case of Rome, where the housing institute (ATER Roma) owns and manages most of the social housing stock of the city. Elements within the Dutch model that might be transferred to ATER are analyzed. Possible directions for improvements are investigated as a result of a comparison with the Dutch housing association's model.

10. B

CHAPTER 3)
SOCIAL HOUSING RENOVATION IN ITALY: WHICH SOLUTIONS CAN BE FOUND IN THE DUTCH HOUSING MANAGEMENT MODEL?

INTRODUCTION TO THIS CHAPTER

This chapter presents the Italian and Dutch context with respect to social housing. It is structured into three sections. The first two each introduce the national context; the last identifies solutions for the housing association in Rome transferable from the Dutch model[1].

The first section deals with an introduction to the Italian national context, the social housing stock and the housing institutes charged with manage social housing. It ends with a focus on the case of Roma, where the housing institute ATER Roma owns and manages most of the social housing stock. This part intends to provide a picture of the management context.
Following the same structure, the second section introduces the social housing sector in the Netherlands and focuses on the asset management strategy of Dutch housing associations.
Finally, the third section, chosen elements within the Dutch model that might be transferred to ATER are analyzed. Possible directions for improvements are investigated as a result of a comparison with the Dutch housing association's model.

The purpose of chapter two is to provide a wider view of the problem. Renovation of social housing, in fact, as shown investigating the Dutch context, is subjected to endogenous (internal) and exogenous (external) factors. Being aware of the fact that, apart from physical aspects, there are further factors influencing the process is fundamental to bring the issue of renovation down to the practice, the real context.

3.1) ITALIAN SOCIAL HOUSING SECTOR

INTRODUCTION

Italian population in 2004 was about 57.9 million people (the Netherlands around 16.3). In 2002, the total housing stock was represented by 26.5 million dwellings, most of it in the private sector (Housing statistics, 2004). Owner occupation in 2003, in fact, represented 83% of the national housing stock; the rental sector was just 16% (Ball, 2005).
About 75% of the total housing stock is multifamily blocks and 22.7% high-rise. The largest part of the stock (68%) has been built between 1945 and 1990 (PRC, 2005).
The social housing stock alone is just 5.4 % of the whole housing stock which amounts at less than 1 million dwellings in 2000 (PRC, 2005). This part of the housing stock is owned and managed by social housing institutes that in 2005 were 111 all over the country (Pozzo, 2005).

Currently, the social housing stock in Italy is diminishing while the number of people in need of affordable housing is increasing. Between the 1980s and the 1990s, 826.000 units,

1 This chapter is strongly based on the paper published for the ENHR conference, Rotterdam 2007 (International Conference, Sustainable Urban Areas). This paper has been written by the author together with dr. ir. Vincent Gruis of the Department of Real Estate and Housing (section of Housing Improvement and Management), Faculty of Architecture – TU Delft. V. (2007).

corresponding to 3% of the whole social housing stock, have been put into the private market (Tosi, 1996; Mezzetti et. al., 2003).
For economic reasons, some institutes that own and manage this part of the housing stock are progressively selling parts of it without replacing with new dwellings. But even this disposition is insufficient to balance their financial deficit: the exploitation of social housing is not profitable. As a consequence, some institutes decrease the maintenance level as well as investments. Therefore the quality of the stock is decreasing.
The problem of deterioration of the technical and functional quality occurs in particular within estates built between the 1960s and the early 1980s. Since the decay affects not only the physical but also the socio-economic sphere, new renovation processes and intervention strategies are urgently required.

The criteria to get access to a dwelling are not in line with the changing social structure, characterized by a high long-term unemployment rate (also affecting young generations) and new emerging groups such as immigrants, (young people), cohabitating couples and elderly households with a specific housing demand. The result is that vulnerable people in need are not facilitated in that allocation process. (Padovani, 1997; Mezzetti et. al., 2003).
The actions recently undertaken by the government, like the privatization process of the institutes charged with the management of the social housing stock and the transfer of the power to the single regions, did not generate substantial positive results. Even if it is difficult to sum up the situation of the Italian institutes, some common features are recognizable across the regions.

The regional housing organization ATER Roma in Rome is managing one of the biggest social housing stocks in Italy and is among the housing institutes with the most urgent issues. Their problem is of major societal relevance considering the current housing emergency that affects the city of Rome.
The problematic situation of ATER and other social housing organizations in Italy is partly an inheritance of privatization policies that led to the separation of social housing from the public sector to private organizations. A similar trend has occurred in the Netherlands, where the (already privatized) housing associations were strongly regulated and supported by the government until the 1980s. Since the 1990s, Dutch housing associations have to operate their stock without (direct) financial support. Still, they are applying successful strategies to deal with social housing renovation.

GENERAL DEVELOPMENTS IN ITALY

HOUSING SECTOR

Italy is among the European countries that allocates the lowest national budget for welfare services. Most of the budget is given to the pension scheme, which mainly intervenes on reducing the numbers of families on poverty level, and far less funds are allocated to unemployment, families, health and the social housing sector. The pension scheme does not allow the country to develop structural policies to defeat poverty; in 2001, 9.627.000 persons lived at the poverty level, the highest percentage in Europe (Pozzo, 2005).
Italy is among the southern European countries privileging the private housing sector through public policies. The housing policy facilitates expansion of the ownership (categorization-particularistic approach) and excludes disadvantaged groups stating just fragmentized and temporary interventions such as temporary accommodations, housing benefits, dormitories and night shelters.
Policy for social assistance consists of social rented houses for people in economic need (supplied by housing institutes and the municipality); temporary accommodation for low-incomers and evictees (supplied by local authority), housing benefits with income criteria (supplied by the local authority) and dormitories and shelters for homeless people (supplied by the local authority or voluntary sector) (Mezzetti et.al, 2003).

TENURE

Most of the Italian housing stock is in the private sector. The social housing stock alone represents 4.5% of the whole housing stock and 23% of the whole rental sector.
In 2000, the stock managed by the social housing institutes was under 1 million dwellings (800.000) and is still diminishing because dwellings are sold of and are insufficiently replaced by new dwellings.

In 2003, owner occupation represented 83% of the national housing stock; the rental sector just 16% (Ball, 2005). Homeownership is even increasing; more than 4/5 of the total residents owned a house in 2004 (Pozzo, 2005). Homeownership is rising also because of the declining share of the private rental sector and scarce availability of social housing.
The rental sector is in the hands of private landlords who manage 70% of the stock against 23% managed by public institutes. In 2001, families living in a rented dwelling owned by a private landlord were few less than 3 million.
About half of the national social housing stock is concentrated in the 12 metropolitan areas. In the metropolitan area of Rome itself are managed 89.533 dwellings of which 66.365 are rental and 16.412 on mortgage, a sort of ownership under special sale restrictions (6.756 are in other categories) (Pozzo, 2005).

SHARE

In 1991, about 1 million social dwellings were put on the market. Starting from 1996, the sale process accelerated reaching a peak in 1998 when 17.000 dwellings were sold. In the same year, the production of social housing did not reach 10.000. Between 1998 and 2000 the social housing stock decreased from 6.3% to 5.3% of the total housing stock (Pozzo, 2005). It has been estimated that the construction of new dwellings in the social sector will stabilize to less than 10.000 social dwellings per year, therefore an increase in the size of the total social housing stock would be feasible only if the housing institutes will invest more in the production of new dwellings

In the last decade, the average monthly rent for social dwellings increased by 119% while average income per household only by 76%. Sale prices change in relation to the regional law but it can be said that they are around 30% of the market price. In 1998, an average dwelling was sold for 28.000 euros (apartment with 4 bedrooms, 90m2. Housing Statistics, 2004). However, prices varied considerably across the country from a minimum of 5.200 euros in the South to a maximum of 39.000 euros in the North (1998) (Pozzo, 2005).

AGE AND QUALITY OF THE STOCK

The national housing stock built more than 40 years ago amounts to 36.5% of the total housing stock. Problems concerning technical deterioration because of low quality and quick construction processes and technologies applied at the time are emerging. CENSIS has estimated that 40% of the whole Italian housing stock can be considered “old” . In 1986, the government registered that 3.5 million dwellings realized in the previous decades were poorly constructed and that 1.590.000 multi storey houses were at risk (Mezzetti et. al., 2003).

RELATION OF PUBLIC BODIES

In 2001, decision-making and economical power in general was transferred from the State to the Regions, the so-called “devolution process”. Since then, Italian Regions decide autonomously on their local policies (Grassia, 2005) and the State is charged of macro-programming activities and co-financing projects.
In the last 10 years, also the role of the municipality changed and is now more present in the housing sector. Concerning the social housing policy, the Municipality localizes interventions, allocates dwellings, allocates subjective subsidies and manages its own housing stock. Since there is an overlap in the assignments of the municipality and the institutes, especially with regards to the management of their stock, it is desirable they cooperate on the common tasks.

THE HOUSING INSTITUE

The social housing institutes own and manage social dwellings realized with public funds, proper funds and subsidized loans. Across the country there are 111 institutes in total and they are under provincial responsibility, with the exception of some with municipal responsibility (Pozzo, 2005).
As a consequence of the devolution process, many differences with regards to the management model can be found all over the regions. For what concerns the restructuring of the organization, two main strategies were applied: modernization of the institute or a substitution with a new body which is not the owner of the stock but manages it on behalf of the municipality (or the province).
In the case of the Emilia Romagna and Toscana regions, the whole stock has been transferred to the municipality which also carries out the administrative and management activities. The municipality has full power in developing its own tools and strategies and the institute, which is then a municipal organization part, manages the stock and provides all financial sources and tools to carry out the entrepreneurial activity. Yet, this is a risky strategy which can decrease the market competitiveness of the organizations and lower the level of performances offered (Grassia, 2005).

DIFFERENCES ALL OVER THE COUNTRY

Differences among the regions regard name, regulations and organizational structure.
Each region chose a different name that is *Azienda Territoriale per l'Edilizia Residenziale Pubblica* in the case of the region of Lazio.
The statue can be adopted independently or approved by the region, like in the case of Lazio. Some regions opted for a single director but the majority chose the board of directors with a diversified number of members. On the whole there are seven institutes in the Lazio region, with 49 board members in total.
However, the greatest difference regards the legal form of the institutes which can be of three types: non economic public institute, economic public institute or a partnership. Half of the Italian institutions, including ATER Roma, joined the economic public institute category. It is defined by law as 'institute whose objective is to run as a company with a public function satisfying an economic profile through the achievement of profits or at least of the quote to cover the expenses'.
The tree legal types differ especially in regard to the asset management. Some institutes manage a stock owned by another public authority, performing as sort of operational body on behalf of a third part, whereas others are structured like companies acting as auxiliary of the region itself. Lazio region follows the latest model in which the economic and exploitation risks are with the region
The economic public institutes define themselves the level of expansion into the private sector by providing further activities for private parties such as design, studio, management and other services in addition to the two principal activities that are management of the existing stock and new constructions.
Some regional laws allow the institutes to go into partnership with other parties to carry out institutional assignments or entrepreneurial activities; this is the case of Toscana region which took the form of Joint-Stock Company.

NEW ASSIGNMENTS

The institutes are now allowed to foresee specific features for new constructions such as the respect of historical architecture and the surrounding environment (constructive techniques and styles) or specific requirements of disadvantaged groups. Moreover, they can also manage a stock not included within the social sector and/or owned by other public bodies. Nevertheless, the most interesting change concerns the extension of the principal activities. On one hand, research and experimentation towards new construction technologies and sustainability, on the other hand, all the set of additional services that can improve the relationship with the users (Grassia, 2005).

FINANCIAL SUPPORT

Before the end of the 90s, the social housing stock was built by public bodies that were the institutes or the municipalities. They were fully financed by the central government or by a combination of central and local government and other public bodies. Nowadays, the State does not provide extensively financial support to the housing institutions anymore. They have to balance their own budget themselves. Therefore they are allowed to make a profit on their activities, and the exploitation of projects has to be in equilibrium.
Subject support to the resident is usually very limited. They are in the form of subsidy for people in economic needs which come from a national fund regularly filled through the financial tax bill. To the fund contribute the government, the region, the province and the municipality (Pozzo, 2005).
The institutes are supervised by the regions but again there are some differences across the country, especially with regards to the activities to be checked and the control carried out.
Further supervision is performed by the ordinary judge for what concerns entrepreneurial management and by the State Auditors' Department (Grassia, 2005).

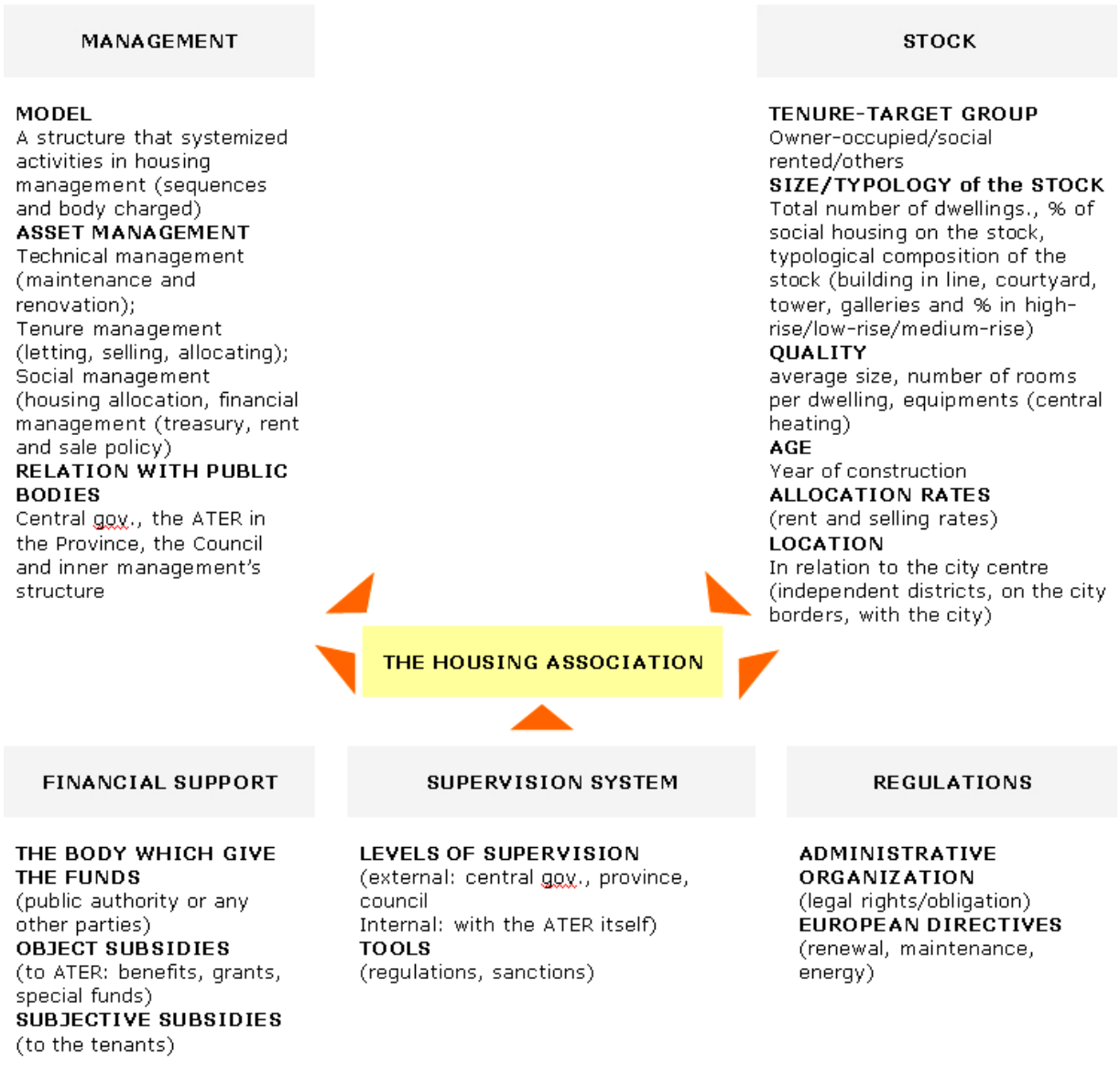
3.1.1) ATER ROMA

INTRODUCTION

In the Lazio Region, where Roma is located, the housing institutes are the ATER, Azienda Territoriale per l'Edilizia Residenziale pubblica (*Territorial Institute for Social Housing*). There are seven agencies that, according to the demographical density of their jurisdictional territory, deal with single Municipalities (Rome and Civitavecchia) or entire provinces

(Viterbo, Frosinone, Latina, Rieti and the remaining part of the territory under the name of the Province of Rome).
By definition, ATER Roma is an economic public institute. It is a sort of tool in the hands of the region but is independent from the financial, entrepreneurial, estate and account point of view. Its mission is to face up to the housing emergency.
The activities carried out are: supporting public authorities and landlords in designing and realizing housing projects (restructuring programs, housing renovation and interventions regarding social housing); managing the housing stock entrusted by others bodies; conducting research and experimentation on housing; and, if charged by public and private bodies, conducting specific studies, do design, realize various projects on urban and building scale, do maintenance and manage the stock.

To describe the model of ATER Roma the following descriptive model is taken as a reference. As it is shown in the model itself, brief information is given with respect to five categories: management (model, asset management and relation with the public bodies), stock (tenure, size, typology, quality, age, allocation system and location) financial support (bodies that give the funds, objective and subjective subsidies), supervision system (levels of supervision and tools) and regulations (administrative organization and European regulation). Information have been collected by means of questionnaire to professionals in ATER (directors and technicians of ATER) and literature in terms of various regulations and reports.



MANAGEMENT MODEL

STRUCTURE

The structure of the company is in the traditional form of a pyramid. On the top level is the board of directors that determines the general policy of the company; it is composed by seven members including the president. The general director is charged with the management of the company and the estates, and, together with the board of directors, is supported by a 'strategic' department whose function is to implement strategic management. Nevertheless, because of the recent adoption of the organigram and the consequent ongoing changes within the structure, the latter department is not formed yet.

On the operational level two departments are charged with the stock and administrative management, each one with its own director. The management department divided into two sub-areas which respectively deal with the basic interventions to maintain a minimum level of building quality and the so-called extraordinary maintenances and new construction.
In addition to this, there are the technical and tenants committee; they are elected by the board of directors and directly interface with it. The first deals with supporting the decisional process at the top level and is composed by the general director, the area directors, experts in social housing, architects and engineers. The tenants committee includes the most representative trade-unions at regional level and deals with a consultancy function. Board of direction, general director and audit committee last the whole regional legislature.
Since all the members of the board of direction are appointed by the region itself the strategies are strongly driven by the current policy orientation. The board of directors delivers general directions to satisfy objectives fixed at the regional level and it elects the general director charged with implementation of those strategies and supervises his activity (Regione Lazio, 2002).

It can be said that there are three main tools used by the institute to manage and program its activity. They are the year program of activities, which defines actions of intervention and the related financial instruments on the basis of the regional guide lines; the yearly provisional budget (in addition to the final balance), which has to be approved by the region and, when necessary, the five years restructuring plan. The last tool can be developed by the general director and the aim is to define concrete strategies to financially restructure the position of the company. Last year (April, 2007), the procedure to approve a restricting plan has been activated.
The described organizational structure was officially approved in 2006 but most of the changes, especially those regarding specific the functions and the related activities to be put into practice by each area, are still under implementation. More changes are expected if the proposed restructuring plan will be approved.

STANDARDIZED SEQUENCES

In general, it can not be said yet that ATER follows a strategic asset management defined as a result of standardized sequences driven by a structured decision-making process; intervention strategies are defined by a so called common sense, strongly driven by politics.
The decisional model is based on a political mediation process based on sharing requirements at the top level. The decisional process is not standardized and any kind of ex-ante evaluation or analysis is developed to support the definition of a strategy.
Even if the reform of the social housing institutes redefined the main tasks of the ATERs and extended the range of basic activities through research and experimentation, ATER Roma is still very far from the development of those activities. Moreover, experimentation on innovative renovations is blocked by all the set of current strict regulations regarding social housing. A strategy based on project financing has been recently activated to renovate using sustainable technologies, but the results of this action are not available jet.

INTERVENTION STRATEGY

The intervention strategy is driven by an emergency approach centered on maintenance of the minimum acceptable level of building quality. Even planning a long term maintenance strategy is a very difficult task for the institute which main problems are the lack of money and administrative and intervention tools to manage it.
Further interventions such as enforcement, differentiation, renovation or demolition are not on the agenda and maintenance is the only strategy applied. Three levels of maintenance are distinguished, that are: a 24-hour repair service, to solve urgent problems with immediate solutions and ordinary and extraordinary maintenance. The differences among the levels concern the budget involved and the scale of the intervention. Within the administrative area

a specific office is charged with receiving complaints by the tenants so that the institute can act immediately, when possible, to solve circumstanced defects.

ASSET MANAGEMENT

TECHNICAL ASSET MANAGEMENT

Technical asset management is just based on implementation of temporary physical solutions to solve imminent local problems. No analysis method has been developed to appraise the best strategy of intervention per estate or per district. Even if there is an interest in programming long term maintenance of estates in relation to the initial physical quality, the technical departments lack the necessary tools to manage it. The financial management of the basic maintenance is driven by an average fixed cost per dwelling.
Recently, a group of experts started direct inspections to assess technical conditions of the existing stock, but the process is very slow and it is till unclear how the updated census will be used in the development of intervention strategies.

TENURE MANAGEMENT

Tenure management is also defined by regional laws. The approach to determine the rents is based on the most convenient price for the family. It is calculated following a very complicated process that considers both objective and subjective parameters. The current minimum monthly rent per dwelling varies from a minimum of 7,75 euros to a maximum of 71,60 euros (for a size of 60m^2).
The process to calculate the rents reveals many problems such as difficulties in updating the subjective parameters, like the income level of each single family, and in assessing the prices obtained by the objective parameters that, since they consider the cadastral position of dwellings, are higher on the periphery.

ALLOCATION

The allocation process is managed by the municipality using the waiting list (Regione Lazio, 2000). Since the income level strongly affects the position of the list, on the top of it there is always the same target group and the others are automatically excluded. Yet, the main paradox is that if a dwelling is assigned to a household) that increased its income level over the years, the family does not loose the right to live in that dwelling (a form of rent protection). This means that the theoretical target group includes also medium to high income families and that there is no social replacement.

SALES

As well as the rent assessment, the sale approach is based on facilitating the current tenant who is put in the best financial conditions to purchase the flat. The cadastral department, within the Ministry of Finance, is charged with calculating the sale price, whereas the EUKOS, an office within the ATER, is charged with the management of the sale program. The institute is obliged by a regional law to develop sale plans in agreement with specific financial requirements. The plan is defined by the board of directors and approved by the region itself. Ever since dwellings are sold, ATER remains the owner of the common spaces, until recently the sale process revealed problems in the management of those spaces.

SQUATTING

In Rome the squatting phenomenon is very common and represents an obstacle in the management of the whole stock. Since social housing is considered a common asset, squatting is not seen as a “crime” and, in many cases, the institute does not have the legal rights to intervene. The amnesty process provided by law is a common practice and in the end those who occupy a room just pay a cheap fee and are legitimated to stay in that dwelling. Considering all the families waiting for an assignment since many years, this is an iniquitous system.
It has been estimated that the arrearage is 36% for dwellings and 41% for non residential rooms. Because of the unsatisfying quality level, people are often reluctant to pay both monthly rent and fees for technical services like electricity, gas and water. The consequence is that ATER runs up many debts with the bank and with the technical service companies.
As well as squatting, the arrearage strongly affects the available budget. To control this phenomenon, the institute enabled a temporary office to recover that money saved by the tenants starting from December, 2005. Till now, around 30 million euros has been regained, but since only 7 millions are cash the strategy cannot structurally contribute to a recovering of the balance.
ATER deals also with vandalism which especially affects the common spaces within the buildings such as elevators and staircases. On January 2007, it was estimated that on a total of 2182 equipments (elevators, chair lifts, platforms and so on) 20 were out of order of which 17 because of vandalism.

RELATION WITH PUBLIC BODIES

PUBLIC BODIES

ATER has relationship with two public bodies that are, as mentioned before, the region, and the municipality of Roma. With regards to the asset management, ATER is charged with maintenance on the building and dwelling level. It manages entrances, storages, garages, common spaces (elevators, staircases and roofs), intermediate public spaces between two or more buildings and technical equipments within the flats that are shared at building level. The municipality is charged with management on the district level such as facilities of public spaces, waste collection, cleaning greenery and lighting infrastructures. The two parties are not coordinated or supervised by a body on the upper level, so a frequent consequence is that it is unclear what the border of the respective competences is. The municipality has at its disposal additional financial and intervention tools to deal with urban renovation; in the last years they were Contratti di Quartiere (*District Contracts*) and articoli 11 (*articles 11*). The main objective of these tools is urban renovation and since not many funds are allocated to intervene on the improvement of the buildings' quality, the result is a set of punctual interventions excluded from a wider strategic renovation of the whole district.

SUPERVISION SYSTEM

SUPERVISION

Because there is no coordination at a national level, the supervision system is directly contributed to the regional level. In the case of Lazio, the region checks the financial activity, fixes criteria regarding management of the stock (sale and rent strategies, recovery of arrearages and credits), elects the board of directors, develops guide lines to be followed by the board of directors, and approves the Statue, the year program of activities, the budget and the restructuring plan.
The external supervision is directed to an auditors committee, elected by the region. Its function is to check the book-keeping and financial management of the company and report the results to the region (Regione Lazio, 2002).

As well as all the other institutes, ATER has to respect all the set of strict norms regarding design and construction of social housing introduced in the 1960s. The approval of the building license is regulated by a specific procedure specifically developed for social housing and the building budget is restricted to a maximum standard cost per square meter. At this moment not one European regulation is acknowledged.

REGULATIONS

REGULATION

Each institute has its own internal regulation represented by the Statue. It defines the functions of each single department within the company, the financing procedure and criterion regarding financial and accounting rules. (ATER Roma, 2004).

STOCK

TARGET GROUP

The target group entitled for social housing in Rome includes low-income, elderly, sick people, handicapped, homeless, drug addicts and ethnic minorities. Nevertheless, as mentioned with regards to the allocation process, the target is wider and includes richer families. As a first result of the recent income census, it has been estimated that also people earning up to 180.000 euros per year live in a social dwelling; between 6.000 and 10.000 families are over the maximum income quote (pers. comm. Maltese, 2007). According to the law they should be evicted.

STOCK

The stock managed by ATER is typologically and technologically much diversified and consists of residential and non-residential estates built starting from the beginning of the last century till the last decades. The residential stock amounts to **55.000 dwellings** in the rental sector plus 15.000 dwellings on mortgage, whereas the non-residential stock includes 300 building sites, 3.200 commercial rented rooms and 3.000 storages (common, garbage, wash-house and water collector's storages).
The social housing stock houses around 200.000 people, which represents circa 7% of the whole population living in Rome.

TYPOLOGIES

Looking at the construction period, the stock is located over the consolidating city (between the beginning of the century and the 1950s), the expanding city (between the 1960s and the 1980s) and the transforming city (after the 1980s) (Moranti, 1988).
The stock of the expanding city is composed by three housing typologies that are the 'in line' block, a kind of row house from 4 up to 15 storeys high; the 'courtyard', which derives from gathering the 'in line' block around the vertical structures; and the 'tower', usually from 6 to 14 stories high.

In agreement with the social housing standards, dwellings are 45m^2 per 1 person, 60 m^2 per 2 people, 75 m^2 per 3 people and 90 m^2 per 4 people, but often flats reach also 120m^2.
Further details about the stock are not immediately available and should be derived crossing administrative information with the cadastral paper database.

QUALITY

Since there is no existing updated database, the institute is unable to know exactly what the size, the quality and the age of its stock are. Often, is not clear how a household is living in a dwelling, especially in those flats assigned more than 30 years ago. For this reason, ATER is

working to build up a digital database including both an update of the available administrative information and a registration of the physical and technical data. Yet, the procedure seems to be slow and will require much time. The lack of basic information about the stock is an obstacle even in the development of short term maintenance strategies.

The pre-war and the early post- war housing stock is built using traditional technologies and is in quite good physical conditions, whereas the late post-war, is facing technical problems due to the prefabricated technologies. Most of this part of the stock is facing technical defects especially on the external envelope. The insulating system is of low quality and deteriorated or even non-existent and, due to the structural adjustments; junctions between the façade and the bearing structure are often damaged. The lack of protective details and decorations abandoned by the modern architecture 'style' exposes the facades to a more direct deterioration process caused by atmospheric agents.

RENT

As mentioned, parameters to fix the monthly rent are based on the regional national law. An average monthly rent per dwelling is 80 euros against a yearly expense for basic maintenance to be paid by ATER estimated around 400 euros per dwelling. Additional rates paid by the tenants are in average 470 euros per year for heating, elevators, water and electricity for the common spaces and cleanings.
The dwellings are sold to the tenant at reduced price (1/10 of the market price!!), regulated by both government and regional laws.
The Eu-Kos (a department within ATER), established on February 2006, is charged with the management of the sale of the stock and works in cooperation with other specialized bodies to implement the program approved by the board of directors. The most recent program established the sale of 1000 dwellings, but the real quality conditions of the stock makes only the sale of just 50 per year possible. However, this strategy does not give a decisive contribution to the restructuring of the financial situation.

FINANCIAL SUPPORT

FINANCIAL SUPPORT

The greatest amount of financial income of ATERt is represented by revenues from the rents, the sale of the stock, refunds for technical expenses regarding social housing programs (calculated by the region), further income gained form the mentioned additional activities to support other public or private bodies and bequests or donations. Additional funds specifically related to social housing can come from the State, the region and the local authority; and further integrative contributions can be given by the region and the municipality in the case of housing or social emergency. (Regione Lazio, 2002).
The mentioned financial streams of income are not enough to let the institute be economically independent; the result reflects on investments in maintenance and improvement of the stock. In 2002, ATER Roma built just 243 new dwellings and investments in renovation were zero. The most active institute in new construction was the one in Genova with 1.083 new dwellings and ATER of Milano with 3.153 renovations. Considering expenses in maintenance and investments, ATER Roma is in the worst economic conditions across the whole country (Pozzo, 2005).

FINANCIAL SITUATION

The current financial situation is alarming. The institute has a founded debit of 750 million euros and an indebtedness of 4 million euros per month. The unpaid Local Housing Rates accumulated till now accounts for 50% of the founded debit whereas fees, other debits, arrears and sanctions, for the remaining 50%. The total debt increases of 11.5 million euros per year.
It has been calculated that, even if ATER can draw on a credit of 20 million euros that will be used up to pay personnel and service companies, it will be able to financially survive only till December 2007. If no structural changes will be activated, the company will collapse.

The structure and the stock of ATER Roma are comparable to ATER Milano. Since the last is enabled to rent dwellings at 240 euros per month, the budget is in credit and the institute can reinvest in new construction and renovation. This case demonstrates that the model can work if regional regulations allow a number of structural changes in the asset management.

According to the described context, the financial emergency and the inefficient structure of the company, whose information has been integrated as a result of an interview with the

general director (April, 2007), a restructuring of the company is unrealistic unless the management model and the structure itself are changed.
The board of directors is very much politicized, and should be working only in the public interest. As soon as the company is in the financial conditions to recruit high quality staff, considerable investments should be done in the personnel within the strategic management department and in the outsourcing of some specific processes.

3.2) DUTCH SOCIAL HOUSING SECTOR[2]

INTRODUCTION

As in many other Western-European countries, the Dutch government has reduced its financial support of social housing (e.g. Boelhouwer, 1997; Smith and Oxley, 1997). Before the 1990s, Dutch housing policy was characterized by a relatively large extent of control by the central government. As part of the vigorous build-up of the welfare state, which lasted much longer in the Netherlands compared with many other European countries (Boelhouwer, 2002), the government strongly stimulated social housing investments through regulations and extensive subsidy programs. Many of these social housing investments where channeled through the housing association sector, which consequently flourished. In the Netherlands (2001), 99% of the not-for-profit housing stock, being 36% of the total housing stock, is managed by housing associations (Ministry of VROM, 2002). These are private, not-for-profit institutions, which have to fulfill public, social obligations, in particular by providing affordable and decent homes for low-income households.

The Memorandum “Housing in the Nineties” (Ministry of VROM, 1989) marked a turning point in Dutch housing policy. Following the international trend, the national government announced a cutback in the financial support of social housing. The BBSH, introduced in 1993, allows housing associations a lot of administrative freedom. They are still supervised by the government, but, unlike before, on the basis of retrospective accountability. In addition, direct financial support through ‘brick-and-mortar’ subsidies and government loans was abolished during the 1990s. At the same time, the formal not-for-profit objectives of the sector were maintained.

The description of the social housing sector in the Netherlands follows the structure used to describe ATER Roma. The same items are briefly addresses.

REGULATIONS

LEGAL RIGHTS AND OBLIGATIONS

The legal rights and obligations of Dutch housing associations are formulated in the Social Housing Management Decree (“Besluit Beheer Sociale Huursector” - BBSH). This decree , based on the Housing Act (Woningwet) stipulates that all the activities of housing associations have to be in the interest of housing. Housing associations must give priority to accommodating households with a weak position on the housing market (mainly lower-income households). However, they are allowed to provide dwellings for other target groups. They are also allowed to deliver high-rent or owner-occupied housing. As a consequence, Dutch housing associations are often typified as ‘hybrid’ organizations, which carry out public tasks, but are independent, private organizations, having market-driven objectives as well (Priemus, 2001, pp. 247-249). The BBSH formulates the obligations of housing associations in the form of general ‘fields of performance’: accommodation of target groups, preservation of the quality of dwellings and their environment, consultation of tenants, securing the financial continuity and stimulating the provision of housing and care arrangements.

2 The information in this section draws heavily on Gruis and Nieboer (2006) and Gruis and Nieboer (eds., 2004).

MANAGEMENT: TENURE

RENTS

Rents are restricted by central government regulations. For the major part of the dwellings in the Netherlands (expensive dwellings are excepted) the so-called Housing Valuation System ("Woningwaarderingssysteem" - WWS) is in force. On the basis of this valuation, a maximum eligible rent can be calculated. In principle, rents can only be changed on July 1st of each year. The government decides each year the maximum allowed rent increase. For housing associations, the government also determines each year a maximum rent increase on corporate level. The latter regulation is in force since 1993. Before, the government determined the annual rent increase on individual level and housing associations were not allowed to vary the annual rent increase per dwelling themselves.

ALLOCATION

Housing associations are rather free in the way of allocation, but within certain government restrictions. A national restriction is that relatively cheap homes must be allocated to low-income households. Sitting tenants, however, cannot be evicted because of (increased) income.
Many housing associations work together with the local government to create and manage distribution systems. Common decisions are made on allocation criteria, for example, relating to household income, size, or age (Kullberg, 2002).

SALES

Housing associations are allowed to sell dwellings. In fact, sales are encouraged, since the promotion of home-ownership is a prominent issue of Dutch housing policy. Since March 2002, only plans to sell dwellings to others than individual households (e.g. to private landlords) and plans for sale which do not fit into performance agreements with the local authorities have to be reported. In principle, housing associations must sell their dwellings against a minimum of 90% of the market value. However, if the buying household makes use of the Purchasing Grant - established as part of the Act on the Promotion of Home-Ownership ("Wet Bevordering Eigen-Woningbezit" - BEW) - associations may give reductions to 20% for new households and 30% for actual tenants. Additional reductions are possible if the development of value of the home after the sale is shared between the buyer and the housing association. The BEW, however, is hardly used in practice, mainly because it can only be applied in a small market of relatively cheap dwellings.

STOCK

QUALITY

The regulations for the technical quality of the housing stock (including social rented dwellings) have been laid down in the Building Decree ("Bouwbesluit"). This decree states minimum (technical) requirements on, among others, construction, safety, energy consumption and health. The Rent Act for Housing ("Huurprijzenwet Woonruimte" - HPW) mentions several additional technical requirements that, if not met, give tenants the right to pay a substantially lower rent. The BBSH states no specific, additional regulations for the quality of social rented dwellings. In general, the technical quality of the housing association stock is good.

SUPERVISION

SUPERVISION

Supervision of housing associations is conducted the basis of retrospective accountability. Their efforts in the interest of housing have to be reported to the Minister of Housing. Their financial position is monitored by the Central Housing Fund ("Centraal Fonds voor de Volkshuisvesting" - CFV). The BBSH contains prescriptions for the annual reports. The government may impose sanctions if an association performs poorly or in conflict with regulations, such as a directive (to undo or to perform a certain activity) or the appointment of a temporary supervisor. Furthermore, housing associations are encouraged to draw up 'performance agreements' with the local authorities. In these agreements, they specify their (public) tasks. In addition to the external supervision by the government, associations have developed an internal supervision structure as an additional means to ensure that they will operate within the interest of social housing in a reliable way. Within the social rented sector an 'audit-system' has been set up to review the performances of housing associations as well as a Governance Code with 'rules of conduct' for the members of the umbrella organization Aedes. Within individual housing associations, management is supervised by a board of 'supervisors' or 'commissioners'.

FINANCIAL SUPPORT

FINANCIAL SUPPORT

As stated above, direct financial support for housing associations has been diminished. During the 1990s, brick-and-mortar subsidies, exploitation grants and central government loans have been abolished. Indirect financial support still exists through:

- some tax benefits, although these have been partly abolished since 2006;
- housing grants to individual households;
- the backing up of a guarantee structure for the social rented sector (see below).

In principle, the Dutch social rented sector is expected to act as a 'revolving fund' in which financial returns are reinvested in the interest of housing. Furthermore, a financial guarantee structure has been established which provides associations with good access to the capital market. Associations' loans can be guaranteed by the national Social Housing Guarantee Fund ("Waarborgfonds Sociale Woningbouw" - WSW), which is filled by fees from the associations and backed up by the government. Associations that are no longer able to secure their financial viability can apply for financial support from the Central Housing Fund (see e.g. Boelhouwer, 1997). As part of the revolving fund, 'rich' associations with few tasks at hand are expected to help 'poor' associations with many tasks in their locality, for example by providing loans against low interest rates. However, this 'matching' of means and tasks has been a marginal phenomenon until now. On average, Dutch housing associations are in a relatively good financial position, although there are considerable differences between individual landlords.

3.2.1) ASSET MANAGEMENT IN THE NETHERLANDS

The asset management of social landlords is considerably influenced by the political and economic context in which they operate. After decades of strong central government intervention in the housing market, the Dutch national government policy has embraced the reinforcement of market principles in social housing. As part of this policy, housing associations have gained much more administrative freedom. At the same time, direct financial support for social housing management has been completely withdrawn. This is unique, even within Western Europe (e.g. Boelhouwer, 1997, 1999). The new policy context has set considerable challenges for the asset management of Dutch social landlords. Being transformed from operational, task-oriented organizations towards 'social entrepreneurs', they have to operate in a more strategic, market-oriented way. As a result, there has been wide interest among associations in methods and instruments to support asset management in a more systematic and business-like manner.

IMPROVEMENT OF FINANCIAL SITUATION

Despite their financial independence, housing associations have been able to remain solvent and even to improve their financial situation. This can be explained from the following factors (Priemus, 2001; Gruis and Nieboer, 2007):

- **Existing financial reserves**. Most housing associations emerged from the 1990s in a relatively prosperous state, due to the moderate interest rate since 1995 and their 'hidden' resources due to undervaluation of their properties in their financial accounts;
- **Rental income**. In the beginning of the 1990s, the national government decided to set the average yearly rent-increase for social landlords at least at 1% above the inflation rate. This real rent-increase was intended to promote cost-covering rents and thus to reduce the need for property subsidy. These real rent-increases have helped housing associations to build up their financial reserves.
- **Property development**. Many associations have become active in the more lucrative development of expensive rental dwellings and owner-occupied dwellings, which generated surplus means to invest in social housing or to strengthen the financial reserves.
- **Sales have increased substantially during the nineties**. The number of dwellings sold by housing associations has increased from 2,000 in 1990 to over 20,000 in the late nineties. The proceedings from the sales have been much higher

than the income that housing associations would have received if they had chosen to continue social rent.

- **Indirect support and guarantee structure**. There is a substantial indirect financial support of the rented sector in the shape of the housing allowance system. About one third of all households in the social rented sector receive an individual housing allowance to help them pay their rent (in 2001, the average allowance was € 44,- per household (Aedes, 2002)). Furthermore, the financial guarantee structure is highly appreciated by the lenders, so housing associations have relatively cheap access to borrowing capital. The interest rate of housing associations' loans is only slightly above that of state loans.
- **Mergers**. Many associations have merged during the nineties. These mergers have resulted in a reduction of the number of housing associations from 824 in 1990 to 678 in 2000 (Ministry of VROM, 1994-2002) and 476 by January the 1th, 2008. Improving the financial position has been one of the motivations for mergers, although in many cases this was certainly not the only, nor the leading motive.

FINANCIAL PRINCIPLE

Basically, the financial principle underlying the asset management strategy of many Dutch housing associations is to match shortages with surpluses within their activities, at various levels:

- at project level, the (re)development of social housing is combined with development of commercial rent and owner occupied dwellings, thus the overall financial feasibility of the projects improve as well as the social/tenure mix;
- at company level, rents are generally sufficient to cover operation costs and interests on loans. Exploitation surpluses of more expensive dwellings with a good market position can be used to match operational deficits of other (social rent) dwellings;
- at company level, lucrative project development and sales are combined with costly housing restructuring activities;
- at sector level, richer housing associations occasionally support poorer housing associations.

At all levels, housing associations anticipate additional proceedings from sales over the course of time. In the past, all social rented dwellings were built with the 'going concern' perspective of continuing rent over 50 years, followed by investments to extend the lifespan. Consequently, the net present value calculations of their investments often turned out negative. Nowadays, housing associations have become aware that they can always sell a part of their stock after a certain period (say 15-25 years). Thus, a growing number of housing associations make their investment decisions on the basis of potential sales in the futures, leading to much more positive financial outcomes. Also, more and more associations do not calculate their proceedings at the level of individual projects or estates, but anticipate the proceedings at neighborhood level. For example, if a housing association decides to demolish and replace ten percent of its stock as part of its strategy to regenerate a neighborhood, it also takes into account the positive effects on the value of the rest of the housing stock in the neighborhood. Finally, to make sales more attractive for middle and lower income households, and to speed up sales and the associated proceedings, housing associations have begun to introduce various innovative tenures, including discounts on sales (e.g. Gruis et al., 2005).

3.3) TRANSFERABILITY OF PRACTICE

Social housing in Italy and the Netherlands have been subject to (financial) privatization policies. Dutch housing associations have been able to survive this process and even came out of it as relatively solvent institutions. Many Italian social housing organizations, on the other hand, came out of the process in a poor financial state, particularly in the case of ATER Roma. Now, we ask ourselves, to which extent can approaches followed by Dutch housing associations be transferred in support of a housing management strategy for ATER?

DIFFERENCES AND SIMILARITIES

DIFFERENCES

To be able to assess the transferability of practice, it is necessary to reflect on the similarities and differences between the context in which Dutch housing associations and ATER have to operate. The relevant similarities that we notice are the following:

- Size: the number of dwellings that ATER Roma manages is comparable to the size of a lager housing association in the Netherlands. The size improves the opportunities to adopt a dynamic approach towards the management of the housing stock - to match shortages with surpluses. It also provides a basis to develop a professional management organization;
- Diversity: When set within an international context, social rented housing in the Netherlands can be characterized by its relatively large share (34%) of the housing stock, the diversity of dwellings within the social rented stock and the variety of tenants, who are not only low-income households. ATER also seems to operate a portfolio with a certain degree of diversity and its allocations currently are not restricted to low-income households;
- Sales: Dutch housing associations and ATER alike, have a relatively large freedom to determine if they want to sell parts of their housing stock.

SIMILARITIES

On the other hand, there are a number of differences which hamper transferability of Dutch approaches to ATER:

- Diversity: Taking into account the relatively small share of social rented housing in Italy and the Lazio area in comparison to the average share of Dutch housing associations in the total housing stock, the diversity of ATER's housing stock presumably is less than that of an average Dutch housing association. Consequently, ATER will have less opportunities to employ the diversity of the housing stock to match shortages with surpluses;
- Regulations: The regulations concerning rent levels and sale prices makes it impossible for ATER to effectively use the market value of its stock to generate additional financial proceedings;
- Organization: While Dutch housing associations are well under way to transform themselves into professional organizations and are improving their competences in a variety aspects at strategic and operational levels (treasury, asset management, project development, social management, networking etc.) ATER seems to be lacking the necessary (strategic) competences to effectively adopt approaches to housing management that are similar to those of Dutch housing associations;
- Supervision: While Dutch housing associations are supervised internally by an board of trustees and externally by an independent board (CFV), the supervision of ATER is embedded within the regional political context, which hampers the development of the more business-like, market oriented approach of the Dutch housing associations.

FIRST CONCLUSIONS

Concluding, the director of ATER seems absolutely right stating that a restructuring of the company is unrealistic provided that the management model and the structure itself are not changed. The differences in the context also make clear that a simple transfer of Dutch approaches to ATER is not feasible. Nevertheless, we have formulated three directions which could help to create a financially sustainable future for ATER. Taking into account the differences in the context, the suggested directions necessarily are not restricted to ATER itself, but have consequences for the external regulations and regional housing policies as well. The possible directions we suggest are as follows.

DIRECTIONS FOR ATER

1) Less restrictive rents and selling prices

If ATER is expected to continue to operate without major (additional) public funding, the application of much less restrictive regulations towards rent setting and selling price seems a basic prerequisite. Inspiration for alternative rental policies can be found in other regions and countries. For example, the region of Lazio could distinguish a core social housing stock, for which rents need to be restricted, and a liberalized housing stock, for which ATER can follow a more market-oriented rental policy. Furthermore, limits could be set to the increase of the total rent sum of ATER, while ATER could be given the opportunity to differentiate rent levels to achieve more market-oriented rent levels. Additionally, selling prices could be brought up much closer to market level. In the Netherlands, for example, we have seen above that housing associations should normally ask at least 90% of the market value, to prevent financial public means leaking away from the social rented sector. If the objective is to make home-ownership available to a larger group of households, higher discounts can be given, but could be combined with the restriction that the landlord retains the right to buy the dwelling back against a similar discount, when the household decides to move.

2) Introduction of a professional (re)development department within ATER
The analysis of the situation of ATER above makes clear that if it fails to employ the financial capacity of its stock, it will not be able to survive in a financial sense. Following the asset based strategies of Dutch housing associations, one possible direction for ATER could be to introduce a professional department to set up and carry out restructuring policies for its housing stock, with a particular emphasis on profitable opportunities. This means, such an organization must not only look at ATER's real estate portfolio from a social housing perspective, but must analyze its housing stock and land from a market perspective. The basis questions of the department would be: which estates can be sold and/or redeveloped into the commercial segments of the housing market; which locations where ATER owns land can be exploited to generate profits and where in the Lazio region do opportunities exist to develop commercial dwellings and other real estate?

3) Split up ATER into a social and commercial organization
The former direction could be taken further by splitting ATER into a social housing organization and commercial enterprise. Such a direction could be inspired among others by recent approaches of some Dutch associations, debates about the organization of the Dutch social rented sector (e.g. Gruis and Priemus, 2007) and stock transfers from local authorities in England (e.g. Gruis and Nieboer, eds., 2004). While the social housing organization maintains the core social housing stock, a commercial enterprise could be set up that manages the more expensive stock and locations that are more popular on the housing market. It could also have the task to undertake (re)development activities within and outside of the ATER housing stock. The commercial organization could be set up as a daughter organization to social mother as single shareholder. Nevertheless, the commercial enterprise should have a separate board and should also be exempted from the restrictive rent and selling price regulations as well as the political context of the mother organizations. Consequently, it will be enabled to more effectively employ the market value of the housing stock and land to generate extra financial means. Such a separation would explicitly stimulate the implementation of more market oriented strategies, since the commercial organization will have the objective to generate a positive financial return for its mother shareholder. Furthermore, the transfer of the stock from the social mother organization to the commercial daughter could be partly financed from private loans, based on a part of the market value of the transferred stock, thereby making extra funding available to the mother organization within a relatively short period.

It should be noted that the suggested directions should be seen explicitly as directions that need further exploration and assessment to check if they are really feasible or not. Furthermore, it should be noted that a combination of directions is probably more effective or may be even necessary to achieve a financially sustainable situation. Finally, the success of each direction depends on the overall market value of ATER's housing stock and land: is it high enough to generate sufficient surpluses to finance the management of the core social housing stock?

The suggested directions are not without drawbacks either. In general they will all lead to introducing a much more market-oriented housing policy in the social rented sector of Lazio. Although it can be argued that current policy leads to financial inefficiencies, introducing market principles in the already relatively small social housing sector could lead to social problems. Thus, the politicians in Lazio need to balance additional financial support of ATER against the potential danger of introducing market principles in its operations.

CONCLUSIONS

As a result of the so-called "devolution process" occurred in Italy in 2001, decision-making and economical power was transferred from the State to the Regions. The State does not provide extensively financial support to the social housing institutes anymore. As a consequence of this shift, the institutes had to adapt their structure and management model to the new system. But some of them did not succeed and are now facing with financial problems.

Despite of being one of the biggest housing institutes in Italy, ATER Roma, the only housing institute in Rome, experienced one of the most critical financial crises. In order to survive as

a company, it opted for a considerable decrease of the maintenance level as well as new investments. Significant consequences affected the quality of its stock.
The Netherlands has been subject to (financial) privatization policies as well. However, Dutch housing associations have been able to survive. They even came out of it as relatively solvent institutions. They are now quite rich and able to invest and implement ambitious developments in terms of restructuring and new construction projects.

We compared The Italian and Dutch context to find out what solutions might be transferable from the Dutch model to the ATER Roma. Fours main issues emerged.

1) A simple transfer of the Dutch approaches to ATER is not feasible.
   The director of ATER Roma seems absolutely right stating that a restructuring of the company is unrealistic provided that the management model and the structure itself are not changed. The differences in the two contexts also make clear that a simple transfer of Dutch approaches to ATER is not feasible.

2) The three directions formulated to help creating a financially sustainable future for ATER Roma are not necessarily restricted to ATER itself.
   They have consequences for the external regulations and regional housing policies as well.

3) The three directions need to be explored further, especially with regards to the effectiveness offered by their possible combination. The success of each direction depends on the overall market value of ATER's estates which highlight the importance of a precise and updated database regarding both housing stock and lands. The directions are the followings:

- Less restrictive rents and selling prices to allow alternative rental policies.
  The Region cloud distinguish a core social housing stock, for which rents need to be restricted, and a liberalized housing stock, for which ATER can follow a more market-oriented rental policy. ATER should be given the opportunity to differentiate rent levels in order to achieve more market-oriented rent levels and bring selling prices up to much closer market level.

- Introduction of a professional (re)development department within ATER.
  Following the asset based strategies of the Dutch housing associations, ATER should carry out restructuring policies for its stock, with a particular emphasis on profitable opportunities. Hence, ATER's real estate portfolio should be analyzed also from market perspectives.

- Split up ATER into a social and commercial organization, as recently done by some Dutch housing associations.
  While ATER maintains the core social housing stock, a commercial "daughter" enterprise, with a separate board of direction and exempted from restrictive rent and selling regulations, could be set up that manages the more expensive stock and locations that are more popular on the housing market. The transfer of the stock could be partially financed from private loans thereby making extra funding available to the "mother" organization within a relatively short period.

3) Introducing market-oriented housing policy in the social rented sector of Lazio could lead to social problems.
   Politicians should face this by balancing additional financial support of ATER against the potential danger of introducing market principle in its operations.

INTRODUCTION TO THE FOURTH CHAPTER

The fourth collected examples of social housing estates recently renovated in the Netherlands, focusing on the physical aspect of the projects. Then, an investigation in Rome on possible strategies aiming at decreasing energy consumptions by means of interventions on the building envelope is presented.

CHAPTER 4)
APPROACHES TO RENOVATION INTERVENTIONS IN THE NETHERLANDS, PROPOSALS FOR ROME

INTRODUCTION TO THIS CHAPTER

The purpose of this chapter is to introduce the subject of renovation on the physical level. It collects examples of renovation projects recently realized in the Netherlands and an investigation of possible intervention strategies for a deprived social housing block in Rome.

The chapter is divided into two main sections. The first deals with an introduction to physical renovation of social housing estates in the Netherlands. Ten examples are presented using graphic tables showing ex-ante and ex-post renovation. Short word description, drawings and pictures support the description in each table. The second section is focused on the Roman context. Perspectives for renovation with respect to a specific housing estate are described and discussed. Conclusions are then provided at the end of the chapter.

4.1) THE NETHERLANDS OVERVIEW ON RENOVATION PROJECTS

INTRODUCTION

The Netherlands is among European countries with a long tradition in Social housing. The government invested a lot of money in it by means of a very active housing policy. In 2001, 99% of the not-for-profit housing stock, being 36% of the total housing stock of 6.7 million dwellings, was managed by housing associations (1% is managed by municipalities, Ministry of VROM, 2002). Social rented housing is 33% of the total housing available. This makes the Netherlands one of the countries with the largest social rented housing sector, together with Poland (29%), Sweden and Denmark (28%).

As in many other Western-European countries, the Dutch government has reduced its financial support of social housing (Boelhouwer, 1997; Smith and Oxley, 1997). After decades of strong central government intervention in the housing market, the Dutch national government policy has embraced the reinforcement of market principles in social housing. Since 1995 ("bruterings"-Act), the government is no longer either financing or subsidizing the social housing sector. The housing associations are completely independent in their strategies, but have to act within the legal framework of the Housing Act and the BBSH. Financially the housing associations have no more ties with the government. The boundaries of the social housing sector are defined in accordance with European legislation and are set at an income level of € 33.000 and at a price level for the dwelling of € 200.000.

The new policy context has set considerable challenges for the asset management of Dutch social landlords. Being transformed from operational, task-oriented organizations towards 'social entrepreneurs', they have to operate in a more strategic, market-oriented way. As a result, there has been wide interest among the associations in methods and tools to support asset management in a more systematic and business-like manner (Gruis et al, 2007).

Restructuring of social housing estates is an item on the agenda since the late '90s. Dutch housing associations have been developing strategies to deal with renovation on neighborhood and building level. In particular, since they have to operate their stock without

(direct) financial support, they developed effective processes to manage renovation projects. A number of housing estates from the 1960s and the 1970s have already been subjected to physical renovation. Some of these initiatives are considered good examples of renovation as it is shown by the National Renovation Prize (NRP), a well-known prize awarding successful renovations in the Netherlands. The NRP has had already 11 editions; the latest one in 2007 (see www.nationalerenovatieprijs.nl)

Renovation on the building level often consists in re-adapting the existing housing supply. Physical transformation types like combination of existing housing units and/or addition of new dwellings (on the top floor, at the bottom, to the top-end) are common solutions in the Netherlands Branders et. al., 2000). Re-organization of existing accessibility (to the building, the dwellings and the shared spaces) by means, for example, of new elevators or addition of galleries or loggias are common solutions as well. From a technical perception, improvements regard new technical equipments, better thermal and acoustic insulation, new claddings and window frames and double or even triple glazing.

The site of the National Renovation Prize (NRP), a well-known prize awarding best practice of renovation in the Netherlands, provides an overview on many projects realized in the recent years. Some of them are characterized by the conversion of their initial appearance into a different one: 'change the old, bad image into something completely new and modern' (Gooijer and Te Velde, 2007 in Andeweg, 2007). This reflects the standard approach to renovation, typically dominated by interventions aiming at improving the quality of the building, meanwhile emphasizing its initial and most relevant architectural characteristics (like Complex 50 Tab.10 Section 4.1.1 and Florijn Noord in Chapter 6). On this concept van Schagen architekten, a very well-known and experienced architectural firm, based his design for transformation of deprived social housing states. A number of their projects are presented in the next section[1]. Examples in which the initial look of the building is profoundly transformed are not very common the Netherlands (see Tab. 4).

RENOVATION LIGHT and HIGH-LEVEL RENOVATION

In the Netherlands, renovation practice typically reflects two types of strategies, 'renovation light' and 'high-level renovation'. Both of them intend to improve the initial building quality. High-level renovation, however, is more profoundly and leads to higher quality by moving the walls to improve, for example, housing differentiation. Clearly, for implementation of high-level renovation, tenants need to move out during the works. A good example of such a relevant transformation is the case of the Complex 50 in Amsterdam (see Tab.10).

4.1.1) TEN EXAMPLES OF RENOVATION

SELECTING 10 PROJECTS

There are a lot of examples of renovation projects in the Netherlands. With this respect, the research project ReUrbA[2] (Restructuring Urban Areas) published a collection of principles and types for transformation of the urban environment to meet new demands of the society. The most interesting sources of information on the subject are the mentioned National Renovation Prize (NRP). Being a bi-annual competition awarding good examples of renovation, it provides an exhaustive overview of the recent renovations implemented.
To select the projects showed in this section the archive of NRP was consulted together with the proceedings of the European funded research Cost C16 (entitled "Improving the quality of the existing urban building envelopes") and internet sites of architectural firms involved in renovation (like van Schagen, Duinker van der Torre, ANA, D&E and so on). With this respect, it needs to be emphasized that the examples of renovation in the tables do not aim at a complete outline of the situation of social housing renovation in the Netherlands. Further in-depth investigations should be done to provide this, like systematic analyses of best practice for renovation as "examples of actions which could be recommended for further application whether in a similar or adapted form" (Minnery at el. 2000). However, demonstrating best practice is not a simple task (like definition of criteria, indicators, and targets like 'for whom' and 'for what') (Roumet, 2007). Yet, a good reference can be the research project "Best Practice Analysis of Renovation-Based Strategies" developed by the

1Van Schagen architekten base their office in Rotterdam. Numerous projects have been published on national and international reviews (see also reports of Cost C16). For an overview check www.vanschagenarchitekten.com.
2 ReUrbA is an international platform for the exchanging and joint development of innovative methods for urban renewal. For an overview check: www.reurba.org

researchers of the Faculty of Architecture at TUDelft. The study focuses on the theoretical and methodical aspects as well as the practical results of best practice evaluation of housing renewal projects in the Netherlands. The research discussed the need for knowledge of renovation based approaches for which analysis of best practices -"examples of action which could be recommended for further application whether in a similar or adapted form" (Minnery et al. 2000) could be used.
An analysis of Dutch best practice showed that the mentioned National Renovation Award (Nationale Renovatie Prijs, NRP) is most promising for further analysis (van der Flier & Thomsen 2002 in van der Flier & Thomsen, 2005). To see whether analysis of projects submitted to the NRP gives insight into Dutch renovation and if the variables used are relevant for the selection of best practice, data from four successive entries were analyzed. The data showed interesting tendencies but gave limited insights and it emerged that both quantitative and qualitative factors are relevant to find success and fail factors of the projects (van der Flier & Thomsen 2003 in van der Flier & Thomsen, 2005). Therefore, an assessment of success and fail factors of case studies (three nominees of NRP) was developed. It emerged that effectiveness of the process (goal attainment), and support (from participants) are relevant for success. Four groups of factors are positively related to the success of projects: cooperation of all the relevant participants, innovative and creative solutions to the specific problems, subsidies to make the specific solutions feasible and presence of residents can make the difference between renovation and new construction. More importantly, the efforts of dedicated individuals are often decisive for the success of renovation based approaches (van der Flier & Thomsen, 2005).

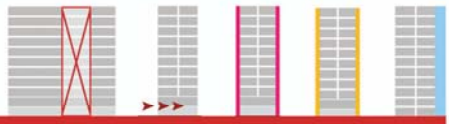
In the next table are listed the projects analyzed in this study, they were chosen according to three criteria:

CRITERIA

- Time: projects designed or implemented no earlier than 2000 (maximum 7 years old);
- Recognition: projects awarder-nominated by NRP or mentioned by COST research project;
- Strategic solutions: projects particularly interesting with respect to the physical solutions adopted.

The following table shows a list of the ten projects, their names, date of completion (between 2001 and 2007), building type (high-rise and medium-rise) and tenure after renovation (social rented housing, homeownership, housing for medical care).

PROJECT n.	NAME	DATE	BUILDING TYPE	SECTOR
1	Hakfort Huigenbos	2007	**HIGH-RISE**	SOCIAL RENTED HOUSING
2	Die Delfgaauwse Weije	2005		ELDERLY RENTED HOUSING (MEDICAL CARE)
3	Fleerde en Frissenstein	2004		HOMEOWNERSHIP HOUSING
4	Osdorperhof	2001		ELDERLY RENTED HOUSING (MEDICAL CARE)
5	Gigantic (not realized)	2000		SOCIAL RENTED HOUSING & HOMEOWNERSHIP
6	De Leeuw van Vlaanderen	2005	**MEDIUM-RISE**	SOCIAL RENTED HOUSING & HOMEOWNERSHIP
7	Enschedelaan	2003		SOCIAL RENTED HOUSING & HOMEOWNERSHIP
8	Siersteenlaan	2003		SOCIAL RENTED HOUSING & HOMEOWNERSHIP
9	Huize Patrimonium	2001		SOCIAL RENTED HOUSING & HOMEOWNERSHIP
10	Complex 50	2000-2004		ELDERLY RENTED HOUSING



GENERAL INFORMATION

Name of the project: Hakfort Huigenbos Amsterdam
Architecture office: DE architekten bna b.v., Delft
Client: Delta Forte Amsterdam

1

EX-ANTE RENOVATION

Construction: '70s
Sector: 100% social rented

EX-POST RENOVATION

Renovation: 2007
Sector: 100% social rented

GENERAL DATA

Number of dwellings: 810
Target group: low-income groups
Average surface of dwellings: na

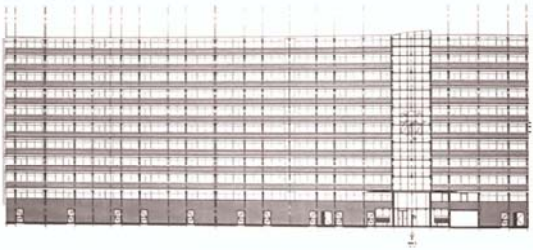
Number of dwellings: 810
Target group: low-income groups
Average surface of dwellings: na

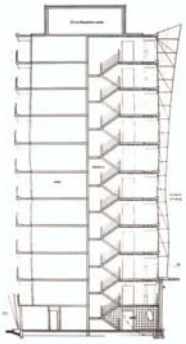
PROBLEMS

PHYSICAL ASPECTS (FUNCTIONAL - TECHNICAL)
Bad condition of all the dwellings
APPEARANCE
Not inviting entrances and stairweels, lack of recognizability and orientation.
SUSTAINABILITY
Not considered
SOCIAL ASPECTS
Not considered

MEASURES

PHYSICAL ASPECTS (FUNCTIONAL - TECHNICAL)
Adaptation of dwellings to current requirements. Selective demolition of walkways on first floor and additional cladding to the top-end of the building
APPEARANCE
Interiors of entrances transformed by using coloured masonry and improving 'visual stransparency' (holes in the walls). Better recongnizability of single entrances by changing shape and material the of stairwells' envelope: glass, paintings and coloured lightings from the inside.
Bottom both of front and back side differentiated respectively with coloured masonry) and climbing plants on stell grids ('vertical gardens').
SUSTAINABILITY
Not considered
SOCIAL ASPECTS
Not considered





GENERAL INFORMATION

Name of the project: Die Delfgaauwse Weije, Delft
Architecture office: Van Schagen architekten, Rotterdam
Client: -

2

EX-ANTE RENOVATION

Construction: 1955
Sector: housing for elderly and medical care

EX-POST RENOVATION

Renovation: 2005
Sector: housing for elderly, medical care and education

GENERAL DATA

Number of dwellings. At the bottom there were: 3000m2 nursing home and related facilities, 300m2 community center, 150m2 physiotheraphy. On the upper floors: 36 dwellings of which 26 with two rooms and 12 with one room
Target group: elderly and people in need of medical care
Average surface of dwellings: na

Number of dwellings. At the bottom there are: 370m2 community centre, 335m2 day nursery, 125m2 after-school activities, 65m2 care info-point, 150m2 physiotheraphy, 660m2 rented office, 30 flats Ipse foundation (50-60m2), 4 flats (110m2). On the upper floors: 49 dwellings for elderly
Target group: elderly and people in need of care. Facilties for mixed groups (children, local community and private enterprises)
Average surface of dwellings: na
Average sale prize per dwelling € 105.000

PROBLEMS

PHYSICAL ASPECTS (FUNCTIONAL - TECHNICAL)
Housing and facilities deteriorated and in the need of update to current standards, especialy for sitting and future elderly.
Required school facilities on local level.
SUSTAINABILITY
Not considered
APPEARANCE
Not considered
SOCIAL ASPECTS
Not considered

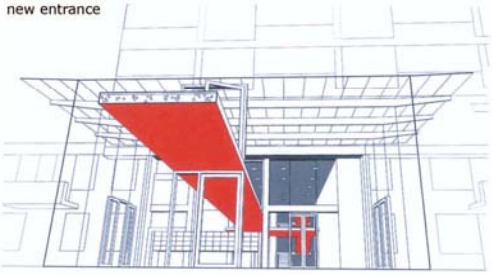
MEASURES

PHYSICAL ASPECTS (FUNCTIONAL - TECHNICAL)
Combination of housing units on upper floors and major repairs. Dwellings provided with new installations. Existing window system changed to fit new requirements.
School facilities added to the South bottom of the block.
Rented offices and special housing added at the bottom at the Northen side.
At the front, added an extra glazed entrance. It connects to all the building areas.
APPEARANCE
Interventions on the facade respect initial architectonic characteristics
The new window system fits the original appearance.
SUSTAINABILITY
PV panels on the top floor and on the South facaded. On the top, they also serve as a shelter for the galleries.
SOCIAL ASPECTS
Residents participated in the development of a plan for the whole area (1998).

renovation project

Housing units

new entrance



notes: Around the two high-rise buildings new one family housing is built (also by Duinker van der Torre) Fleerde is part of a new building block.

GENERAL INFORMATION

Name of the project: Fleerde en Frissenstein, Bijlmermeer, Amsterdam, ZO
Architecture office: Duinker van der Torre samenwerkende architecten, Amsterdam
Client: Era Bouw BV

3

EX-ANTE RENOVATION

Construction: 1968
Sector: 100% social rented

EX-POST RENOVATION

Renovation: 2004
Sector: homeownership - mid price

GENERAL DATA

Number of dwellings: Fleerde 146, Frissenstein 146
Target group: low income people - small families and elderly
Average surface of dwellings: 87 m2 (netto)

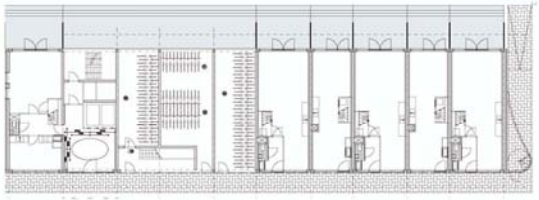
Number of dwellings: Fleerde 50, Frissenstein 47
Target group: low- middle income people who believe in the qualities of the Bijlmermeer
Average surface of dwellings: 97 m2 (netto)
Average sale prize dwellings € 146.500

PROBLEMS

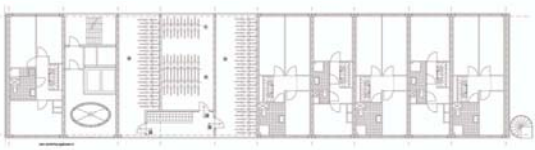
PHYSICAL ASPECTS (FUNTIONAL - TECHNICAL)
Physical decay and ageing of building components and installations
APPEARANCE
Enormous and anonymous blocks
SUSTAINABILITY
Insufficient performances of the façade
SOCIAL ASPECTS
Very good floor plan of dwellings but, because of the storages at the ground floor and the inner walkway on the first floor, there was a serious lack of social safety

MEASURES

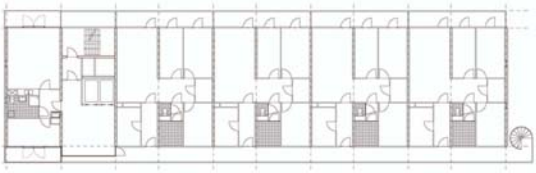
PHYSICAL ASPECTS (FUNCTIONAL - TECHNICAL)
Give the blocks a second youth by radical transformation and place dwellings on a different market position (affordable homeownership)
2/3 of the high-rise blocks are demolished and 1/3 renovated.
The ground and first floor are combined to get maisonettes.
All dwellings are provided with new installations, bathrooms and kitchens.
Additional storages are provided in external volumes added to the building.
Inner space of entrances is renovated. General attention for details.
To the Fleerde are attached new courtyard low-rise
APPEARANCE
Coloured paraptes, blue for the Frissenstein and green for the Fleerde
SUSTAINABILITY
Additional insulation of the existing facade. Savings on energy costs: 30%.
SOCIAL ASPECTS
It is expected that safety nearby the block would be improved by dwellings overlooking the street.
During the process informal meetings were arranged together with potential buyes to get a product fitting their future requirments



Ground floor



First floor



Upper floors

Notes: around the two high-rise buildings new low-rise are built (also by Duinker van der Torre)

GENERAL INFORMATION

Name of the project: Osdorperhof, Amsteram Osdorp
Architecture office: Duinker van der Torre samenwerkende architecten, Amsterdam
Client: Woningstichting Patrimonium

4

EX-ANTE RENOVATION

Construction: 1969
Sector: social rented housing for elderly people in need of medical care and medical facilities

EX-POST RENOVATION

Renovation: 2001
Sector: social rented housing for elderdly people in need of medical care and medical facilities

GENERAL DATA

Number of dwellings: 245 rooms in nursing home
Target group: elderly people in need of medical care
Average surface of dwellings: 18 m2

Number of dwellings: 50 dwellings + facilities
Target group: elderly people in need of medical care
Average surface of dwellings: 72 m2

PROBLEMS

PHYSICAL ASPECTS (FUNCTIONAL - TECHNICAL)
Small housing units with common facilities: the building layout does not suit modern need for independent living of elderly people.
Facilities out of date and physical decay

APPEARANCE
Need of a fresh image. The appearance of the '60s was not appriciated.

SUSTAINABILITY
Little insulation

SOCIAL ASPECTS
Lack of social relationships between the elderly housed in the block and people living in the area.

MEASURES

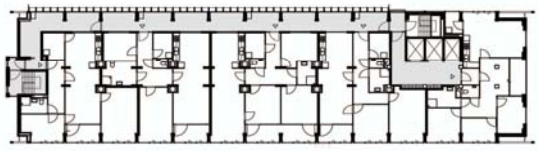
PHYSICAL ASPECTS (FUNCTIONAL - TECHNICAL)
Four housing units are combined into one 2 bedroom dwellings
New entrances and additional facilities (medical and ricreational).
Change the accessibility to the dwellings: corridords and galleries alternated

APPEARANCE
New glazed façade makes the building more distinctive in the neighbourhood. The block is now a recognizable landmark amidst 2/3 storey housing.

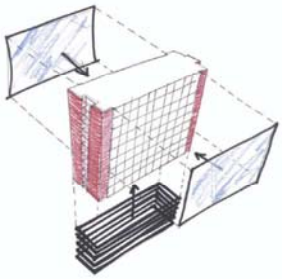
SUSTAINABILITY
The new facade was realized by keeping the casco structure.
It has higher technical characteristics, like more thermal insulation. Considerable energy savings fater renovation

SOCIAL ASPECTS
The volume attached at the bottom containing recreational activities is open once a week to host kids from the school nearby. Sitting residents did not participate in the new design.

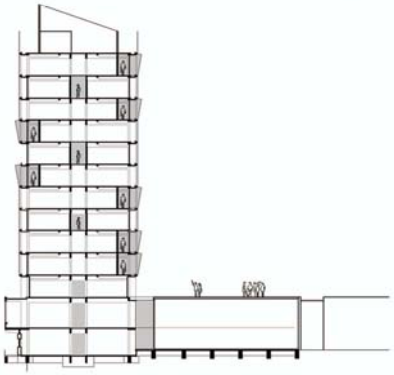
Floor plan housing units



Floor plan 'gallery housing units'



Floor plan 'corridor housing units'



GENERAL INFORMATION

Name of the project: Geldershoofd, Bijlmermeer, Amsterdam
Architecture office: ANA architects, Amsterdam
Client: Woningsticjting Ons Belag

5

EX-ANTE RENOVATION

Construction: 1965
Sector: 100% social rented

EX-POST RENOVATION

Renovation: not yet implemented (project 1997 - 2000)
Sector: homeownership and social rented

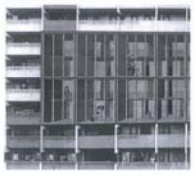
GENERAL DATA

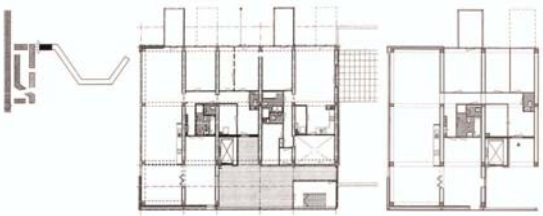
Number of dwellings: 502
Target group: low income people
Average surface of dwellings: -

Number of dwellings to be implemented: 145
Target group: mix of tenants and homeowners. Cheap and expensive flats.
Average surface of dwellings: -

PROBLEMS

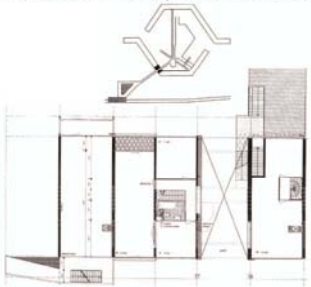
PHYSICAL ASPECTS (FUNCTIONAL - TECHNICAL)
Differentiate existing housing types
APPEARANCE
The block is monotonous and unattractive
SUSTAINABILITY
Not considered
SOCIAL ASPECTS
All the social problems present the Bijlmermeer before renovation

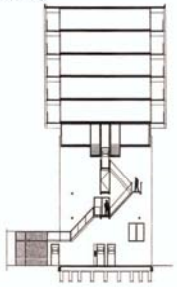




MEASURES

PHYSICAL ASPECTS (FUNCTIONAL - TECHNICAL)
New types: 'top-end', 'high archway', 'loggia', 'courtyard', 'atrium', 'drive-in', 'car-lift', 'shop-windows', 'oriel window', 'terrace apartment'.
'Top-end' are luxury flats for elderly(onestorey executed as steel truss conti-levered on the roof, the other are two suspended from it).
'High Archway' are dwellings above the gate (flats split by 5 storeys high space. The parts are connected by semitransparent corridors)
Shop-window' are maisonettes on upper floors which surface is extended by adding balconies then covered by transaprent facade.
APPEARANCE
Improved by a radical change the initial architectonic characteristics: many housing types, differentiation of the facade, better relationship of the building with the public spaces.
SUSTAINABILITY
Not considered
SOCIAL ASPECTS
Improvement of identity would contribute to social safety





GENERAL INFORMATION

Name of the project: De Leeuw van Vlaanderen, Amsterdam
Architecture office: dhr. Egon Landskroon, Amsterdam
Client: Far West

6

EX-ANTE RENOVATION

Construction: 1958
Sector: 100% social rented

EX-POST RENOVATION

Renovation: 2005
Sector: social rented and homeownership

GENERAL DATA

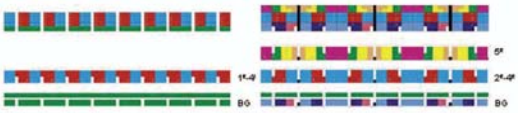
Number of dwellings: 96
Target group: lower income families with children and elderly
Average surface of dwellings: 72 m2

Number of dwellings: 54 social rented and 42 homeownership
Target group: families with children, elderly and disabled
Average surface of dwellings: 86 m2
Average monthly rent 670€

PROBLEMS

PHYSICAL ASPECTS (FUNCTIONAL - TECHNICAL)
Lack of differentiation of housing types.
Noise problems because of the highway nearby (<3m from the block)
APPEARANCE
Not considered
SUSTAINABILITY
Not considered
SOCIAL SAFETY
Improvement of social safety nearby the block

HOUSING DIFFERENTIATION SCHEME



Ex-ante Ex-post

PROBLEMS

PHYSICAL ASPECTS (FUNCTIONAL - TECHNICAL)
Housing differentiation : 2 types of maisonette (top and ground floor - homeownership) and 2 types of dwelling by combination of two existing units.
Double glazed façade for noise protection. New elevator and galleries.
APPEARANCE
Fashinable galzed facade functions as'window'for restructuring projects in the neighborhood
SUSTAINABILITY
Not considered
SOCIAL ASPECTS
Improved by addition of maisonette at the ground floor overlooking the space around the block. Better collective spaces within the building.
Inhabitants had influence. The plan has been developed according to the points of departure of the 'social plan park city', set up by the city, Far West and representatives of the inhabitants.

Plan 1-3 floor

Plan units 1-3 floor

Plan maisonette 0-1 floor

top floor maisonette

GENERAL INFORMATION

Name of the project: Enschedelaan, Den Haag Zuid West
Architecture office: Van Schagen architekten, Rotterdam
Client: Vestia Den Haag Zuid-West/Ceres Projecten, Den Haag

7

EX-ANTE RENOVATION

Construction: 1954
Sector: 100% social rented

EX-POST RENOVATION

Renovation: 2003
Sector: homeownership and social rented

GENERAL DATA

Number of dwellings: 239 three rooms gallery dwellings in one block
Target group: lower income groups
Average surface of dwellings: 55 m2 (netto)

Average monthly rent € na
Average sale prize existing dwellings € na

Number of dwellings: 124 in two blocks of which 79 renovated (31 maisonnettes, 48 gallery apartments), 84 new construction.
Target group: lower income groups - elderly, large families - homeownership
Average surface of dwellings: 88m2 (netto)
Average monthly rent: € 460

PROBLEMS

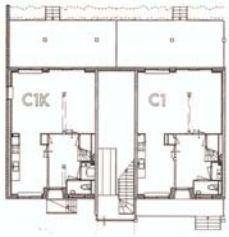
PHYSICAL ASPECTS (FUNCTIONAL - TECHNICAL)
Lack of differentiation: no housing for elderly and large families.
Small dwellings. Old technical installations, no elevators.
APPEARANANCE
Not considered
SUSTAINABILITY
Little thermal insulation
SOCIAL ASPECTS
Not considered

MEASURES

PHYSICAL ASPECTS (TECHNICAL - FUNCTIONAL)
Differentiation of existing gallery apartments by vertical and horizontal combination:
- 31 maisonettes for large families on the ground floor (120-135 m2). Two storeys with individual entrance;
- 48 gallery houses on top floor (90 m2). Two storeys on top floor reached by central stairwell and elevator.
Improvement of sound insulation. Addition of elevators.
APPEARANCE
Minimum adaptations to get the lowest alteration of the initial characteristics dating from the '50s.
SUSTAINABILITY
Strong improvement of energy consumptions by additional thermal insulation. Savings on energy costs: 70%
SOCIAL ASPECTS
Sitting tenants had an important role in deciding whether to go for demolition or renovation. Their opinions were investigated in the initial steps of the process and considered in the next phases.

Gallery dwellings
Type B and A, A'

Gallery dwelling
Type A, B (2nd and 3rd floor)



Maisonette - private entrance
Type C (ground and 1th floor)

Back elevation

Notes: in 2003, Court Loevesteijn won the urban renewal price 'Living City' of the province South Holland. Wishes of present inhabitants, future value, available finances were among the main succesful aspects of the project. It has been nominated by the NRP in 2005.

GENERAL INFORMATION

Name of the project: Siersteenlaan - Vinkhuizen, Groningen
Architecture office: DeZwarteHond, Groningen
Client: Nijestee

8

EX-ANTE RENOVATION

Construction: 1971
Sector: 100% social rented

EX-POST RENOVATION

Renovation: 2003
Sector: social rented and homeownership

GENERAL DATA

Number of dwellings: 108 three bedrooms apartments
Target group: lower income groups - elderly
Average surface of dwellings: 101 m2 (netto)

Number of dwellings: 105. 1 or 2 floors dwellings and gallery flats
Target group: homeownership and lower income groups. Families with kids and elderly couples
Average surface of dwellings: 123 m2 (netto)
Average price after renovation: 170.000 €

PROBLEMS

PHYSICAL ASPECTS (FUNCTIONAL - TECHNICAL)
Need of more functional dwellings suitable for wider groups.
Lack of connections with the shopping centre nearby the blocks (opposite Siersteenlaan).
Prefabricated system were used for the facade (Rottinghuis): wooden window and doorframes, and electrical conduits incorporated in the walls and façades. Elements needed to be substituted due to the putrefaction of the wooden structures

APPEARANCE
Need to improve the appearance of the blocks

SUSTAINABILITY
Not considered.

SOCIAL ASPECTS
Need to improve social safety, especially in the street behind the blocks (vandalism, crime and drug).

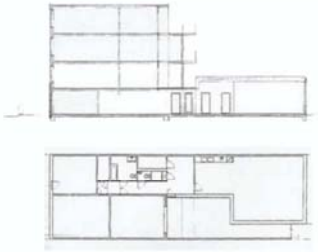
MEASURES

PHYSICAL ASPECTS (FUNCTIONAL - TECHNICAL)
Opening new passageways by splitting the 3 large blocks into 6 smaller ones.
Housing differentiation by little changes to reduce costs.
Addition of one elevator per block to let elderly people reach the smaller gallery apartments on upper floors (former stairs system was changed into galleries by placing additional steel structure). Equipments were changed on request and exchanged for higher rents.
One floor dwellings with private gardens and store-room in the larger blocks.
Two floors dwellings with kitchen, living room and patio attached to the smaller blocks (combination with the first floor).

APPEARANCE
Single localized measures improved whole appearance (also new coloured paintings for existing facades)

SUSTAINABILITY
As much as possible preservation of existing casco by selective demolition.

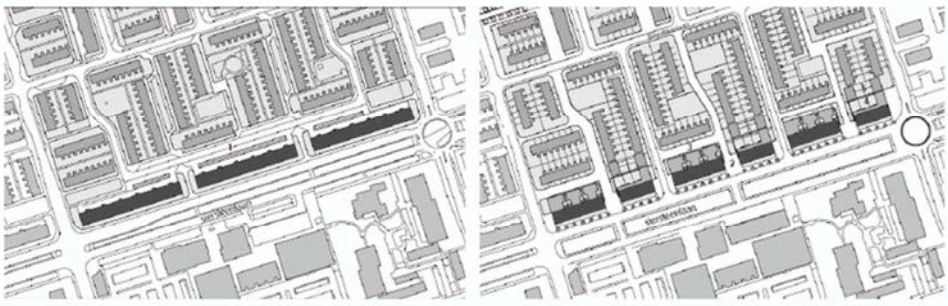
SOCIAL ASPECTS
Double orientation of dwellings on the ground floor overlooking the street behind the block. According to the blocks, the street has been split as well.
The developer and the Municipality consulted the sitting tenants. They had a say on reducing the percentage of demolition (50% less what was planned by West8)



Patio apartment in larger blocks
Section and floor plan

Two floors apartment in smaller blocks.
Section and floor plan

Notes: The project won the NRP in 2003 for the category innovative housing renovation. Actions on the blocks of Siersteenlaan were part of a larger urban scheme aiming to restructure the entire neighborhood of Vinkhuizen



GENERAL INFORMATION

Name of the project: Huize Patrimonium, Amsterdam
Architecture office: Van Schagen architekten, Rotterdam
Client: Woningstichting Patrimonium, Delta Forte, Amsterdam

9

EX-ANTE RENOVATION

Construction: 1960
Sector: social rented (elderly)

EX-POST RENOVATION

Renovation: 2001
Sector: social rented (elderly)

GENERAL DATA

Number of dwellings: na
Target group: elderly people
Average surface of dwellings: na

Number of dwellings: 76 for elderly and 2500m2 rooms for rent
Target group: elderly people
Average surface of dwellings: between 80-160m2

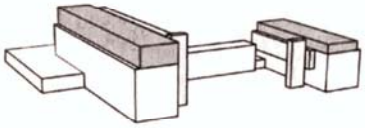
PROBLEMS

PHYSICAL ASPECTS (FUNCTIONAL - TECHNICAL)
Small and repeated housing units.
Need to improve current quality of dewllings for sitting tenants.
APPEARANCE
Adadpt the blocks respecting the original physical characteristics.
SUSTAINABILITY
make use of renewable energy sources
SOCIAL ASPECTS
Strengthen the Overtoomse Field-South area
Strenghten presence (symolic value) of the blocks on neighbourhood level by mixing housing for elderly with other functions.

MEASURES

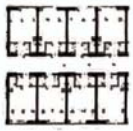
PHYSICAL ASPECTS (FUNCTIONAL - TECHNICAL)
Improved diversification and quality of housing supply.
Combination of social housing for elderly and room for rent (inhabitants organization on neighbourhood level)
Optoppen by wooden structure: two storeys of gallery apartments.
Combination of exising units (low-rise: vertical combination of existing 17m2 untis).
Better and more safety accessibility to the dwellings, by means of new gallayer , stairwells and elevators. ('box into box' concept)
High sounds insulation
APPEARANCE
Required adaptations fitting the existing architecture.
Optoppen integrated in the existing block. Changes in the opening system of the windows according to original layout.
SUSTAINABILITY
Make use of existing casco structure.
Added 250 m2 pv-panels on the roof.
High thermal insulation (energy saving decreased living costs).
SOCIAL ASPECTS
Residents had an influence on the project. Their wishes were considered for the renovation of the dwellings and the construction works.

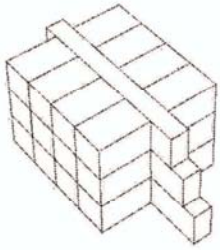
Renovation scheme



Optoppen - gallery dwelling

Optoppen - Corner gallery dwelling





Low-rise dwellings

Low - rise dwelings
by vertical combination

Notes: the project won the Nationale Renovatie Prijs in 2003, in the cathegory 'Innovatie' because of the reuse of the casco structure.

GENERAL INFORMATION

Name of the project: Lederambachtstraat, Amsterdam Osdorp
Architecture office: Van Schagen architekten, Rotterdam
Client: Woningbouwvereniging Het Oosten, Amsterdam

10

EX-ANTE RENOVATION	EX-POST RENOVATION
Construction: 1958 Sector: 100% social rented	Renovation: 2000 - 2004 Sector: social rented and homeownership

GENERAL DATA

Number of dwellings: 250 to be renovated Target group: low-income households, families, elderly people and starters Average surface of dwellings: 72 m2	Number of dwellings: 250 renovated and 400 new dwellings Target group: sitting low-income households, families, elderly, starters Average surface of dwellings: 86 m2

PROBLEMS

PHYSICAL ASPECTS (FUNCTIONAL - TECHNICAL)
Uniformity of the dwellings layout did no longer meet the needs of the households.
Blocks were 5 storeys high without elevator
Low technical quality of the blocks: lack of acoustic and thermal insulation.
Need to raise the whole quality keeping dwellings affordable for sitting low-income households.

APPEARANCE
In 1993, a research reported that 40% of the tenants wanted to move out. Improving attractiveness of the blocks was a requirement.

SUSTAINABILITY
Deterioration of the 'energy quality' of the dwellings, they were not equipped with central heating.

SOCIAL SAFETY
Lack of social safety in the streets

MEASURES

PHYSICAL ASPECTS (FUNCTIONAL - TECHNICAL)
Added maisonettes on top floor (light prefabricated wooden frame).
Existing dwellings on the ground floor enlarged combining them with those on the first floor (addition of private gardens).
Elevators up to the new maisonette on the top-floor made the dwellings on the lower floors accessible for elderly.
Existing portals enlarged to connect to the park nearby.

APPEARANCE
Better appearance by combining solutions for housing differentiation with improvements of the existing façade.

SUSTAINABILITY
Material savings by reusing the skeleton. Maisonettes and renovation existing units meant increasing life cycle of the building of 50 years. In terms of energy and water saving, the houses were upgraded to today's standards. New façade: grid of prefabricated concrete, wood and glass to solve thermal problems.

SOCIAL SAFETY
Different types of housing have their own entrance to avoid social conflicts in collective stairwells.
Participation: architects shared ideas with residents (especially about energy). Specialized professionals have been involved as intermediaries between tenants - architect.
The majority of people did indeed return to their dwellings after the renovation, which is unique.


Urban plan - enlarging portals


Front and back ex-post renovation


Maisonette ground floor


Scheme housing differentiation

notes: concerning sustainability the approach was considered experimental: process - new organizational models and product - physical innovations. The project received the status 'Example Project Sustainable and Energy-saving Building' by the Steering Group Experimental Housing. New approaches are now in Dutch Environmental Policy (like 'Area Based Development': the whole area - dwellings, surroundings, available facilities, infrastructure, nature and environment - is redesigned in an integral way, involving all relevant parties). In 2001, Complex 50 won the National Renovation Award.







4.2) ROME: REproject vs DEPRIVED SOCIAL HOUSING ESTATES

4.2.1) REproject AS ENVELOPE DIRECTED STRATEGY FOR RENOVATION

What might be renovation approaches to be implemented in deprived social housing estates in Rome? Elaborating on the Dutch approaches, a strategy can be directed on the building envelope[3]. This means preserving the bearing casco and substitute the existing façade with the aim of meeting higher levels of energy saving and building identity (for an example of preserving the casco and change the envelope see Tab 4, section 4.1.1).

IMPROVEMENTS ON BUILDING AND URBAN LEVEL

The scale of envelope directed approach is technically limited to the single estate, but since a number of measures involve the immediate surroundings, results could reverberate on the urban level as well. In principle, aspects that could be improved by implementing such a strategy could be distinguished into aspects related to the building and the close surroundings.

B*uilding*

- energy and technical performances of the façade (therefore of the entire block);
- maintenance (good materials require less expenses and last longer);
- interior comfort and health (high-performance façade improves interior livability);
- market position of dwellings (thanks to higher quality of dwellings);
- aesthetics (dwellings in attractive blocks can be rented or sold easier);
- differentiation of housing supply (interior walls can be moved to diversify types of dwelling);
- functional flexibility (interior walls can be moved to convert the use from residential to other functions like commercial);
- adaptation of shared spaces within the estate (they can be converted as well).

Close surroundings

- accessibility to the building (redefinition of public and semi-public space nearby the block, more safety);
- attractiveness of the neighborhood (good renovation might attract people living there and improve the image of the area);
- orientation within the area (recognizable façade can help identifying the place where one lives);
- control of public spaces;
- use of the bottom (conversion into functions like shops, culture, education can be used by people living in the area);
- reputation of the area.

Social cohesion and safety might be improved on both the building and the close surrounding level.

ASSUMPTIONS

The basic assumptions are the followings:

- The approach directed to the envelope might be ***an*** effective strategy of intervention.
  As showed in section 4.1.1, high-level renovation to improve initial building quality, can be successfully implemented as well.

- An envelope directed strategy can support *life cycle* extension of estates.
  Renovation itself is already an action to extend the life cycle (as it is stated by a definition provided by Thomsen, 2007). In particular, since the life span of the building envelope is included within the category of intermediate life-cycle building components, it contributes

3 In this study, the building envelope is not only defined as a surface that wrapping the building but also as a component which three-dimensional transformation increases or decreases the entire volume. With this respect, additions and subtractions (like attaching building volumes and selective demolition) are incorporated within the range of physical measures for renovation directed to the envelope.

to the life extension up to 25-30 years (although motives related to fashion, technology and energy might influence this span) (see Chapter 2, section 2.4).

▫ Substitute the existing façade preserving the casco structure can be implemented if the bearing structure itself is sufficiently capable to carry the interventions (weights of new façade and move of inner walls). Therefore, good technical conditions are the starting point for implementation. All physical solutions have to be strictly designed in combination with the bearing structure.

4.2.2) PROPOSALS FOR RENOVATION OF A SOCIAL HOUSING BLOCK IN ROME. TIBURTINOIII

The research program RE-project, financed by the Department of Design and Architecture Studies of the University of Roma Tre, focused on investigations for physical renovation of social housing estates in Rome. Proposals for envelope directed strategy in a block located in Laurentino III have been explored. In this chapter, the structure of the investigation and main results obtained are described[4].

A residential block in the social housing neighborhood Laurentino III, located on the North-East outskirts of the city, has been chosen. It is an estate built in the 1980s well representing a part of the social housing stock of Rome managed by ATER Roma.
The block faces streets on three sides. On its back, other buildings are located, using the same layout. The block is 5 storeys high and 400m long, with porticos on the ground floor. The building contains 96 social rented dwellings with inner staircases and elevators. A few commercial activities and entrances to the building are placed on the ground floor. Underneath are garages and storage-spaces, while on the top floor there are numerous washrooms.

The bearing structure consists of prefabricated concrete framework (beams and pillars) while the façade is in prefabricated concrete panels. Balconies run along the four sides of the block.

4 The description of the building layout, the methodology and the results of the study have been revised on the basis of a research project conducted by F. Riccardo and S. Pollack on behalf of within DiPSA - Roma Tre Univerisy.
See Riccardo, F., Pollak S., (2006) REproject- building skin as opportunity for regeneration of post-war building stock, in "Programme, Abstract and Maps. Global places, local spaces, Planning Conference", London, 5-7 April 2006; and Riccardo, F. (2006) Rivestire l'edilizia economica e popolare anni '80. Un' ipotesi per l'esistente, in: "PONTE. Mensile di Progettazione, Gestione e Tecnica per Costrure", anno XIV n.10 ottobre 2006

The first and the second floor in the North end of the building are empty. Because of unknown reasons, the bearing structure has been left standing alone without being completed with walls. Clearly, since in this sector the building surface is not as compact as the rest of the block, this is a problem for total energy consumption. Moreover, this concentrates empty rooms, increasing social problems.

METHODOLOGY

The aim of the study was to investigate renovation proposals for an existing housing block and their contribution for improvement of energy consumption. The main question was:

1. How to improve current energy consumptions intervening on the building envelope?

The study was organized into fours steps.

1. Calculation of present energy consumptions;
2. Definition of three ex-ante proposal for renovation;
3. Calculation of energy consumptions of each proposal.
4. Conclusions

The three proposals were defined as follows:

- Soft-proposal: 'non invasive' solutions to conform to energy regulation by means of thermal insulation from the inside;
- High-level proposal: 'invasive' solutions by means of substitutions of existing façade to improve energy performances and change building exteriors;
- RE-project-proposal: 'radical' solutions to improve energy performances, change building exteriors and add functional quality adding facilities on the ground floor.

Software was used to calculate energy consumptions of the current condition and each proposal for renovation (Lesosai). Afterwards, results were compared according to the energy certification CasaClima. Because of the current lack of regulation regarding energy certification in Italy, it has been assumed that CasaClima would be compulsory in the next future[5]. This certification in fact, is the only currently applied in Italy for new construction, in

5 The Energy Building Performance Directive (EPBD 2002/91 CE) was adopted in Europe to set up a common framework to promote energy efficiency of buildings. By 2006, all the European members implemented the directive into a national law; they are currently dealing with its implementation. Implementation of EPBD will be obligatory for all member states by 2009. The Directive focuses on existing stock as well as new constructions. Its implementation requires several measures to achieve a prudent and rational use of energy sources, and to reduce the environmental impact of energy use in buildings. The Directive includes four main components: calculation methodology, minimum energy performance requirements, energy performance certificate and inspections of boilers and air-conditioning. A total of 30 European standards (EU) and 24 international standards (EN ISO) have been revised in order to facilitate the European members in implementing the EPBD and are presented in the so-called "Umbrella Document". The standards, for example, do not prescribe a single definition of energy rating or expression of energy performances rather provides a limited number of options. In the calculation methodology, it is considered not only the quality of the building insulation, but all the factors determining energy efficiency that are: space heating and cooling, domestic hot water, lighting and ventilation.
The EPBD was implemented in Italy with the national directive 192/2005 and 311/20065. By July 2009, energy certification will be obligatory for all dwellings to be put on the market, whereas since January 2007, the energy certification is necessary to get incentives and tax concessions. A provisional certificate will be issued by qualified professionals till the definition of energy certification system at national and regional level (by December, 2008). As a result of the directive, each Italian Region can autonomously implement the European Directive in terms of definition of guide lines for energy certification provided that they satisfy the national and European directions. Operative proposals have been already developed by some Regions like Lombardia and Friuli Venezia Giulia5. Nevertheless, the leader in this sector is the Autonomous Province of Bolzano, in the North of the country. It developed its own method for energy certification, CasaClima.
In The Netherlands the EPBD has been implemented by the EPA (Energy Building Advice for existing buildings), that will be obligatory from January 2008. EPA (Energy Performance Advice) is a method enabling consultancy firms to assess energy performance of existing building and to issue energy saving advices for improvement of energy efficiency by Rational Use of Energy (RUE) based on cost-effectiveness. EPA is also connected to a subsidy scheme encouraging implementation of energy saving measures that are allocated, for example, when measures are taken based on EPA advice. The EPA advice itself was fully subsidised until 2004. After the subsidizing stopped, the number of EPA's

the North in particular (province of Bolzano)[6]. In the end, presences of further improvements per proposal have been identified.
To compare different energy consumptions of buildings Casa Clima uses the so-called "classes" system. The standard of EPDB, in fact, proposes two types of scales: continuous scale and classes. The continuous scale is simply a graduated scale defined by best practice (e.g. zero energy building) at one end and the worst case at the other end. A specific building finds its place on this scale according to its energy performance indicator. In the class system, buildings are sorted into seven classes A to G. The best buildings are in class A, buildings with energy performances in line with standards in classes A or B, buildings better than the building stock average in classes C or D, and other buildings in classes E to G, depending on their performance with respect to the building stock average for the same type of buildings (Roulet & Anderson, 2006).

CURRENT CONDITIONS

Current conditions of the block are characterized by prefabricated concrete panels provided with window frames and glazing attached to the concrete framework. Their thermal capacity is very low (0,69 W/Km2K). The current energy building consumptions (101kWh/m2) place the block into Class E. This Class is far from the minimum one required by the certification taken as a reference (at least Class C, 70kWh/m2).

SOFT-PROPOSAL

To satisfy the minimum energy consumption required by the regulation, the called 'soft-proposal' has been formulated. It is easily feasible: it does not imply the temporally removal of residents, does not require particular technically expertise and is financially affordable, and brings a quick yield on the investment for the resident.
It consists in adding an interior thermal insulation layer to all interior walls of the dwellings, including the roof and ceiling of the porticos. Together with the substitution of single glazing with higher performance double glazing it leads to a shift of 101 to 90 kWh/m2a, corresponding to Class E and D. The total cost was roughly estimated around 900.000 €, per dwelling € 9.000 (2005).

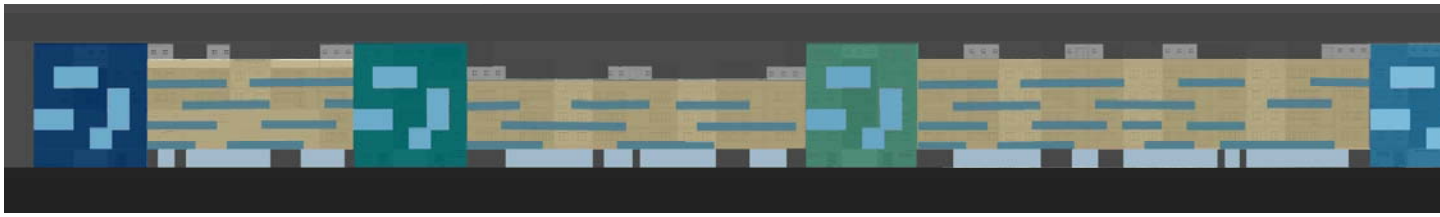
However, better energy consumption could also be reached by means of further envelope directed physical measures. Therefore, a more articulated proposal was formulated, the called 'high-level proposal'. It regards not only improvement of thermal performances of roof and ceiling of porticos, but also substitution of entire building envelope with a high performance facade. This is formed by light insulated prefabricated panels characterized by a double layer of cellulose fiber, 19cm thick and a U value of 0.19 W/Km2K, and external side in fibrocement panels. With a total cost of around 1.100.000€, this proposal leads the consumption shifting to Class A (28 kWh/m2a).
Clearly, the appearance of the building could be strongly altered by means of the new panels.

REproject - PROPOSAL

Nonetheless, the 'high-level proposal' does not employ alteration of the functional layout. Thus, a third proposal that was called 'REproject' was defined to investigate to what extent further physical measures could produce additional improvements comparing to the high-level proposal.
Solutions to expand the building size have been formulated. Empty rooms on the first and second floor were filled with new dwellings and porticos with additional commercial activities. Existing flats extended by attaching livable boxes to the façade. This latest measure could

diminished. The EPA-method is now being "translated" to the EPBD classification.
6 The subject has been further explored in the Paper by Riccardo, F., (2007) Beyond new clothes for renovation of social housing. Problems, strategies and future perspectives for the city of Rome, (also CD-Rom) in congress proceedings "XXXV IAHS World Congress on Housing Science. Planning, design, construction, performance", Melbourne, Australia 4-7 September 2007

help differentiating the housing supply within the block. Using the additional floor surface provided by the boxes, the layout of dwellings was improved. Wherever possible, existing units have been combined. The table below summarizes all the solutions adopted. The set of physical measures let the building shifting to Class A.



REproject PROPOSAL

MEASURE	ENERGY	APPEARANCE	HOUSING	COSTS
Fill in with dwellings the voids on the first and the second floor	Compact the building and contribute to the decrease of energy consumptions	Contributes to make the building different form the other blocks (recognizability)	Diversify housing supply within the block (different types of dwelling) house the sitting residents during renovation	Sales and higher rents could finances renovation
Fill in the porticoed ground floor with commercial facilities	Compact the building and contribute to the decrease of energy consumptions	Improves attractiveness and social safety of the ground floor		Sales and higher rents could finances renovation
Add living space to the building by attaching small volumes (boxes)	Slight improvement of energy consumptions Top floor of each box could be used to house thermal solar panels (for hot water)	Contributes to make the building different form the other blocks (recognizability)	Increase chances for changing floor plan	Sales and higher rents could finances renovation
Substitute existing envelope with light prefabricated panels highly insulated	Improvement of energy consumptions	Contributes to make the building different form the other blocks (recognizability)	-	Energy savings could be translated in less expenses on the long term

The next table shows initial characteristics of the block and the three proposals for renovation. All single solutions are listed per each approach, including the respective cost, the shift of the U value and the total energy consumption.

		ACTION	COSTS (€)	SHIFT U value (W/Km^2K)	SHIFT ENERGY CONSUMPT (kWh/m^2a)	IMPROVEMENTS
CURRENT BLOCK	-	Prefabricated concrete panels	-	0,69	101 Class E	-
SOFT	1	Additional thermal insulation from inside	200.000	0,69 to 0,34	101to 90 *Class E to D*	▪ ENERGY CONSUMPTIONS
	2	Additional thermal insulation on the roof Additional thermal insulation on the ceiling of the portico	460.000	1,69 to 0,70 2,44 to 0,39	90 to 58 *Class D to C*	
	3	Substitute existing glazing	260.000	1,4	58 to 48 *Class C to B*	
Total			**900.000**		**Class B**	
HIGH-LEVEL	1	Additional thermal insulation on the roof	-	1,69 to 0,34	-	▪ ENERGY CONSUMPTIONS; ▪ BUILDING RECOGNIZABILITY
		Additional thermal insulation on the ceiling of the portico		2,44 to 0,28		
	2	Substitute existing envelope with light prefabricated panels highly insulated		0,19	48 to 28 *Class B to A*	
Total			**1.100.000**		28 **Class A**	
REproject	1	Fill in with dwellings the voids on the first and the second floor ($1.200m^2$)	-	0,19	101 to 88 *Class D*	▪ ENERGY CONSUMPTIONS; ▪ BUILDING RECOGNIZABILITY; ▪ HOUSING TYPOLOGY
	2	Fill in the porticoed ground floor with commercial facilities			88 to 67 *Class D to C*	
	3	Add living space to the building by attaching small volumes (boxes) with good glazing		1,1	67 to 65 *Class C*	
		Thermal solar panels (for hot water) on top of each box				
	4	Substitute existing envelope with light prefabricated panels highly insulated		0,20 (av. glazing +panels)	65 to 30 *Class C to A*	
Total					>30 **Class A**	

4.2.3) CONCLUSIONS AND FURTHER DEVELOPMENTS

CONCLUSIONS

Comparing the three proposals it emerges that they are all satisfying form an energy savings perspective. By means of different physical measures, they all achieve Class B or even A. However, because of their profound approach, high-level and REproject-proposal lead the best energy saving (Class A). But considerable investments, especially to implement the last proposal, could bring a financial return on the long term. A substantial contribution might derive form the use of renewable energy sources (solar) and new rates of both dwellings and commercial activities.

REproject could lead to the improvement of tree factors: energy savings, building aesthetics (appearance) and housing supply. However, all the proposals, that in practice represent three physical approaches to renovation, could be an answer to different levels of requirements. The soft-proposal, for example, is an effective strategy wherever initial conditions of the block turned out to be satisfactory (in terms of functional quality and housing differentiation).

FURTHER DEVELOPMENTS

Clearly, all the approaches should be investigated to a greater extent. For what concerns the REproject proposal for example, aspects like technical feasibility (structural aspects or integration of renewable energy sources) and design of new floor plans by combination of dwellings could be explored further. Moreover other building typologies and case studies, like towers blocks, could be investigated.

In a sense, these studies might encourage again the distinctive experimental approach of ATER Rome undertaken from the late-post WWII (see Chapter 3). Nevertheless, the most important issue is that alternative approaches to major maintenance interventions have to be urgently explored to satisfy the changing housing demand, new formed groups and coming energy regulations (EU). In such a context, the role of the housing association is crucial. The following questions are important:
- *To what extend high-levels of renovation could be implemented by ATER Roma?*
- *What might be conditions for effective management of renovation processes?*

According to the conclusion in Chapter 3 and the investigation presented in section, the most relevant conclusion is that, despite considerable investments on the long term, such experiments could be realized provided that the housing organization is in the financial position and managerial conditions to plan and manage those interventions.

CONCLUSIONS

The Netherlands is among European countries with a long tradition in social housing (housing association introduced in the middle of the nineteenth century, Ouwehand and van Daalen 2002), a large share of social housing sector (the highest in Europe. In 2001 2,6 million dwellings, VROM 2007), a considerable transformation of the existing stock (restructuring of deprived neighborhood is on the agenda of the government till 2011, VROM 2007), and large investments of housing associations (Ouwehand and van Daalen 2002). Therefore, it experienced the right conditions to develop good examples of renovation for deprived large social housing estates.

The site of the National Renovation Prize (NRP), a well-known prize awarding best practice of renovation in the Netherlands, provides an overview of the many projects realized in the recent years. However, the ten examples showed in this chapter do not aim at describing the Dutch renovation practice on the whole. Two conclusions can be drawn:

1) Renovation approach by means of the building envelope is not very common in the Netherlands. There are exceptions in which the building envelope has been adapted or completely changed, like in the case of the De Leeuw van Vlaanderen and the Osdorperhof (both in Amsterdam), to improve the quality and the identity of the building. However, this approach does not represent the actual practice. Renovation, in fact, is typically dominated by interventions improving the quality of the estate, meanwhile preserving the initial architecture appearance by conserving its relevant characteristics (like Enschedelaan, in Den Haag and most of the projects designed by van Schagen architecten). Clearly, this is not to say that such an approach is wrong or limited. Rather, that it is the only experiment so far and that other approaches, like radical transformations aiming at change substantially the initial look of the block, remains on paper (like in the case of the Gigantic).

2) Energy saving in renovation is not very much implemented. Few examples are strongly driven by kind of 'sustainable approach to renovation'. This is quite surprising in the view of the European energy regulations like the EPDB.

For these two motivations it might be argued that there are some aspects of Dutch renovation that should deserve more attention.

Elaborating on the Dutch approaches to renovation, investigations were done in Rome. In the previous chapter it has already discussed that to develop renovation, as it is implemented for example in the Netherlands, substantial changes need to be done in the model of the housing association (ATER) and local regulations. In this chapter it emerged that renovation aiming at improving energy performance of an existing building might be an effective

approach for technical and functional renovation. In principle, with a possible financial return on the investments on the long term, it could also be affordable.

Such a perspective has been explored in a deprived social housing block, the Tiburtino III. Three proposals of renovation by means of adaptations of the building envelope aiming at decrease energy consumptions of the building were investigated. Clearly, as it has already been acknowledged by other studies, it emerged that the building envelope is the most responsible for energy consumptions. Increasing thermal insulation of existing façade leads to reduced energy consumptions. However, a very good option could be to substitute the existing façade with a new one with higher energy performances. Also combine it with the addition of building volumes where are located the greatest thermal dispersions (like porticos, any building void and top floor). A significant financial contribution might derive form the use of renewable energy sources and the combination of social rented with homeownership dwellings. However, all the proposals should undoubtedly be investigated to a greater extent (for example technical feasibility - structural aspects).

It is though that these first investigations in Rome together with the Dutch examples showed in this chapter might encourage experimentation of ATER Roma. However, the housing association itself should invest in exploring further cases by doing research and then testing solutions in practice.

INTRODUCTION TO THE FIFTH CHAPTER

The fifth chapter goes further in explaining physical renovation of social housing estates in the Netherlands. This is achieved by describing one of the well-known examples that is the Bijlmermeer. The description of this problematic case, let to get additional insights within the process of decay of social housing neighborhoods and common physical solutions for renovation of the blocks adopted so far.

CHAPTER 5
A DUTCH CASE STUDY.
THE BIJLMERMEER, AMSTERDAM ZUIDOOST

INTRODUCTION TO THIS CHAPTER

This chapter offers deeper insights into a well-known example of large social housing estates in the Netherlands, which is the Bijlmermeer in Amsterdam Zuidoost. Unlike Chapter 4, in which an overview on Dutch examples of renovation is provided, here an additional case is presented. The circumstances that lead to the decay of the neighbourhood and the physical solutions undertaken with respect to urban and building renovation are described.

This chapter presents the case according to one of the three items showed in the table below: the Bijlmermeer on neighbourhood level. The remaining two are discussed in Chapter 6: 'F' neighbourhood and Florijn Noord.
The first section (5.1) regards an introduction to the physical characteristics of the Bijlmermeer as a neighbourhood (urban and building layout); its historical background (from the initiative to the urban renewal waves) and an overview on what have been identified as its major problems.
Section two provides a description of the most recent solutions with respect to the restructuring of the Bijlmermeer as a neighbourhood (the latest urban plan) and examples of physical renovation on building level implemented so far. A table collects pictures of the most common measures recently adopted to improve functional and physical quality of high-rise blocks.
Conclusions are provided at the end of the chapter.

5.1 WHAT ABOUT THE BIJLMERMEER?

INTRODUCTION

As mentioned in the introduction to this chapter, the following sections regard a description of the Bijlmermeer on neighbourhood level. The table below shows the descriptive model adopted.

Before beginning with the description of the Bijlmermeer, it is important to highlight the main motivations behind this choice. Actually there are at least four items that supports its selection:

- Historical representativeness: the Bijlmermeer is a good example to explain how and why large housing estates have been massively constructed at one time and soon deteriorated. It is also an example showing common features of late post-war II neighbourhoods (urban layout, building and housing types).
- Handbook for renovation: despite of being under extended plans for demolition, the neighbourhood assembles many physical solutions adopted to improve the functional and physical quality of social housing estates.
- National Renovation Prize: the Florijn Noord is placed in this neighbourhood. It was nominated by the National Renovation Prize in 2005. Also, it was designed by a well-known architectural firm widely acknowledged in the Netherlands for renovation of existing housing estates (Van Schagen Architects, see also Chapter 4).
- Transferability: the Bijlmermeer has physical features comparable with a part of the social housing stock in Rome. They regard: size (around 30.000 inhabitants like Laurentino38 and Tor Bella Monaca in Rome), bearing structure (tunnel technology as many Italian social

housing estates from the 1970s like Laurentino38 and Tor Bella Monaca), critical problems (on physical and socio – economic level), stigmatization (bad reputation often worsen by the media), renovation under implementation on both urban and building level.

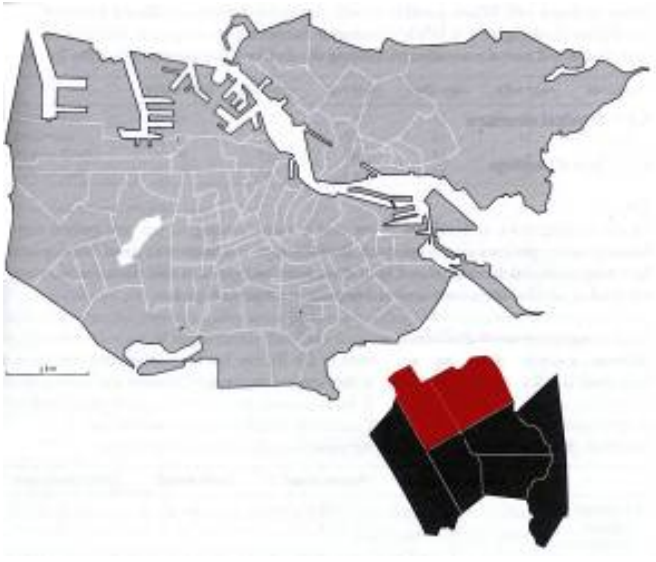
However, the choice of the Bijlmermeer does not pretend to describe **the** Dutch approach to renovation, rather providing information on examples useful to explain some of the aspects characterizing renovation in the Netherlands.

5.1.1) PHYSICAL CHARACTERISTICS

URBAN LAYOUT

The Bijlmermeer is a housing district realized between 1966 and 1973. It is placed on the Southeast borders of Amsterdam (Amsterdam Zuidoost). It is the most extreme and most well-known case in the Netherlands (Wassenberg, 2006).
It was designed as 'a modern place in a park' (Aalbers et. al., 2005) according to the principles of the CIAM-movement ("Congrès Internationaux d'Architecture Moderne") to respond the enormous housing shortage of that period (see Chapter 1 and 2).

All the concepts of modern living found their application in the Bijlmermeer: separation of functions (living, working, and recreation) and mobility, green and parking garages. The neighbourhood was designed emphasising collectivity, 'social spaces would have compensated limitations of living in high-rise' (Wassenberg, 2006).



The Bijlmermeer in relation to the city centre of Amsterdam and the Southeast district (Zuidoost)

The urban layout is based on an orthogonal grid. The network of raised streets and the housing blocks are located following such a scheme. Wide green areas with facilities (pedestrian routes, bicycle lanes, playgrounds, stretch of waters and canals) fill in the lots between the buildings. By means of this modern urban structure, the urban planners tough they would have attracted middle-low income families living in the city centre, at the time populated by low-income groups.

Between 1968 and 1975, 13.000 dwellings were realized in 31 high-rise estates[1] (Wassenberg, 2006). The buildings are 10 storeys high. Most of them are shaped according to an hexagonal pattern for a length up to 400 meters. The bearing structure consists of parallel reinforced concrete partitions (walls and floors).

BUILDING LAYOUT

In each block the same scheme is repeated: at the ground floor the entrances to the buildings (including elevators and staircases) and the storages for bicycles are located . On the first floor small housing units are located and an inner walkway running along the whole building. This path connects the block to the raised multi-storey parking garages. Bigger dwellings are located on the upper floors.

HOUSING LAYOUT

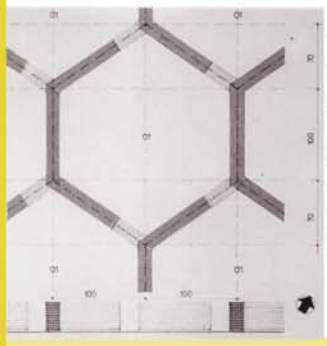
All the gallery apartments, 300 to 500 each block, are structured on the so-called honey-comb pattern. Comparing to the standards of the time, the flats are spacious (100 to 125 m2 - up to five rooms), well-lit, furnished with luxury sanitary facilities and rationally organized. (see tables in the two next pages)

However, despite of the optimistic beliefs of that time, problems arise soon after the completions of the works and multiplied over the following decades (Wassenberg, 2006).

1 For definition of large housing estates see Chapter 2, Section 2.1.

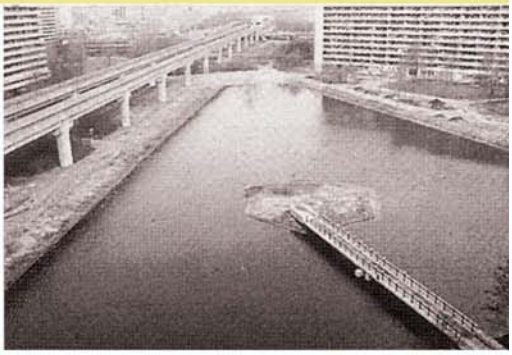
THE BIJLMERMEER 1

URBAN LAYOUT



The Bijlmermeer is the most extreme and well-known large housing estates in the Netherlands (1966 - 1973).
It was designed as a 'modern place in a park' to respond to the housing shortage of that period. It was designed to house about 40.000 inhabitants.

MODERN LIVING CONCEPTS



It embraced all the concepts of modern living: separation of functions (living, working and recreation), separation of vehicular and pedestrian paths, wide green areas and multistorey parking garages. Being based on the concept of collective living, social spaces would have compensated limitations of living in high-rise.

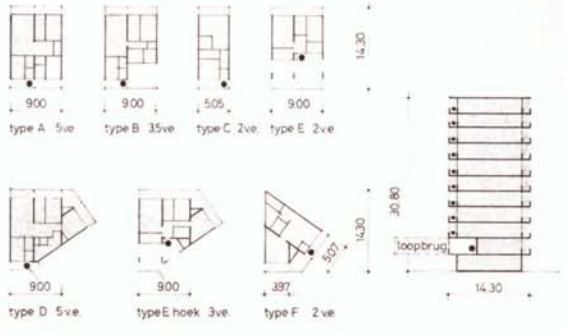
THE BIJLMERMEER 2

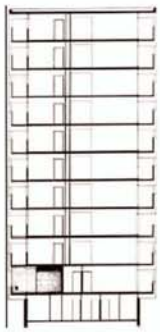
BUILDING LAYOUT

Between 1968 and 1975, 1300 dwellings have been realized in 31 high-rise estates. The blocks are 10 storeys high, most of them shaped according to an hexagonal pattern for a length up to 400 meters.
In each high-rise it is repeated the same scheme: entrances (elevators and staircases) and bicycle storages at the ground floor, small housing units and an inner walkway run on the first floor. The walkway connects to raised multi-storey parking garages. Bigger dwellings are located on the upper floors.

HOUSING LAYOUT

All the gallery apartments, 300 to 500 each block, are organized on the so-called honey-comb pattern.
They are spacious (100 to 125 m2 - up to five rooms), well-lit, furnished with luxury sanitary facilities and rationally organized.





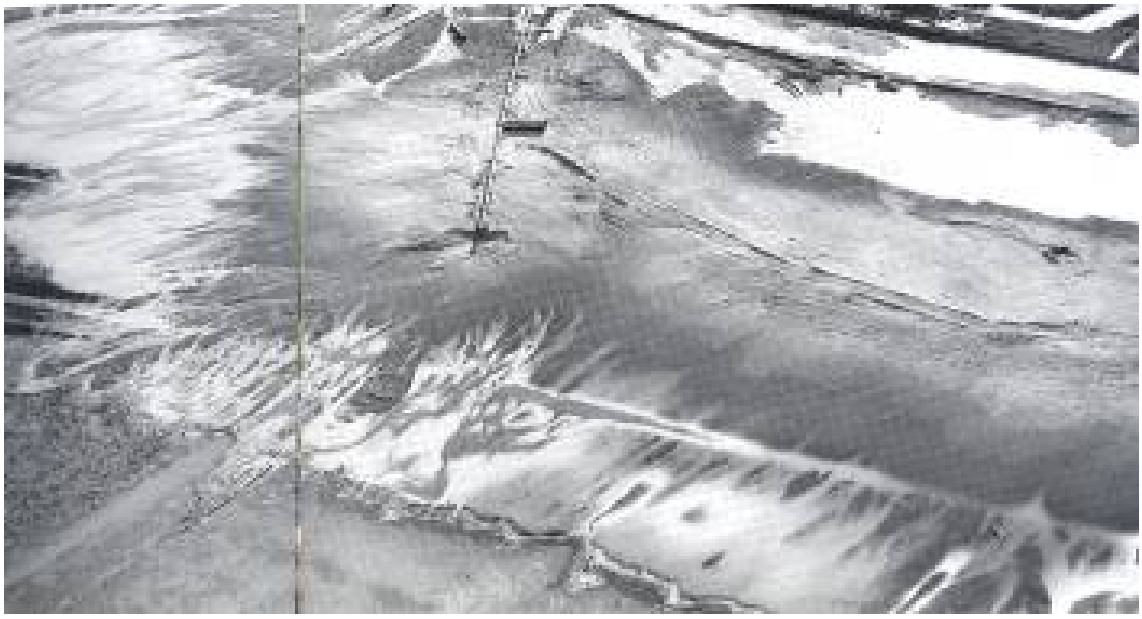
5.2) RENOVATION DEVELOPMENTS

5.2.1) HISTORICAL BACKGROUND

Many developments were interwoven with each other over the years. Therefore an historical overview could support understanding the current initiatives for renovation.
The long-intricate background of the Bijlmermeer could be introduced gathering the main facts into five groups:

1935-1962 initiative;
1963-1975 construction;
1976-1982 first renewal wave;
1983- 2002 second renewal wave;
2002-2009 final plan

Here follows a brief description of all the five phases.



The polder during preparation of the field

INITIATIVE 1935-1962

Between 1930 and 1947, Cornelis van Eesteren was the director of the Urban Planning Division of Amsterdam. He embraced the concept of 'ideal city' (hygiene, green, efficient traffic system, wide and well-lit spaces) to answer the uncontrolled urban growth of post-industrial cities. The solution would have been clear urban plans to shift 'from the chaotic to the functional city'. According to this objective, high-rise building seemed to be the best housing type. The first proposal for the Bijlmermeer was presented to the City of Amsterdam in 1953, but it was just in 1962 that the Town Planning Department group, guided by van Eesteren, defined the urban plan.

1963-1975 CONSTRUCTION

Between 1963 and 1975, the acquirement of the land and the preparation of the polder[2] began. In compliance with the principles fixed by the Town Planning Department, the Amsterdam Zuidoost Urban Plan defined the extension of the city over the Southeast by means of hundreds modern dwellings. Housing for 40.000 people, of those 90% in high-rise blocks, were realized by industrial building contractors.

2 In the Netherlands, the polder is an area of land under the sea level that is transformed into a building area after pumping out all the water

Although the Amsterdam Urban Plan (1928-1935) advised against the residential extensions to this area due to the lack of transportation links, in 1966 the polder is officially added to the city. Two years later, the first dwellings are completed (Hoogoord, by K. Rijnboutt in Fig.7). However, the metro line was realized not before 1980. This excluded the neighbourhood from the city for too long. With respect to the initial enthusiasms, just three years after the beginning of the works, the first complains began. The inhabitants constituted an independent resident association (OBO). They protested especially against the management of the public spaces, which is and was a responsibility of the municipality The Nota Matteman is the first critical dossier gathering together all the critical comments (Archis, 1997).

OMA WAS CHARGED BY THE AMSTERDAM HOUSING DEPARTMENT WITH DEFINING A NEW PLAN FOR THE BIJLMERMEER. IN 1986, THE GROUP PROPOSED *REVISIE BIJLMER,* A PROPOSAL BASED ON THE IDEA OF THE SO-CALLED *BIJLMER STRIP,* A NEW LINEAR URBAN CENTRE SURROUNDED BY HIGH-DENSITY HOUSING. THE PLAN HAS NEVER BEEN REALIZED, BUT MANY IDEAS WERE LATER RECONSIDERED, SUCH AS THE CENTRUM ZUIDOOST AND THE BIJLERMDREEF LOWERING (Laner & Menegotto, 1998).

Most of the buildings were completed between 1975 and 1976 but, in the mean time, the former Dutch colony Suriname, obtained the independence from the Netherlands. The Surinam inhabitants could choose their nationality. As a consequence, many immigrants looking for a house, found their place in the Bijlmermeer, because it was the only quick available housing scheme.

The failures of the urban and building scheme have been sensibly raised over the years. With the first Agenda delivered by the council of Amsterdam Zuidoost in 1976, a first set of interventions is planned, but the first concrete solutions were implemented by the Project Group on High-rise Buildings. The group, founded in 1982 under the Municipality of Amsterdam, proposed interventions to adapt and improve the existing spatial concept of the Bijlmermeer. Many physical measures were implemented such as: addition of new dwellings at the bottom, closing of the inner walkways, equipment of additional elevators, provision of small commercial activities, demolition of multi-storey parking places and retrain the green spaces with cycle and pedestrian signed routes. However, additional public facilities like sport hall, indoor swimming pool, police station, a big commercial centre and a mosque were finished only at the end of the '80s (Wassenberg, 2006)

All over the last 20 years, many studies have been conducted in order to clarify the real conditions of the neighbourhood and identify possible solutions of intervention (like the first report of the working group 'Future of the Bijlmermeer' in 1986, and 'Revisie Bijlmer' by OMA in 1986).

SECOND RENEWAL WAVE 1983-2002

In 1983, the sixteen housing associations managing the neighbourhood merged their dwellings in the Bijlmermeer into a new housing association: Nieuw Amsterdam. The Amsterdam administration together with the central government allocated new funds to let the housing association act immediately. The rents were decreased and some renewal interventions implemented (see two examples next page).

Hoogoord (1995)
VVKH Architecten

Hofgeest (1999)
VVKHArchtiecten

In addition to actions on the social level, structural improvements on the buildings regarded: colourful repainting of the façades, partition of 1.000 four-five room apartments (to satisfy demand of small households), improvements of building entrances, installations of extra elevators, and closing and transforming of the storages places into dwellings (Wassenberg, 2006).

Nevertheless, in spite of the mentioned interventions, living in the Bijlmermeer remained unpopular. The middle class was not stimulated in looking for a flat in the Bijlmermeer and vacancy increased from 18% in 1983 up to 25% in 1985 (Aalbers, et. al., 2005). As a consequence, the housing association Nieuw Amsterdam fell in a critical financial crisis.

One of the most important contributions for the redevelopment of the district came from 'The Bijlmer keeps changing', a second report published by 'Future of the Bijlmermeer' in 1991. In addition to proposing a public-private partnership in defining a new renewal plan, the following directions were defined: demolishing ¼ of the 12.500 dwellings in the high-rises and substituting them with new low and middle rise; repositioning[3] ¼ of existing buildings, improving the upkeep of the remaining 2/4.
The Planning Authorities agreed with the proposals introduced by this document and founded the Bijlmer Renewal Steering Committee, headed by Prof. D. Frieling, and in which the Municipal Council of Amsterdam, Amsterdam Zuidoost and Nieuw Amsterdam were represented. The actual strategy was published in 1992 in the report 'Create work with work'. To implement the plan, the three authorities founded the Bijlmermeer Renewal Project Office, a body financed by the City of Amsterdam and the Central Public Housing Found (CFV, which used money that was charged from all the housing associations in the country). They signed a specific covenant on the methods of intervention (1995). The end of the work was fixed by 2006, after 15 years, but some of the interventions are still under completion.

The renewal focused on two action areas (Ganzenhoef-West and Amsterdamse Poort) integrating solutions on urban, building and socio-economic level. The urban environment was improved by introducing small commercial activities, clearing the green areas (for safety reasons), mixing the different mobility systems and demolishing and/or converting the parking garages.
Of the existing housing blocks some were demolished, some renovated, some upgraded and sold. To extend the housing supply, new low-rise in the homeownership sector were realized.
Besides intensification of maintenance, a key point for social renewal was job creation, by means of concrete actions to involve unemployed, women and immigrants. Other measures like guard men and outdoor underground garbage collection points contributed to the improvement of the whole living conditions.
It was expected that such improvements would have encouraged inhabitants to stay, being offered a housing career in their own neighbourhood, as well as attracting newcomers (Wassenberg, 2006).
The *model block* representing the first 'experiment' of physical renovation on high-rise is the Hoogoord (1992).

From the '90s up to the latest years, a great number of projects and urban plans have been developed and/or realized[4]. Further facilities have been opened like cinemas, theatres,

3 'Repositioning' means that "an existing flat is cleared and radically rebuilt for another function or different market segment" (van Hoogstraten et al, 2002)
4 See for example the following projects (some of them in the figure on this page):
1995, the third action area Kraaiennest, to which participated West8, De Architekten Cie and NL Architects (then revised in 1999 and 2000);
1996, the project for Ganzenhoef shopping centre by Kees Christiaanse;
1996, the urban plan for the Centrumgebied by Pi de Bruijn;
1996, (1) the ArenA stadium by R. Schuurman/S. Soeters;
1997, The Bijlmer is my city, the urban plan for the Bijlmermeer, first version by A. Bhalotra in 1994;
1997, Amsterdamse Poort action area, structural plan by Kraaijvanger Urbis;
1998, the four sub areas of Ganzenhoef, for which many architects made projects in the previous years (DKV, HDZ, Ton Venhoeven, Lafour & Wijk, Claus & Kaan, Geurst & Schulkze and HDZ);
1998, (2) the Memorial for the El Al air disaster by Georges Descombes and Herman Hertzberger;
2000, (3-4) the Pathè multiscreen cinema and the Rainbow Complex shopping centre by de Architekten Cie – Frits van Dongen;
2001 Heineken Music Hall by de Architecten Cie, Frits van Dongen
2001, (5) the Villa ArenA by Benthem Crouwel architecten
2001, Owal tower by Skidmore, Owings, Merril
2003, Tomorrow Pavillion by UN Studio

commercial and business centres. The majority of them have been built behind the station, on the opposite side of the Bijlmermeer. Those recent developments transformed the Southeast in a district becoming more and more urban compared to the original plans. Currently, it is second just to the city centre of Amsterdam in provision of employment. The new developments, in fact, created a number of job opportunities. In 2001, 55.000 people were working in the district but the number is expected to grow to 75.000 by 2010 (Aalbers et al, 2005). Are they living in the Bijlmermeer or is a substantial part of the Zuidoost becoming a business area for people coming form outside? Such a process could be very risky for the entire neighbourhood.

IDEALS		DISADVANTAGES
ICON OF MODERN LIVING	>	ICON OF CONTEMPORARY DETERIORATION
SEPARATION OF TRAFFIC	>	SOCIAL SECURITY
COLLECTIVITY	>	ANONYMITY
GREEN	>	UNCONTROLLED SPACES
PARKING GARAGES	>	EMPTY UNSAFE BLOCKS
SHARED FACILITIES (WALKWAYS)	>	SHELTER FOR DRUG ADDICTED – HOMELESS

However, the latest breakthrough is represented by the Final Plan published in 2002. After 10 years, in fact, only 1/3 of the previous renovation programme was realized, therefore it was decided to make a survey over the areas to be renewed in order to verify what physical solutions the residents would have preferred. There was the strong belief that postponing renewal of the remaining areas would have transmitted problems from the redeveloped areas to the others, without actually solving them.
As it emerged from the previous surveys in 1995 and 1999, most of the interviewed residents supported demolition of the remaining high-rise buildings. According to their preferences, it was decided for a plan focusing on areas waiting for demolition. The “Final Plan of Action” defines their definitive structure up to 2012.

5.2.2) GROUPS OF PROBLEMS

As most of the large European housing estates, it is difficult to clarify exactly when and why the deterioration started. In the case of the Bijlmermeer, the high vacancy rate and the confused management of the shared facilities, both emerged in the beginning, played a central role in the decay process. Nevertheless, it is still not clear what was the factor or the group of factors triggering the decline. Most of the key people come to the inevitable conclusion that *the spatial concept* of the Bijlmermeer is the most important cause of its decline.

The major defects of the Bijlmermeer can be grouped according to the urban scale on which they appeared (urban – building scale) or gathering homogeneous issues.
According to the first criterion, Leferink gathered all the misfits of the spatial concept as follows (Aalbers et al, 2005):

- Massiveness and monotony;
- Identical high-rise estates of 400 or 500 flats, all connected by galleries;
- Excess of semi-public open spaces;
- Rigid division between functions;
- Intangible size and scale in which the individual disappears.

2006, (6) new Bijlmer station by Grimshaw
2009, (7) the GETZ Entertainment Centre by Jerde

According to the second criterion, Wassenberg identified three groups of problems: unfinished character, liveability problems and demand- supply misfit (see the table in which the items listed so far are summarized and assessed in terms of scale).

UNFINISHED CHARACTER

As stated in the previous section, most of the facilities were realized many years after the beginning of the works. The too optimistic financial previsions delivered by the companies made substantial cuts of expenses necessary. Some of the spaces for commercial, sports and recreation facilities were constructed at the end of the '70s and the early '80s. However, as soon as the facilities had been realized, most of them turned out to be concentrated only in some areas making it difficult to reach on foot for those living on the borders..

PROBLEMS		URBAN LEVEL	BUILDING LEVEL
MASSIVENESS AND MONOTONY	▪ In terms of scale and repetitiveness of the same layout	X	
IDENTICAL HUNDREDS FLATS	▪ In terms of repetitiveness of the same layout		X
EXCESS SEMI-PUBLIC OPEN SPACES	▪ Lack of social safety	X	
SEPARATION OF FUNCTIONS	▪ In terms of location and connection of the functions	X	
THE INDIVIDUAL DISAPPEARS	▪ In terms of scale relationship between the building and the human being	X	
UNFINISHED CHARACTER	▪ Late completion of sport and commercial facilities;	X	
	▪ Location of facilities;	X	
	▪ Metro line after 10? years;	X	
	▪ Parking garages over dimensioned;		X
LIVEABILITY PROBLEMS	▪ Modern neighborhood requires diverse management strategy;	X	X
	▪ Attention to public and semi-public spaces;	X	X
	▪ Fragmentized management;	X	X
DEMAND & SUPPLY	▪ Decrease rents for lower income groups;	X	X
	▪ High vacancy rate;	X	X
	▪ No free choice;		
	▪ Mobility - less social structure		

LIVEABILITY

The second group of problems refers to all of those related to the management of the neighbourhood. It was clear that high-rise buildings, parking garages and public areas would have required specific management strategies. Each housing block contains 'thousand of square meters of public and semi-public spaces, and elevators and an intercom unlocking system that require constant management' (Kwekkeboom 2002, in Wassenberg 2006). Cleary, the fragmentized management by the sixteen housing associations could not succeed in such a context. For example, it was often unclear who had to take care of a specific area or service. The whole management was chaotic till the foundation of the Nieuw Amsterdam (1983). Still, it was complicated to handle problems like rent-arrearages and evictions. Each year, more than hundreds of inhabitants did not pay the rent contributing to the ongoing deficit of the housing association (van Hoogstraten et al, 2002). Actually, the merger did not stimulate structural shifts and problems continued to increase. In 1992, the debt was 63.5 million euro.

DEMAND & SUPPLY

Also, since the very beginning, the supply of dwelling types did not match the demand and the result was a chronic vacancy. Single family houses with gardens built in the cities around Amsterdam were preferred against the high-rise buildings. In a way, this seems to be a paradox considering the housing shortage of that years and the tight housing market of Amsterdam. Since it was difficult to let the flats in the Bijlmermeer, the rent rates were considerably decreased and people with less possibilities for a free choice who did not want to wait long, found their chance there (i.e. immigrants and lower-income people). The Bijlmermeer became an area where most of the people settled if they could not find a place elsewhere.

In 2000, despite all the actions undertaken in the former years, the medium abandonment rate in the Bijlmermeer was still very high, 16% per year (van Hoogstraten et al, 2002). The persisting vacancy rate, together with the frequent replacement contributed to the destruction of social structures already compromised by immigration waves. In the '90s,

about 70% of the inhabitants in the high-rise buildings were non-Dutch (van Hoogstraten et al, 2002).

According to Wassenberg, 'most of the planner's ideals changed into disadvantages' (see table in the previous page). Despite all the interventions realized so far, the bad reputation of the Bijlmermeer is still unchanged. More has still to be done.

5.2.3) MOST RECENT ACTIONS

THE BIG CITY POLICY

The Bijlmermeer is currently among those areas of intervention selected by the Big Cities policy (BCP). The BCP aims to create 'the complete city'; a city with thriving economies, jobs, pleasant living conditions, safe streets and integrated communities (Aalbers et. al., 2005). At the basis of such a policy, there is the 'integrated approach' which combines economic, social and physical aspects[5].

INTEGRATED APPROACH

The Big City Policy is a matter of the central government, but Dutch cities have their own strategies and visions in multi-years development programmes. The cities can designate target neighbourhoods themselves. In this case, the local government decides on which objectives money has to be spent whereas the single districts develop and implement the plans.

In Amsterdam, the BCP is partly based on the 'Amsterdam Complete Stad' (Complete City). In this document is described the seven major city's problems and the corresponding proposed solutions. The suburbanization of the middle class has been classified among those problems. This suburbanisation is caused by the mismatch between housing supply and demand, and poor housing environment. The identified and proposed remedy consists of investments in demolition and new developments, housing rehabilitation and improving the housing environment.
All the Amsterdam's districts receive funds from the BCP-budget according to the stated priority. The Southeast, thus the Bijlmermeer, has been

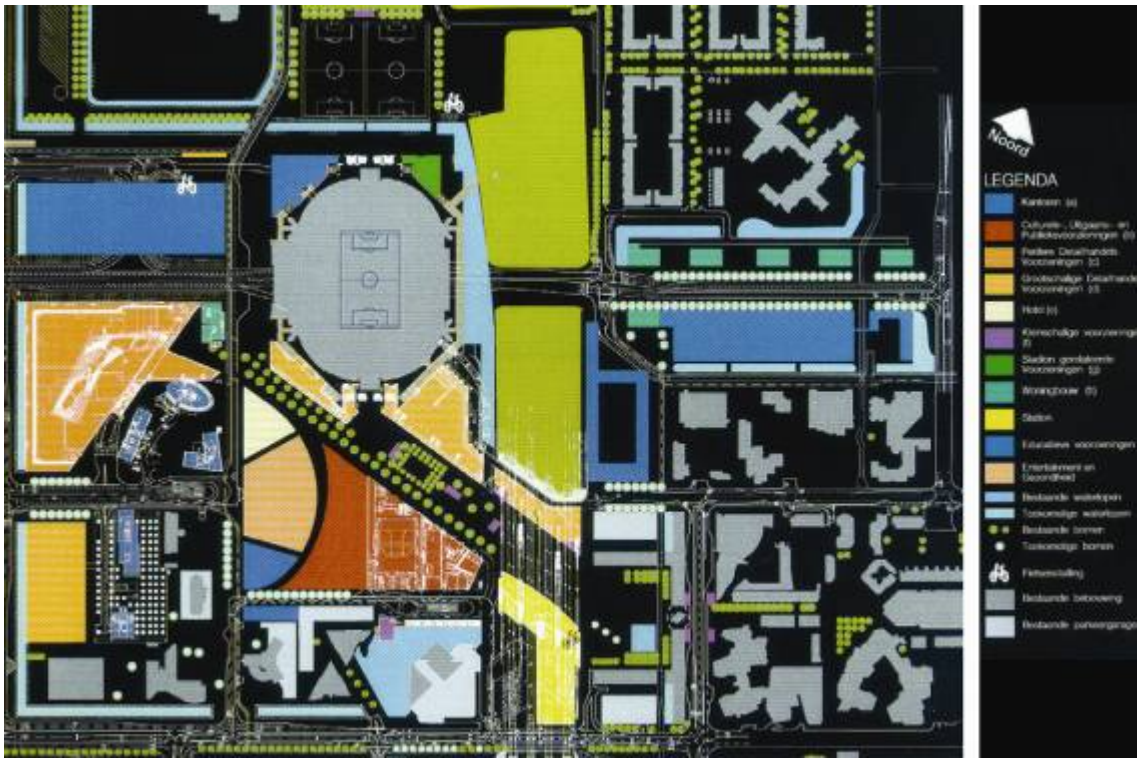
5 The BCP is based on four main pillars: employment and economic, physical developments, social and safety. For what concerns the second pillar, among the others, it includes measures for the revitalization and restructuring of the housing supply, fine-tuning open space planning and other physical interventions to improve safety in traffic, physical environment and society.

identified as a high priority district. This corresponds to the class entitled Development Areas, for which the largest funds are provided.

HOUSING STOCK

As said, the Bijlmermeer is under the administrative control of the district council of Amsterdam Zuidoost (Amsterdam Southeast). The whole Zuidoost covers 10% of the total surface of Amsterdam and counts 82.000 inhabitants of which 50.000 living in the Bijlmermeer. Of the total housing stock in Southeast, 73% is social housing, 14% private rented housing and 13% is owner-occupied. However, since many housing units have been sold between 1996 and 2000, and many more are still in the selling process, it is difficult to specify the exact number of dwelling by tenure (Aalbers et al, 2005).
In 2000, it was estimated that dwellings in the Bijlmermeer were still spacious comparing to Amsterdam (in Bijlmermeer Centre and East between 41% and 49% of the dwellings are more than 80m2; in Amsterdam just 24% of dwellings are bigger than 80m2). Moreover, about half of the housing stock in the Southeast is considered affordable (60m2 - rent below € 500). These numbers are interesting because they demonstrate again that physical aspects, like dwellings' size in this case, and even affordable prices, are not sufficient incentives to attract people to live in a stigmatized area (Aalbers et. al., 2005).

Compared to the whole city of Amsterdam, the Bijlmermeer has a relatively low population and housing density, with a high share of green spaces (in Southeast 134m^2 of green per dwelling, while in Amsterdam it is 70m^2). Since the mid 90s, in fact, the green area's were mentioned by the residents as the most attractive aspect of their housing environment (Wassenberg, 2002). On the other hand, as we highlighted in the previous paragraph, this physical quality also led to social problems like vandalism and lack of safety.
Thanks to the new business and commercial areas recently realized in the ArenA area (AJAX-stadium), the whole "Zuidoost" can not be considered a strictly residential district any more. In 1975, in fact, there were mostly housing blocks and residents had to live with few local shops (one baker, one butcher and four supermarkets).



Urban plan ArenA by Pi de Bruin, 1996. The main developments are on the left side, behind the station

TRANSFORMING THE BIJLMERMEER

The Bijlmermeer is changing its physical appearance: it is no longer a high-rise district (van Hoogstraten et. al., 2002). Year by year, as a result of the implementation of the Final Plan, the Bijlmermeer is loosing his original residential character. Because of demolition and renovation, the original buildings have been improved or substituted by new construction in

different housing segments. The first action has the character of 'corrective building measure' in the prosecution of the approach applied since the '80s.
Different *preservation* levels of the initial urban and building configuration have been fixed per sub-areas. The characters of the G- and K- neighbourhood, for example, that are high-rises in the so-called 'Bijlmermeer museum' -area, have been substantially preserved.

FINAL PLAN

As said in the previous section, the Final Plan of Action is the most recent renovation programme under implementation in the Bijlmermeer. It is currently the largest Dutch restructuring project (Wassenberg, 2006) and based on a very radical approach. For what concerns the existing high-rise buildings, in fact, there is a very high demolition rate. In the end, almost 70% of the original blocks will be pulled down.

Portion of former high-rise surrounded by new low-rise, Fside area – urban plan by Rein Geurtsen, 1997

THE BODIES

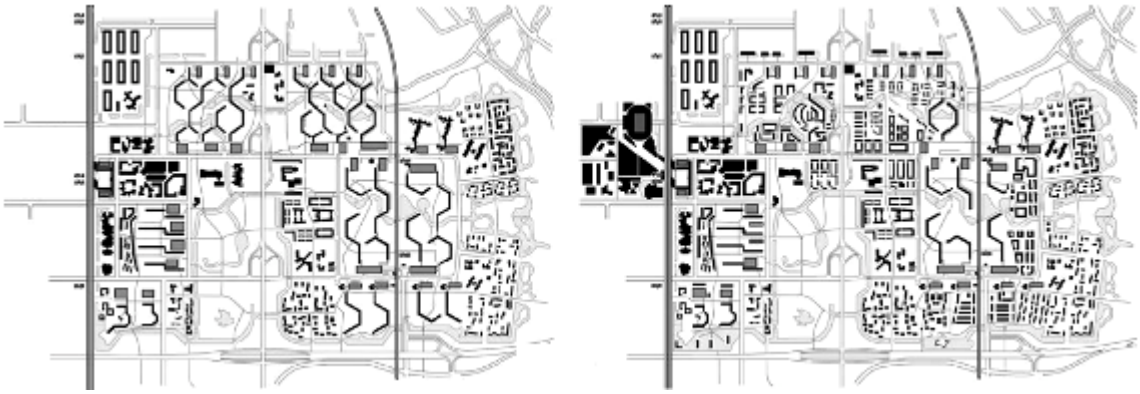
The Project Bureau Bijlmermeer is the office set up to co-ordinate and implement the entire plan. The board, directing the working group and deciding for the major directions of intervention, is composed by three bodies that are the City of Amsterdam, the local municipality Amsterdam Zuidoost and the housing association Nieuw Amsterdam.

DWELLINGS	1992		DEMOLITION	NEW CONSTRUCTION	2012	
HIGH-RISE	12.500	100%	6.550	0	5.950	44%
LOW-RISE	0	0%	0	4.600	4.600	34%
SINGLE-FAMILY	0	0%	0	2.850	2.850	21%
	12.500	**100%**	**6.550**	**7.450**	**13.400**	**100%**

Most of the green lots have being substituted by new low rises. F side by Splineter, 2005

The City of Amsterdam contributes for 50% of the costs, while the other half is financed by the Central Fund for Housing (CFV), the national fund created by fees paid by all the Dutch housing associations together. The 10 year investment (excluding interventions within the ArenA-area) is € 1.6 billion, of which € 450 million won't produce a financial return (the exploitation deficit is paid by the housing association).

A part of the renewal is also supported by URBAN, a European fund for socio-economic renewal. Also ERA- bouw, a private developer and contractor, renovated some of the blocks. It worked on two high-rise (240 apartments).



On the right: the situation in 1992, before any plan. On the left, the situation in 2012 when the Final plan of action will be finished (Wassenberg, 2006)

The Final Plan of Action distinguishes nine 'fields of action': intensively mixed urban areas, urban centre environment, along the avenues, traditional Bijlmermeer high-rise, medium high-rise, water neighbourhood, low-rise renewal and Bijlmermeer Park and city-edge living. The vehicular structure won't be altered (van Hoogstraten et al, 2002).
The whole approach could be described by three key words: 'integrated approach', according to the policy started in the '90s; 'differentiation' that, according to preferences of residents is implemented by demolition and new constructions; and 'better management'[6].

INTEGRATED APPROACH

Integrated approach. This implies renovation combining actions both on physical and social-economic level. The latest approach includes construction of sport and social facilities, measures for social safety and facilities to support new business activities.

DIFFERENTIOATION

Differentiation. Demolition of the remaining high-rise buildings means substitution by new constructions, mainly low-rise and single family houses. In the end, more than half of the original blocks will disappear (15 out of 31) and very little of the initial housing model will be recognizable. In the early '90s, the percentage of dwellings in high-rise buildings was 100%.. In 2012, when the whole plan will be implemented, this percentage will be reduced to 44%, and will be replaced by low-rise (34%) and single family dwellings (21%).

BETTER MAINTENANCE

Better Management. Maintenance will increase and management of the public spaces be improved thanks to the decreased amount of public space which will reduce the expenses as well.

CONDITIONS FOR SUCCESS

Wassenberg identified five so-called 'conditions for success' that are at the basis of the effective renewal so far implemented. The five conditions are the followings: improvement of the surroundings, integrated approach, radical solutions, alternative financing and perspectives for inhabitants (see the table below).
Considering that local conditions often play a crucial role in successfulness for redevelopment of deprived large housing estates, he argues that actions undertaken within the he Bijlmermeer might be useful for transferability of practice to other similar contexts.

6 'Diversification' in the Netherlands, has to do with extending free choice of people looking for a house. Since the housing demand is becoming more and more differentiated (also because of immigration and change of preferences-requirements), to attempt social and thus spatial segregation, the so-called 'gentrification' approach has been applying in urban renewal housing policies. Measures are been implemented in order to stimulate more expensive owner-occupied dwellings as attractive locations in districts dominated by social housing: demolition, upgrading and selling off the rented flats (Ball, 2004).

5 CONDITION FOR SUCCESS	WHAT	ACTION
IMPROVEMENT OF SURROUNDINGS	ArenA area	▪ catalyst to solve problems within the high-rise area
INTEGRATED APPROACH	combination physical and socio-economic renewal	▪ housing differentiation (demolition - renovation) ▪ job creation ▪ better maintenance
RADICAL SOLUTIONS	replacement of existing estates	▪ demolition of existing high-rise ▪ substitution with new construction (low-rise, single family houses)
ALTERNATIVE FINANCING	Central Housing Fund; facilitate the inhabitants	▪ the CHF pays half of the costs; ▪ moderate (rent and sale rate) prices
PERSPECTIVES TO INHABITANTS	priority to improvement of living conditions	▪ offer better house within the neighbourhood or elsewhere

5.2.4 OVERVIEW ON EXAMLES OF RENOVATIONS

RENOVATION LIGHT HIGH-LEVEL RENOVATION

In the Netherlands, physical renovation of social housing estates typically reflects two approaches: 'renovation light' and 'high-level renovation'. Both of them intend to improve the initial building quality. High-level renovation, however, is more profoundly and leads to higher quality by moving the walls to improve, for example, housing differentiation. Clearly, for implementation of high-level renovation, tenants need to move out during the works.
There is not an official definition to refer to those two approaches, but the professionals tend to use such terms to distinguish the level of intervention. In chapter 4r, where ten Dutch examples of renovation have been introduced, some of the projects are based on 'high-level' renovation. It is the case, for examples, of the Complex 50 (Tab. 10) in Amsterdam by van Schagen architects and Osdorperhof by van der Torre architects. In the latter renovation, the casco structure has been preserved and a new attractive façade attached on it.
However, Ouwehand and van Daalen (2002) argue that wherever there are severe problems on the physical and socio-economic level, radical (renewal) approaches at neighbourhood level are necessary, where dwellings should be made available for middle and higher income households. This means also the "removal" of many of the original residents. This is a political choice.

Renovation light and high-level renovation, are both largely implemented in the Netherlands. Deciding to go for one or another depends on many factors (like financial and social context and location). Most of the motivations are indigenous and often driven by the 'personality' of the housing association and its leaders (Gruis, 2007).

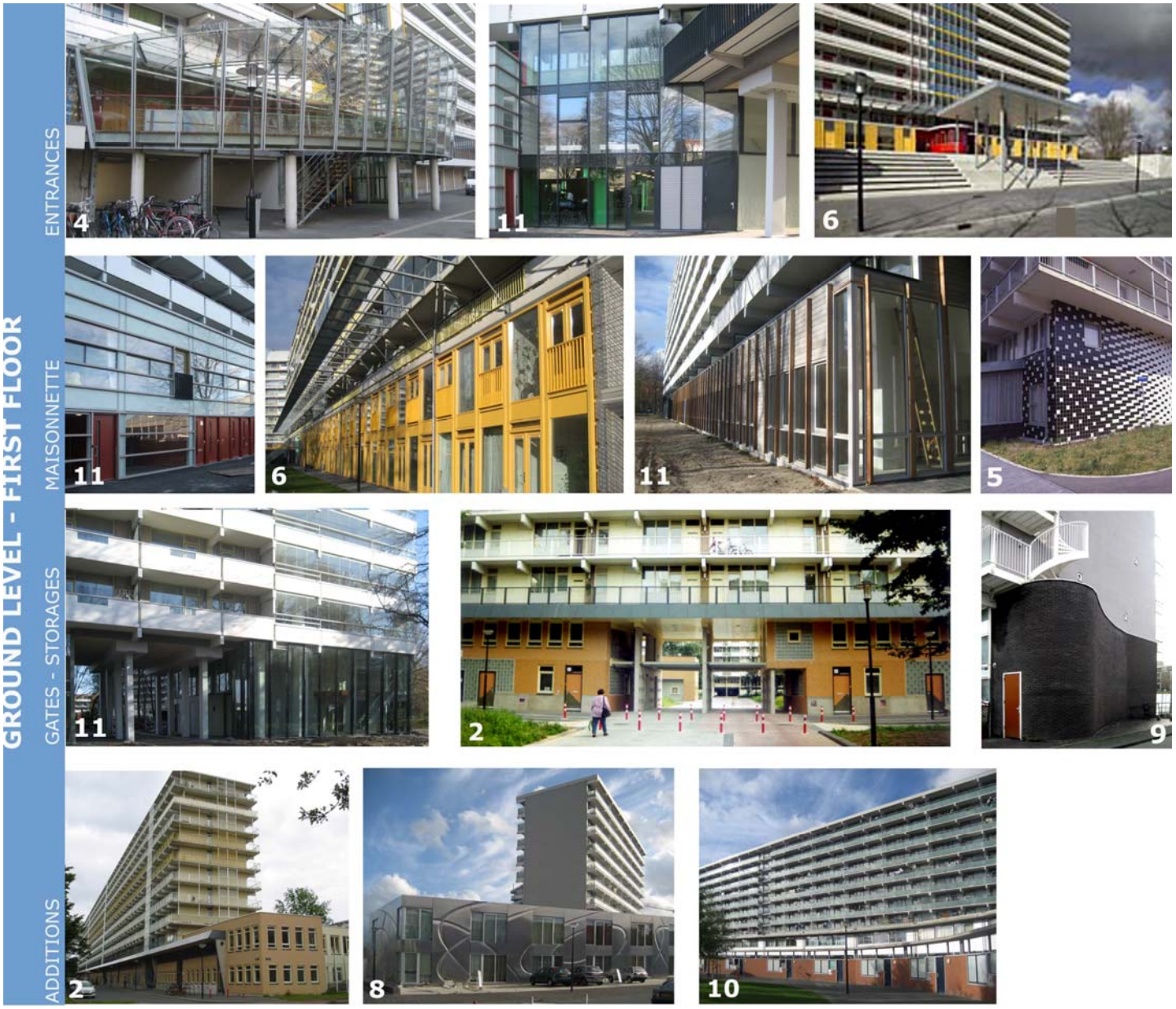
Among the factors to be improved by implementing high-level renovation, the physical ones are usually the followings:

- Building function: by improving accessibility to the block and/or the dwellings, increasing social safety and liveability of shared spaces (often by interventions focused on inner walkways and/or storages)
- Housing differentiation: by adapting existing dwellings more chances for wider target groups are provided (combination of units);
- Technical performances: by updating technical equipments and the characteristics of the façade (usually focusing on thermal and acoustic insulation).
- Look of the building: mostly by preserving its initial architectural features or constructing a completely new one.

RENOVATION IN THE BIJLMERMEER

Those factors are widely used in the Bijlmermeer. A lot of interventions to improve the quality of the high-rise blocks have been carried out in the neighbourhood since the middle '90s.


GROUND LEVEL - FIRST FLOOR
ENTRANCES
MAISONNETTE
GATES - STORAGES
ADDITIONS
UPPER FLOORS
FACADE
STAIRS_ELEVATORS


GROUND LEVEL - FIRST FLOOR
ENTRANCES
MAISONNETTE
GATES - STORAGES
ADDITIONS
4
11
6
11
6
11
5
11
2
9
2
8
10


UPPER FLOORS
FACADE
STAIRS_ELEVATORS
6
7
10
4
6
3

The first interesting physical solutions were applied in the late '90s in the Hoogoord and Hofgeest block by Verheijen Verkoren Knappers architecten. The first was nominated by the National Renovation Prize (NRP) in 1999 and is still a good example of renovation. In this case, storage spaces at the bottom of the buildings have been converted into maisonettes with a front door on street level and a private garden on the back. Social safety nearby the high-rise substantially improved after this sort of 'privatization' of the bottom. Mutual social control, higher safety, neighbourhood relationships and bringing life back in the streets, were the results.

Without aiming at providing a complete list of all the projects realized in the neighbourhood, it can be interesting mentioning some of them. In the list below eleven projects are mentioned. Pictures showing the key elements are collected in the following table.

10 EXAMPLES

1) Hoogoord by Verheijen Verkoren Knappers architecten (nominated NRP 1997);
2) Hofgeest by Verheijen Verkoren Knappers architecten (1999);
3) Gravenstein XXAcrchitecten
4) Gooioord by Bruins Soedjono Architekten (2001) (submitted NRP 2003);
5) Hogevecht (submitted NRP 2005);
6) Kruitberg by KOVOS Architecten en Ingenieursbureau (European Demonstation Project Regen-Link, submitted NRP 2007);
7) Hakfort Huigenbos and Groeneveen by D&E (1999 and 2007);
8) Florijn Zuid by van Schagen architects
9) Frissenstein – Florena by Duinker van der Torre (2004)
10) Florijn Noord by van Schagen architects (2003)
11) Grubbehoeve by CASA architecten (under completion)

In the picture below is shown a design study for the high-rise in the D and E neighbourhood by KOVOS architects. The project was commissioned by the housing association Patrimonium (now Rochdale) in 2001 but the proposal remained on paper. The aim was to adapt the existing dwellings to different housing types for different groups like artists, students and high-income households. The solution was a second façade provided with its own bearing structure attached to the gallery side of the block.

COMMON SOLUTIONS

Ravesloot (in Bragança, 2007) argues that the aesthetic perception of especially the entrances alone has become more important during the last years, mainly because of increased need for social safety. This is particularly true in the Bijlmermeer where the most visible solutions actually regard the accessibility system (entrances to the block, stairwells and elevators).
Housing differentiation of existing units has been implemented as well, but being generally quite expensive it is less common. Also, it requires the temporally removal of people during the works and can be more difficult in terms of feasibility. Differentiation is realized by converting storage spaces into dwellings and/or by additions at the bottom. As it has been

showed in chapter 4, this is a very common physical solution aiming at solving liveability problems.
According to the budget, technical performances are also improved. Simple improvement of thermal performances of the facade is the most used solution. A case in which those characteristics have been substantially improved is the Fleerde-Frissenstein. After renovation, all the dwellings have been sold.
For what concerns the look of the building, not many renovations were aimed to substantially transform the initial appearance of the building. An exception is the renovation of the Florijn Noord or the Fleerde-Frissenstein, but interventions like Osdorperhof (Chapter 4, Tab 4) are absent.

With respect to the place of physical solutions within the blocks, there are no relevant variations. Generally, iinterventions can be roughly gathered into two groups:

BOTTOM AND FIRST FLOOR

- Bottom and the first floor. Mainly improvement of accessibility to building and dwellings, housing differentiation by conversion, addition of social facilities (school, special centres).
  Interventions regard to upgrade the gates crossing the blocks, restyling existing entrances, conversion of storages into housing (maisonette[7] or atelier).

UPPER FLOORS

- Upper floors. Mainly improvement of accessibility to the dwellings and housing differentiation by combination of existing units.
  Technical interventions usually regard thermal insulation and/or change of window frames and front-doors. Combination is often implemented horizontally by matching two existing units (in one case it led to conversion into student housing). The most visible changes regard the elevators (upgrading and new additions) and change of parapets. Because of their technical state or to enlighten the flats, concrete parapets are often substituted with transparent materials ones (sometimes glass). The 110cm high parapets, in fact, obstructed the view and penetration of natural light (in the picture below can be seen the new glazed parapets on left and the old one on the right).

Total or partial demolition (so-called selective demolition) is also implemented in the Bijlmermeer. Being, mainly driven by financial motivations, this is an extreme solution to break repetitiveness of the high-rise blocks and diversify the urban layout. After works, the demolished lots are often occupied by new middle-low rise construction (see the 'F' Neighbourhood in Chapter 6).

7 Conversion of existing room on the ground floor into maisonette or their addition on the top-floor (optoppen) is a very common concept in Dutch renovation. With this word is meant an apartment, usually a duplex, with independent entrance being part of an existing building characterized by different housing typology.

CONCLUSIONS

The Bijlmermeer is the most extreme and well-known large housing estate in the Netherlands (1966-1973). It is currently the largest Dutch restructuring project.
It was designed as a modern place in a park to respond to the housing shortage of that period. It embraced all the concepts of modern living: separation of functions (living, working and recreation), mobility, green and parking garages. Being based on the concept of collective living, social spaces would have compensated limitations of living in high-rise. Dwellings for about 40.000 inhabitants were placed in thirty high-rise blocks, ten stories high, mostly shaped according to a hexagonal pattern for a length up to 400 meters.

Observing the historical background, recent developments and examples of physical renovation, three aspects emerged:

- Optimistic modern beliefs have definitively failed but restructuring on neighbourhood and building level could help solving the main problems multiplied over the years. After decades implementing solutions to solve multiple problems, the very definitive structure of the Bijlmermeer will be finally completed only by 2012. The restructuring is being directed by the Final Plan of Action which is based on three key words: integrated approach, differentiation of the stock (mainly by demolition) and better management.

- The Bijlmermeer is changing its physical appearance. Due to a restructuring strongly focused on demolition of high-rise, more than half of the original blocks will disappear (15 out of 31) and very little of the initial housing model will be recognizable.

- It is not that clear yet what factors caused such a deterioration of the Bijlmermeer. Most of the people tend to say that the spatial concept of the Bijlmermeer is the most important cause of decay. Leferink gathered all the misfits of the spatial concept as follows: massiveness and monotony; identical high-rise estates of 400 or 500 flats, all connected by balconies; excess of semi-public open spaces; rigid division between functions; intangible size and scale in which the individual disappear.
However, causes of deterioration seem to be caused by problems on different levels. With this respect, Wassenberg identified three groups of problems: unfinished character, liveability problems and demand- supply.

- Wassenberg identified five conditions that support the success of the renewal in the Bijlmermeer so far and can be useful for transferability of the approach to other estates in other circumstances. They are: improvement of surroundings, integrated approach, radical solutions, alternative financing and perspectives to inhabitants.

- A lot of interventions to improve the quality of the high-rise blocks have been carried out in since the middle ‘90s. First renovations are still good examples being project. They affected solutions applied later in other blocks.

- Examples of renovation in the Bijlmermeer are quite homogeneous. Four aspects are usually treated by renovation: building function (accessibility to the block and/or the dwellings, social safety and liveability of shared spaces), housing differentiation (adaptation of existing dwellings by combination of existing units), technical performances (better insulation of the façade) and appearance (improved meanwhile preserving initial architectural features). Specific solutions can be distinguished as placed at the bottom and on the upper floors.

INTRODUCTION TO THE SIXTH CHAPTER

The sixth chapter deals with an in-depth description of the ‘F’ neighborhood that is an area recently restructured in the Bijlmermeer. In particular, it focuses on a good example of building renovation that is the Florijn Noord high-rise by van Schagen architects. The project was nominated by the NRP in 2003.

CHAPTER 6
FLORIJN NOORD.
A RENOVATION IN THE BIJLMERMEER

INTRODUCTION TO THIS CHAPTER

This chapter describes renovation of a high-rise block in the Bijlmermeer. Physical solutions have been designed by a well-known Dutch architecture firm which is experienced in the field of renovation of social housing. The block is placed in a neighbourhood for which specific restrictions with respect to the urban restructuring have been set up being it included within the whole master plan of the Bijlmermeer. Therefore, the renovation itself is a good example to show the relationship between building and urban redevelopment.

In Chapter 5 a descriptive model was used to introduce the Bijlmermeer on urban level (Section 5.1). The same model is now used to present the renovation of Florijn Noord. With this frameworkt the following sections deal with the F area describing it on a neighbourhood level (Section 6.1) and the Florijn on a building level (Section 6.2). A brief overview on success and fail factors as mentioned in a study by Thomsen and van der Flier and by the project manager is also provided (Section 6.3).

6.1 GET TO KNOW THE 'F' NEIGHBORHOOD AND THE FLORIJN NOORD

INTRODUCTION

Each neighbourhood in the Bijlmermeer has a different demolition percentage. The D, E and F area, for example, are subjected to the less preservation levels[1]. The previous chapter provides an overview on a number of renovation projects implemented so far. However, the choice of the 'F' is related to thee criteria:

- Integration: a case in which the design is integrated with the restructuring plan to explain the connection between the urban and the building scale;
- Variety: a case with a variety of physical measures applied to enrich the range of possible solutions showed in chapter four;
- Representativeness: a good example of renovation (successfulness proven by the National Renovation Prize).

The renovation project of Florijn Noord satisfied all those criteria. The design was developed according to the objectives of the restructuring plan for the F neighbourhood. Many physical solutions were applied and it was nominated by the National Renovation Prize in 2003. Moreover, according to van der Flier and Thomsen, it can be considered a good example of best practice for renovation[2].

1 The Bijlmermeer is divided into sub-neighborhoods identified with letters (A, B, C, D). The Rochdale has associated different demolition percentages per area. For example, most of the flats in the H neighborhood will remain standing, about half of the flats in the G and K neighborhoods will be pulled down, and most of the flats in the D, E and F neighborhoods will be demolished as well. One of the factors in the decisions concerning the demolition of flat buildings was the outcome of a large-scale survey conducted in 2001 among the occupants of 4,600 homes (3,500 residents participated in the survey). Of the total 12.500 flats in the Bijlmermeer, the Rochdale housing association decided for the demolition of 6.500 flats. The first two blocks were demolished in middle of the '90s (Geinwijk and Gerenstein). The last high-rise, the Develstein, will be pulled down in 2009 (Bijlmermeer Renovation Planning Office (2005).
2 van der Flier, K., Thomsen, A. (2005) Sustainable housing transformation; Best practice evaluation of the 10th national Renovation award, at the ENHR-conference "Housing in Europe: new challenges and innovations in Tomorrow's cities", Reykjavik, 29 June – 2 July 2005.

6.1.1 OUTLINES OF THE RESTRUCTURING PLAN

The F neighbourhood is located on the Southeast area of the Bijlmermeer. Its borders are clearly defined by a vehicular gird (Dolingadreef, Bijlmerdreef and Gooiseweg).

As mentioned, the renovation project was driven by the restructuring urban plan. This was designed in 1997 by the Delft urban planner Rein Geurtsen. Zeger Woudenberg is the designer of the landscape project (de Haan & Keesom, 2004).

At the end of 2007, the renovation and most of the new low-rises in the 'F' neighbourhood were already realized. However, the works will be completely finished in 2009.

The F neighborhood during the works (before spring 2005)

KEY WORDS OF URBAN PLAN

The key words of the plan are 'densification' and 'differentiation'. They were implemented by means of selective demolition of existing high-rise and construction of low-rises in the home ownership sector. The objective was to increase the residential incidence with 10% (at least 65 people per hectare) in order to decrease uncontrolled public spaces and increase social safety. Free parking places close to the high-rise and surrounded by green areas will have substituted the collective garages.
On the basis of those assumptions, the plan reorganizes the demolished lots into a new urban layout. Higher recognizability of buildings is obtained by means of different volumes (shapes) and more types (high, middle and low-rise) and use of different materials.
This concept is based on a resident survey. It emerged that residents would have accepted partial demolition and that they had a large interested in affordable home ownership. Also technical investigations for possible physical configurations of the high-rise supported the entire design.

INITIAL CONFIGURATION OF THE AREA

In its original urban configuration, the F neighbourhood had five high-rise blocks. The blocks followed the building layout presented in Chapter 5 when describing the Bijlmermeer. All dwellings were in the social housing rental sector.
According to the urban restructuring (Action plan 1996), one block was completely demolished while the remaining blocks– Klein Frissenstein, Klein Fleerde and Florijn – were partially demolished. The first two blocks are now comprised in the so-called Florena and are integrated into a clear urban structure with a more compact residential pattern. They play the role of recognizable vertical signs in the landscape (see especially the distinctive colors of the parapets. See also Chapter 4, Tab 3).

As shown in the table below, after the completion of the demolition and renovation works, the total number of housing units decreased from 1395 dwellings in the social rental sector to 333 dwellings, and to 108 in the owner-occupied sector.

NUMBER OF DWELLINGS IN F NEIGHBORHOOD BEFORE AND AFTER RENOVATION[3]

HIGH-RISE BLOCK	BEFORE RENOVATION	AFTER RENOVATION
Frissenstein	439 social rented sector	40 homeownership 7(dwellings on the ground floor–homeowner ship)
Flereede	425 social rented sector	40 homeownership 10 maisonette
Florijn	531 social rented sector	333 social sector (90 flat in Zuid, 216 flat + 27 atelier in Noord) 11 homeownership
Total	1395 social rented sector	333 social sector, 108 homeownership

3 de Haan, H., Keesom, J. (2004)

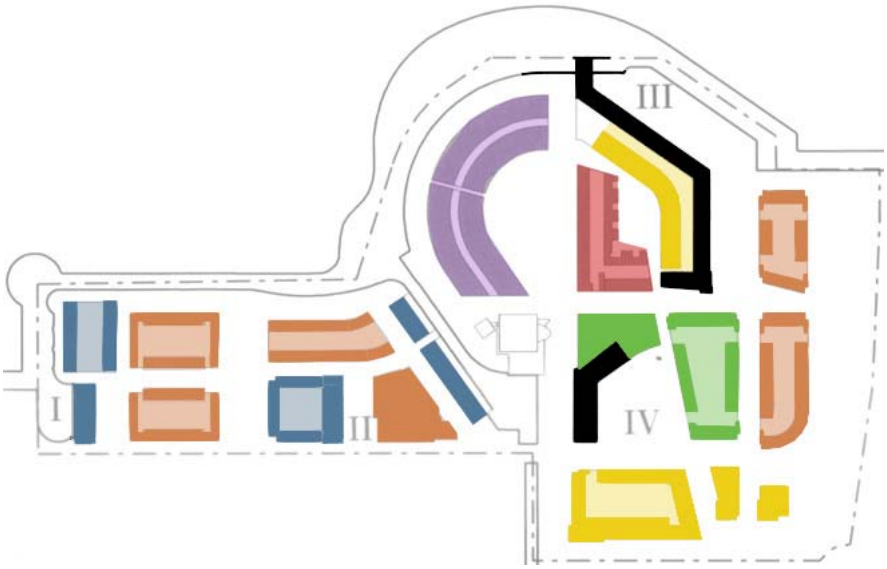
LOW-RISE AT THE BOTTOM: FLORENA

In the lot called Florena (including portions of the Fleerde and Frissenstein high-rise blocks) there are good examples of 'high-level renovation'. In this case, the tenants did not stay in their dwellings during the works; they have been re-housed (permanently or temporarily) elsewhere. The bearing structure was preserved. But some of the inner walls were moved to combine housing units to large dwellings. In both high-rise blocks, the storage spaces on the ground floor have been converted into maisonettes with a street front door. After transformation, all the units were ready to be put on the home ownership market.
The next table identifies the dwellings by tenure form after renovation. It is evident that the predominance of low-rise is in the homeownership sector. New low-rise blocks, in fact, were attached to the high-rise (Frissenstein) or built close to the bottom of each block (Fleerde).

DWELLINGS TYPES IN THE FLORENA: FRISSENSTEIN AND FLEREEDE[4]	
Apartments in high-rise, home ownership	80
Independent dwellings one on the top of the other	2
Single family houses, home ownership	124
Single family houses, social rental sector	50

ERA Bouw, a company that in the '60s developed a rapid high-rise building method, was the developer of the renovation for the Fleerde and Frissenstein. When renovation of high-rise was under discussion, ERA accepted the challenge of readapting the dwellings to meet the new requirements and repositioned them on the home ownership market. In 1994, in association with the Steering Committee on Social Housing Experiments (SEV), the housing association, the District and two architectural firms, the company carried out a study for possible actions (van Hoogstraten et al. 2002). In 1996, results stated that 'the remaining dwellings could be made suitable for another group of residents, provided that they were integrated into low-rise developments'. Architect Duinker & van der Torre were charged with the renovation of the high-rise, architect Splinter with the new low-rise. The work was finished in 2005 and all the dwellings have been sold

New urban layout of F neighborhood. In red remains of Fleerde and



F neighborhood: blue by Duinker van der Torre, samenwerkende architecten; orange by Splinter Architecten; green by Kas Oosterhuis Architecten ONL; Architecten; red Pattynama Ahaus Architecten; violet by MacCreanor & Lavington architects; Roelf Steenhuis Architecten

4 de Hann, H., Keesom, J. (2004)

When the middle portion of the entire Florijn was demolished, the two ends were identified as Noord (North) and Zuid (South) (see the black block in the picture). The Florijn Zuid is another example of the addition of new low-rise at the bottom in the 'F' neighbourhood. Van Schagen Architects renovated 90 dwellings, following a scheme similar to the one used in Florijn Noord (see Section 6.2). ONL [Oosterhuis_Lénárd] was charged with the 53 dwellings in new low-rise (1998). They based the design on stressing the image of the new blocks wrapping the volumes with very recognizable panels.

LOW-RISE AT THE BOTTOM: FLORIJN ZUID

Renovation of high-rise block finished in 2006, while the new construction of the low-rise was finished in 2007. The picture on the right shows the location of the new construction fixed by the urban plan. Nine architectural firms were involved. Some of them designed more that one building. The whole plan is almost completed (updated on December, 2007). New low-middle rise buildings are under construction on the border of the 'F' neighbourhood.

The restructuring of the high-rise blocks and the numerous new constructions nearby are giving the areas a character of a modern residential neighbourhood. Walking in the streets doesn't give the feeling of scarce social security and, at least for outsiders, the area does not look as a deprived neighbourhood dominated by social housing. The impression is that the 'F' neighbourhood is actually very different from the rest of the Bijlmermeer. However, the restructuring being very fresh, its environmental quality should be verified later.

DUE TO THE EXPERIMENTATION OF THREE-DIMENSIONAL PREFABRICATED PANELS TO BE HANGED TO THE BEARING STRUCTURE, THE PROJECT HAS BEEN SUBJECTED TO MANY CHANGES OVER THE YEARS. ACCORDING TO THE PROGRAM, 80% OF THE NEW FLATS ARE SOCIAL RENTED AND 20% IN THE HOMEOWNERSHIP SECTOR. THE SURFACE OF EACH PANEL IS ENGRAVED WITH SMOOTH SIGNS WITH DIFFERENT PRESSURE; THE WHOLE TEXTURE CREATES A SINGLE DRAWING ON THE FAÇADE. THIS SYSTEM, AND THE USE OF ALUMINIUM FOR THE EXTERNAL SIDE, WILL ADD A VERY STRONG IDENTITY TO THE WHOLE AREA.

6.2 THE RENOVATION PROJECT

6.2.1 INITIAL CHARACTERISTICS OF THE BLOCK

ORIGNAL CONFIGURATION

As most of the high-rise blocks in the Bijlmermeer, the Florijn Noord was built at the end of the '60s. It was 100% a social housing multifamily block with gallery apartments and elevators.

The block was erected on deep foundations (about 20m) and constructed using the so-called tunnel building technology[5]. Side walls of dwellings and underside of floors are constructed by pouring concrete in a tunnel formwork. Prefabricated cantilevered beams are placed at both ends of the tunnel formwork to support galleries and terraces. To save time the temperature within the tunnel was kept artificially high, thus in a few days they could be removed.

The tunnel strongly affected the floor plan. Because of the price of steel and concrete, the building layout alternated two spans, 3 and 5 meters. The thickness of the walls and the

5 All the blocks in the Bijlmermeer have been realized by using the Tunnel Technology. Therefore, it has been assumed the description of a block called Geldershoofd as valid for Florijn as well provide by "Change of identity of "Geldershoofd" in Amsterdam-Bijlmermeer" by Verhoef et al. in di Giulio (2007)

floors were respectively 18cm and 17cm. Then, the floor was covered with a 50mm sand-cement layer.
The façade on the gallery side was composed by both concrete blocks (usually 1,5-2cm inner thermal insulation) and wooden windows frames with single glazing. The opposite side was completely glazed being formed be the same window frame and glazing. A small portion at the bottom of this wall is made by wood and accommodates the radiator. Therefore, it is clear why most of the renovations within such dwellings are focused on improvement of the inner comfort (usually additional acoustic and thermal insulation). Despite this transparency, the natural light hardly entered the dwellings due to the 130cm high concrete parapets.

The rigid layout of the tunnels can hardly accommodate different functions. Moreover, foundations can not easily support additional weight due to changes in the building layout. Thus, wherever possible, existing openings should be preserved.
In some places and under specific restrictions, it could be possible to hang extra space to the existing walls or to ad on the top floor. In any case, the foundations have to be strengthened. Because of the subdivision into independent structural sections and therefore the risk of altering the whole stability of the block, it could be problematic creating bigger openings. Furthermore, the capacity of the outward projections (galleries and terraces) can not support as much weight as the floors.

Towards the North, the original configuration of the block can be observed in the Develstein block, the sequence of the Florijn itself. Due to administrative obstacles because of its location on a different area (D neighbourhood), Develstein could not be renovated together with the Florijn. Toward the South, selective demolition left a sector of the original high-rise, the Florijn Zuid. Its renovation has been recently implemented on a design of van Schagen Architects, applying most of the measures already used on the rest of the block (2006).

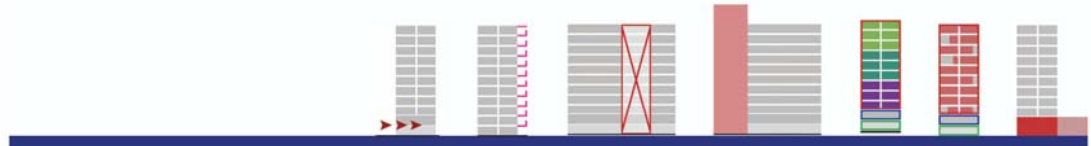
6.2.2 OBJECTIVES OF THE RENOVATION

OBJECTIVES

The Florijn suffered from the problems affecting the neighbourhood on the whole: physical and socio-economic problems (social safety, technical and functional deterioration, market position of dwellings).
The housing association Nieuw Amsterdam defined objectives of the renovation mainly on the basis of market analysis. These objectives can be grouped into physical (technical), functional and financial aims under the approach called ‘schoon, heel and veiling’ (clean, intact and safe) (pers. comm. Hamel). The renovation was conducted on neighbourhood, building and housing level and was completed in 2003.

Objectives related to building aesthetics have not been taken into account since the very beginning of the process. Despite improvement of attractiveness has been considered afterwards, it was implemented in a very soft-traditional way with the aim of reducing uniformity of the block (see the table below). The approach usually undertaken by the housing association, in fact, does not considered improvement of aesthetics as a requirement for renovation.
Because of the absence of any obligation for implementation of energy savings on building-dwelling level and the costs being still very high, “ green” measures have been excluded from the requirements. However, a low-temperature central heating has been installed and is currently used by the whole neighbourhood. It saves up to 30% of the total energy consumption for heating systems.
According to van der Flier and Thomsen (2005), objectives of the renovation and their respective actions can be summarized as follows:

PROBLEM	ACTION
Relationship with surroundings-building scale	Soften the shift from high-rise to low-rise
Physical deterioration	Substitute–renew concrete components
Inner comfort	Improve thermal insulation
Social cohesion	Mix dwelling types
Safety	Add elevators
	Subdivide the galleries
Existing qualities	Preserve / refurbish most of dwellings on the upper floors with relatively high functional- technical quality
Repetition	Reduce uniformity by means of architectural design



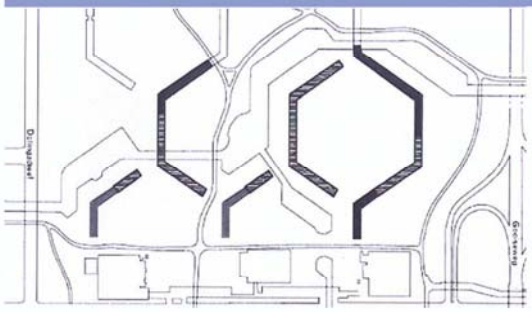
GENERAL INFORMATION

Name of the project: Florijn Noord, Bijlmermeer - Amsterdam ZO
Architecture office: van Schagen Architekten, Rotterdam
Cliente: Rochdale Amterdam

11

EX-ANTE RENOVATION	EX-POST RENOVATION
Construction: 1968 Sector: 100% social rented	Renovation: 2003 Sector: social rented and homeownership

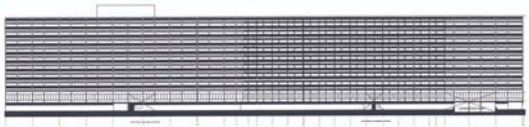
URBAN LAYOUT

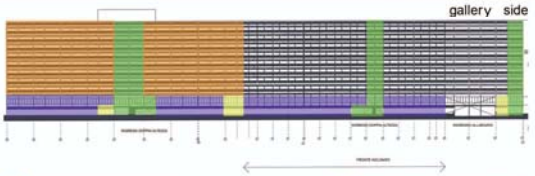


Main concepts : separation of functions (living, working, and recreation), separation of vehicular and pedestrian paths, wide green areas and multistorey parking garages. Emphasizing collectivity: 'social spaces would have compensated limitations of living in high-rise.'

Restructuring urban plan designed in 1997. Key words: density, recognizability, safety and 'differentiation'. Increase by 10% residential incidence developing new low-rise in the social rented and homeownership sector.

BUILDING LAYOUT





135 dwellings renovated
27 atelier (ground/first floor)
rooms for rent (commercial)
new entrances

High-rise 10 storeys high mostly shaped on hexagonal pattern. Blocks up to 400 meters long.
1395 dwellings in high-rise

Renovation by building extensions at the bottom, addition of new top-end and combination of housing units.
333 social rented and 108 homeownership dwellings in high-rise

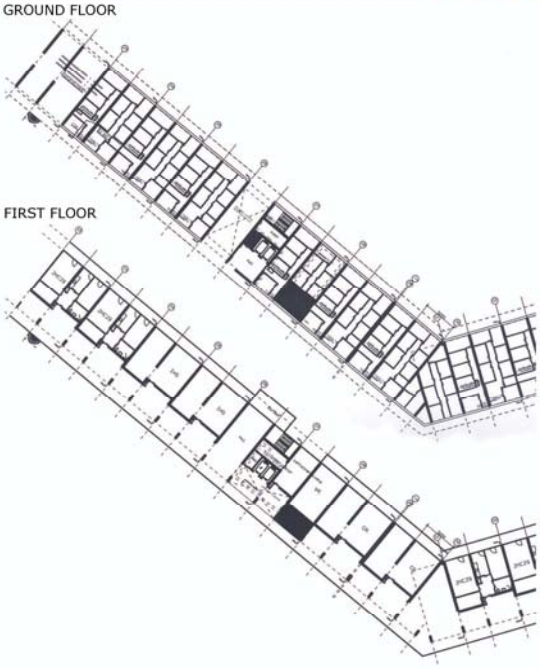
BEARING STRUCTURE

Side walls of dwellings and underside of floors were constructed by pouring concrete in a tunnel formwork, the so-called tunnel. Prefabricated cantilevered beams were placed at both ends of the tunnel formwork to support the galleries and the terraces.

HOUSING TYPES
GROUND FLOOR

GROUND FLOOR

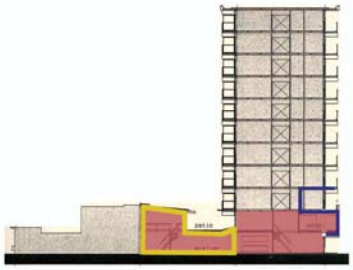
FIRST FLOOR



Comparing to the standards of the time, the flats were spacious (100 to 125 m2 - up to five rooms), well-lit, furnished with luxury sanitary equipments and rationally organized

GROUND FLOOR

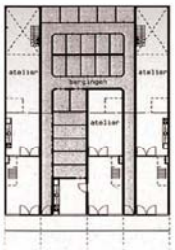
VERTICAL COMBINATION: GROUND FLOOR + FIRST FLOOR

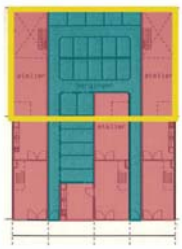


ATELIER
ADDITION
FILLING

Bicycle storages at the ground floor, inner walkway and small housing units on the first floor have been converted into atelier (studio- housing for artists in economic difficulties). Henk van Schagen collaborated with Roelf Steenhius to the concept of 'maisonette-with-small-garden' (patio houses backing onto studio apartment. Each patio is designed to maximize daylight and prevent looking in

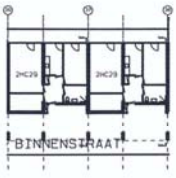
GROUND FLOOR

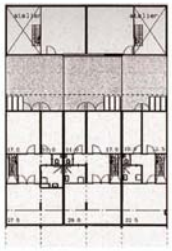


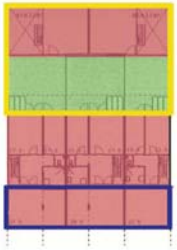


STORAGES

FIRST FLOOR







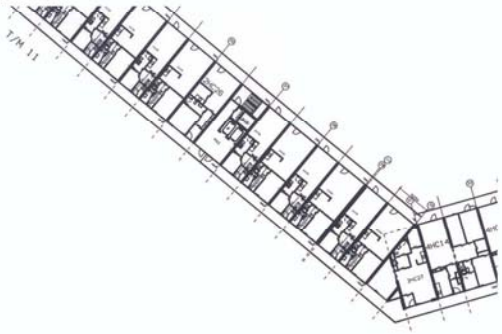
PATIO

Bicycle storages at the ground floor. Walkway, small housing units and shared rooms on the first floor

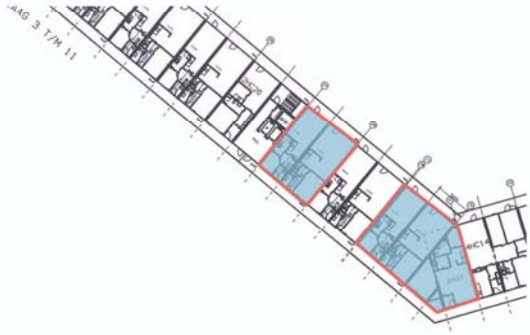
Ateliers are obtained by extending the room at the ground floor and filling the walkway on the first floor.

HOUSING TYPES
UPPER FLOORS

THIRD FLOOR



Living rooms were located on the balcony side where the wider window surface is provided. Bedrooms and kitchen were located, together with the entrance, on the gallery side where the walls are mostly composed by concrete blocks.



Housing differentiation by combination of existing units: some dwellings have been converted into student housing or bigger dwellings

DWELLING A:1 BEDROOM
DWELLING B:1 BEDROOM
DWELLING C:1 BEDROOM

COMBINATION A+B+C
6 BEDROOMS STUDENT HOUSING

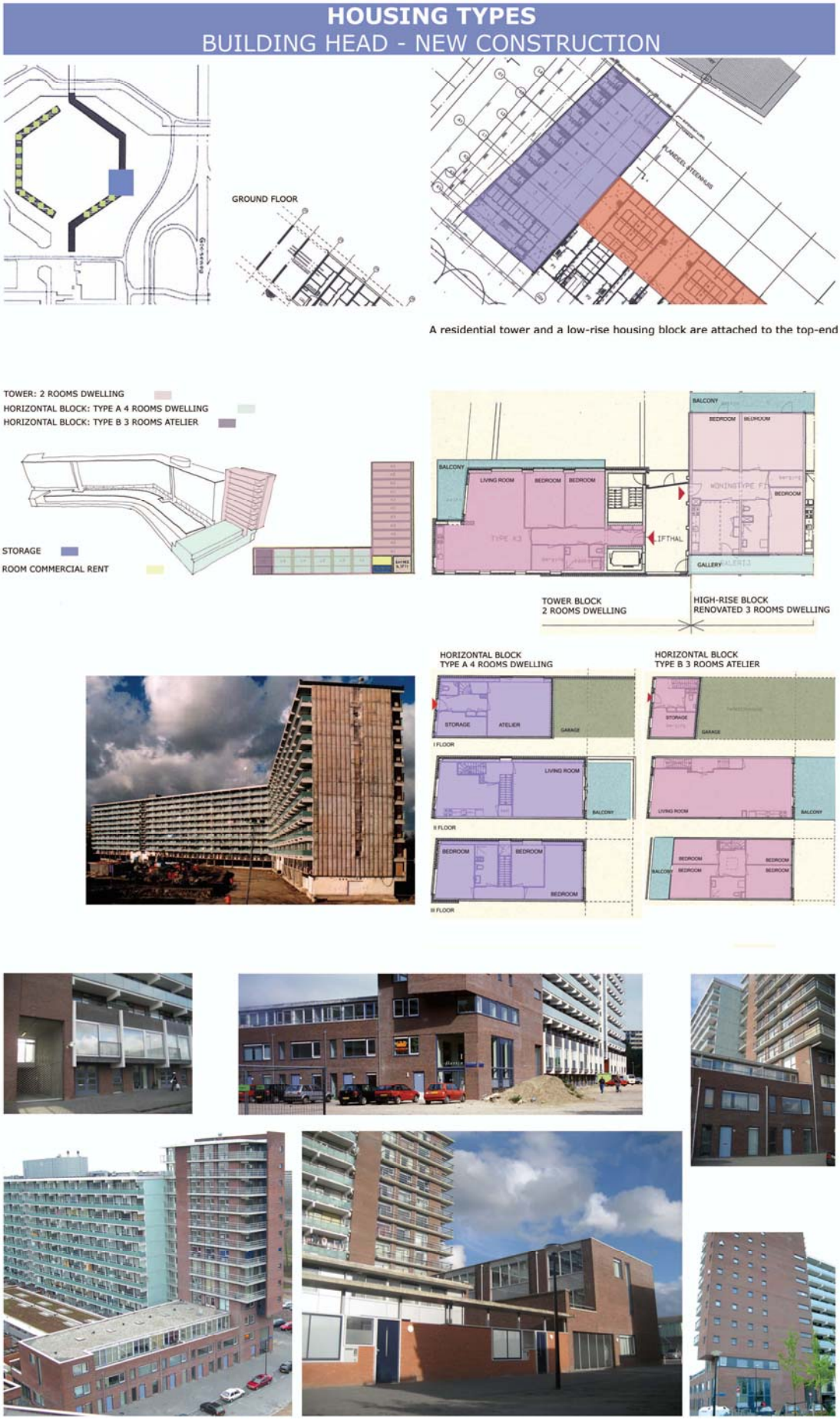
DWELLING A: 1 BEDROOM
DWELLING B: 1 BEDROOM

COMBINATION A+B
2 BEDROOMS

COMBINATION A+B
3 BEDROOMS

The original facade is still recognizable: structural form of two-level base with a superstructure and the vertical elements.

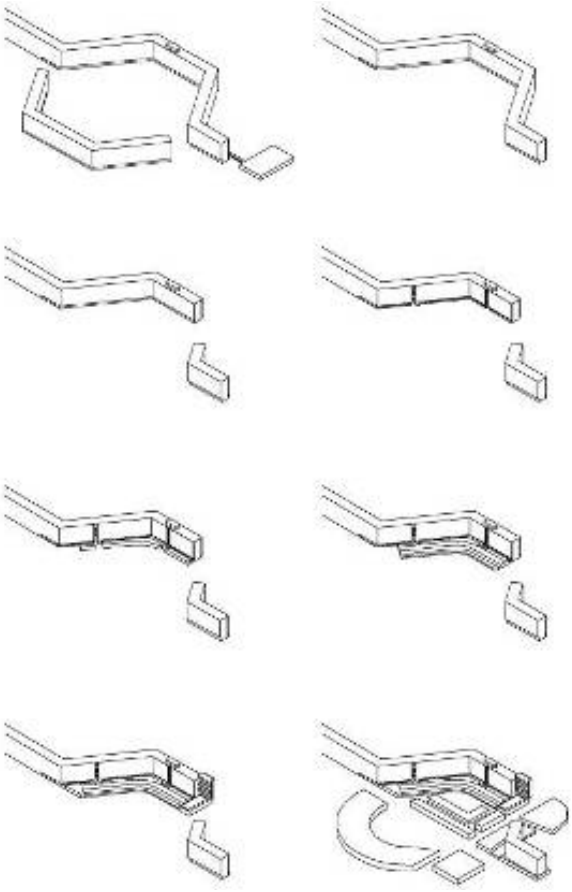
The transparency of the walkway on the firs floor was preserved: it accommodates the living room of the ateliers.


HOUSING TYPES
BUILDING HEAD - NEW CONSTRUCTION
GROUND FLOOR
A residential tower and a low-rise housing block are attached to the top-end
TOWER: 2 ROOMS DWELLING
HORIZONTAL BLOCK: TYPE A 4 ROOMS DWELLING
HORIZONTAL BLOCK: TYPE B 3 ROOMS ATELIER
STORAGE
ROOM COMMERCIAL RENT
TOWER BLOCK
2 ROOMS DWELLING
HIGH-RISE BLOCK
RENOVATED 3 ROOMS DWELLING
HORIZONTAL BLOCK
TYPE A 4 ROOMS DWELLING
HORIZONTAL BLOCK
TYPE B 3 ROOMS ATELIER

6.2.3. ORGANIZATION OF THE PROJECT

PARTIES INVOLVED

The parties involved within the process were: the housing association owning the dwellings (Nieuw Amsterdam, later Rochdale), the government (central and local government - Zuidoost), the Project Office Renovation Bijlmermeer, the mentioned architects (van Schagen Architects), a residents committee and other organizations (like the students and the artists committee).



The housing association and the government initiated the process. As in this case, the housing associations independently fixed its own objectives for renovation, but it cannot be denied that government parties exert a sort of political influence. However, these parties participated in project group on neighbourhood level to steer the urban planning process. Residents and professionals worked on the building level; a building team operated during the works together with the contractor.

The architects were actively involved during both ex-ante analysis and strategy development. For what concerns the design, they had to respect the program of constraints developed by the housing association itself. However, they also worked in close cooperation with the urban supervisor from the local government to solve the relationship with the built surroundings (see the picture in this page).
The housing association was charged with the planning and cost control, the architects with the design. The project was financed by the Central Housing Fund, the city of Amsterdam and the housing association itself. Further subsidies for special housing (ateliers) and for energy savings (the mentioned central heating system) were stimulated by the local government.

APPROACH: PRESERVE THE BLOCK

As for their experience in housing renovation, van Schagen Architects (Rotterdam) were charge with the project. Van Schagen argued that, excluding the walkways on the first floor, the bad functioning of the lifts and the long storage wall at the ground floor, the block had its own basic qualities to requite basic upkeep interventions. They stated that repairs and maintenance would have been sufficient if problems with the common spaces were resolved[6]. As it clearly emerges from these statements and observing the current appearance of the building, the architects deal with deteriorated social housing estates in a 'traditional' way, preserving the main architectural features of the block. Actually, they were chosen for their distinctive approach to renovation based on respecting the block. In this case, this fits the requirements of the housing association. Moreover, they were considered experienced in managing all the ex-ante analysis (pers. comm. Hamel).

6 See literature published on the site www.vanschagenarchitekten.com, visited on June, 2005.

6.2.4 PHYSICAL MEASURES FOR RENOVATION

PHYSICAL SOLUTIONS

To get a deeper insight into the renovation project, the project manager (ir. Wouter Hamel, Delta Forte) has been interviewed. The first group of questions regarded:

1) What set of physical measures was used to improve the initial quality of the block?

According to the project manager of Florijn Noord, the renovation approach used could be placed in the between of the 'renovation light' and 'high-level renovation'.
He provided information on the physical solutions adopted for improvement of the building function and technical performances. They can be grouped as follows: alterations of the building surface, interventions in the dwellings, use of the base of the blocks, redefine accessibility, improvement of the appearance of shared spaces, improvement of thermal insulation and technical equipments (see the scheme below).

ITEM	MEASURE
DWELLINGS	▪ Adaptation for special groups (atelier at ground floor and students on the upper floors) ▪ Horizontal combination (match two units to get student dwellings) ▪ Vertical combination (match ground and first floor to get duplex)
BUILDING SURFACE	▪ Addition at the building head (new residential tower and transversal housing block in the rent sector) ▪ subtraction by selected demolition (demolition of the inclined portion between Florijn Noord and Zuid) ▪ extension of total housing surface (additions at the bottom to get spacious atelier)
USE OF THE BASE	▪ Addition of small commercial activities (at the ground-first floor) ▪ Conversion (storages transformed into atelier)
ACCESSIBILITY	▪ More elevators ▪ Subdivide the galleries by means of elevators and stairs volumes
THERMAL INSULATION	▪ Addition of insulating layer (from the inside)
SHARED SPACES	▪ Aesthetical improvement of entrance, staircases and galleries (more space, new materials, colours and paintings) ▪ Substitution of parapets (concrete panels into soft-green glass)
TECHNICAL EQUIPMENTS	▪ Renewal of water supply and sewage system ▪ Installation of district heating

A comparison of ex-ante requirements and ex-post renovation, mostly focused on the housing types, is presented in the following tables.
Before renovation the total number of dwellings was 309, after the works, 243 have been renovated and 17 new flats have been added to the building (the tower and the transversal block).
Renovated dwellings include those with no alteration of the floor plan, 27 new ateliers, 36 dwelling were created by combination and 27 student flats. In the end, the total number of housing units decreased by 10%. The average (net) dwellings' size increased of about 30 m2, going from 64 to 91-99 m2.

	EX-ANTE RENOVATION		EX-POST RENOVATION
GROUND FLOOR	▪ Bicycle storages	▪ gates	▪ 27 ateliers
FIRST FLOOR	▪ 17 small dwellings (2 types - 1 or 2 bedrooms)	▪ Shared spaces (3 types)	
UPPER FLOORS	▪ 292 dwellings (10 types - 1 or 3 bedrooms)		▪ 153 renovated dwellings same size (5 types - 1 or 3 bed rooms) ▪ 27 student flats (3 types – 2, 3 or 4 bedrooms) ▪ 36 dwellings matching existing units (1 or 3bedrooms) ▪ 11 new dwellings in the tower (3 bedrooms) ▪ 6 new dwellings on three storeys in the transversal block (2 types - 3 or 4 bedrooms)
	▪ 309 dwellings		▪ 17 new dwellings ▪ 243 renovated dwellings

The next table summarizes the total costs of renovation per dwelling, the rent increase and the actual selling prices).

Average cost for renovation of existing dwellings	82.000 €
Average cost for new apartments	176.000 €
Rent increase	From 495 € to 527 €
Selling prices	188.000 €

It needs to be highlighted that the final product is also a result of the close cooperation between the architects and the structural consultants (constructive advisers). The final design, especially structural alterations, was strongly restricted by the stability of block. In particular, when the bearing structure had been realized by design tunnel technologies, changes are very expensive and subjected to constraints in terms of location within the block. For example, the same big hole like a door can not be opened into the walls of a column of dwellings (pers. comm. ir. Hamel). In the Florijn Noord, this was a constraint to the combination of the existing units. Limited openings into the walls, for example, served to match two or three dwellings to get one large student apartment.

6.3 SUCCESFULL RENOVATION?

In addition to insights into the project itself, other questions were asked to the project manager. This section describes answers to the following questions that are integrated with the results of the study by Thomsen and van der Flier.

2) Would you suggest any recommendation for projects to be implemented in the future?
3) How do you select architectural firms for the design of renovation?

6.3.1 SUCCESSES AND FAILURES. IMPROVEMENTS FOR FUTURE PROJECTS.

2) Would you suggest any recommendation for projects to be implemented in the future?

This question also regards the renovation process. As said, this information is integrated with the study on best practice undertaken by van der Flier and Thomsen in which the Florijn Noord is included (2005). They investigated successful and fail factors of three Dutch good practices for renovation. To do this, they developed a Model to analyze the process and the product of the project. The Florijn Noord was assessed using the Model.

The authors defined as most successful factors mentioned by the residents the cooperation between the parties involved.

SUCCESS: COOPERATION

> In the case of the Florijn it emerged that a good cooperation of the participants in the design team for the development of creative ideas. The ateliers at the block bottom, for example, are the result of mediation of requirements from the different parties: the housing association looking for single-family dwellings, the architects in search for more urban types combining working and living, and the local government suggesting apartment for artists.
> Also cooperation between the local organizations for higher education and the housing association was mentioned as successful. It allowed the conversion of existing units into student apartments (horizontal combination of two existing units).

The main fail factor was phasing of the process, especially management of the works and land during the renovation. They are the cause of the slow down of the process.

FAIL: MANAGEMENT OF WORKS

Involvement of residents in decision making was quite poor. Rather, participation could be defined as 'tokenism': people have a voice and policy makers are obliged to comply with them. In this case they could not drive the decisions making but had some influence.

FAIL: PARTICIPATION

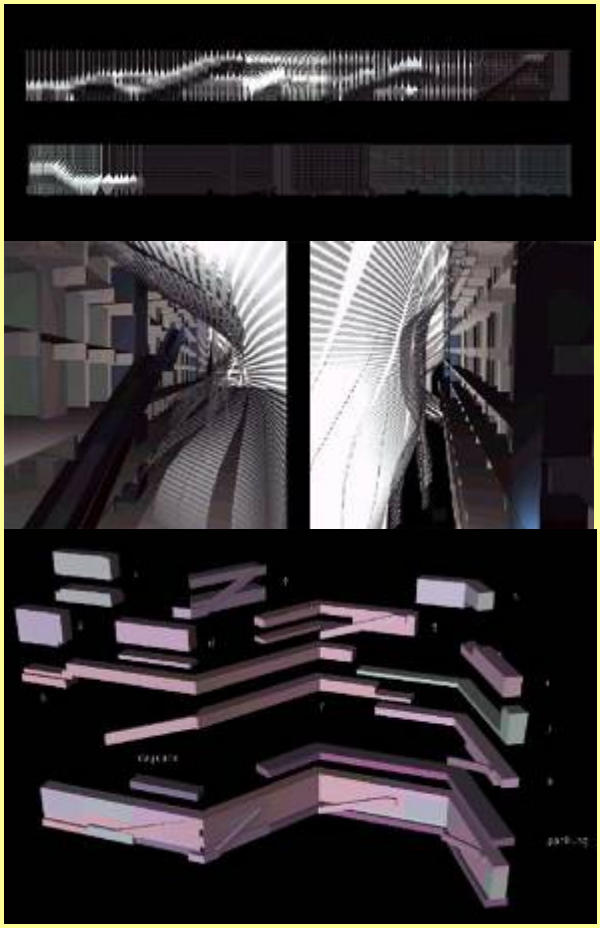
> Their preferences, especially concerning the appearance of the building on the whole, have been considered very little. However, according to the project manager it is fine this. They have the rights to protests indeed.

Architects shared design solutions together with them and their wishes have been inserted in the brief. Residents complained for the loss of covered parking places, thus additional free parking lots have been provided in front of the building. Inhabitants were informed about the meetings and been visited to get personal approval for renovation of their own dwelling.
The conclusion by the project manager is that participation could have not been better than it was. Further involvement, in fact, could result as an increase of costs that could be spent in other way.

3) How do you select architectural firms for the design of renovation?
What about the design competition?

According to the experiences in the Bijlmermeer, a negative comment regards this alternative procedure for selecting projects like design competition.

This process can be very expensive and slow down the process. Moreover, often designs do not completely meet requirements of the housing association. Choose an architectural firm fitting the renovation approach of the housing association increases chances for mutual understanding and speeds up the process (Hamel pers. com).
As it emerged in the renovation process of the Kleiburg high-rise (see the table below) a design competition rarely works. In this case, the process slowed down due to the lack of agreements on the design proposal of the winner. The block is still standing for renovation.



TRANSFORMATION OF THE KLEIBURG BLOCK

THE KLEIBURG IS A VERY WELL-KNOWN EXAMPLE OF RENOVATION IN THE BIJLMERMEER. THE DESIGN WAS SELECTED AS A RESULT OF A DESIGN COMPETITION IN 2000.
THE APPROACH AIMED AT PROFOUNDLY TRANSFORMS THE LOOK OF THE BUILDING. CHANGES IN THE FLOOR PLAN OF EXISTING DWELLINGS AND FAÇADE WERE INVESTIGATED BY BOTH ARCHITECTS AND STRUCTURAL ADVISORS.
HOWEVER, SUCH SOLUTIONS TURNED OUT TO BE VERY EXPENSIVE AND THE HOUSING ASSOCIATION ABANDONED THE PROJECT.
THE PROPOSAL WILL NOT BE REALIZED ALSO BECAUSE THE LANDSCAPE SPECIALISTS EMPLOYED BY THE MUNICIPALITY ADVISED ON PRESERVATION THE EXISTING ARCHITECTURAL CHARACTERISTICS (VOLUME-SHAPE) AS A MONUMENT.
THE BLOCK IS STILL STANDING FOR RENOVATION

Competition: 2000 - Award: June 2001
Client: Woningstichting Patrimonium
Greg Lynn FORM: project designers Greg Lynn, Elena Manfredini, Jakie Haa
Ove Arup: structural concept

According to the project manager, there are several factors that deserve further attention. One recommendation for future implementations is related to the thermal insulation. In the coming period, also the existing construction will have to satisfy the minimum requirements for energy consumption and interventions on the facade will be required. In particular, additional thermal insulation and a change of glazing will be required.

RECOMMANDATION: THERMAL INSULATION TIMING OF WORKS

He also mentioned timing of the whole process and management of the works as factors deserving further attention in future projects.

He stressed the point that all the factors deserving more attention are strongly constrained by costs. For example, relevant issues like ecologic renovation and improvement of the attractiveness of the building could be implemented provided that the project does not substantially exceed the available budget.
Also, innovations have to be shared and accepted by people. It is mostly a matter of agreement.

RECOMMANDATION: ECOLOGIC RENOVATION ATTRACTIVENESS

The project manager commented also about investment on the building appearance. He argues it could be very risky. The Bijlmermeer still suffers from its stigma; dwellings are sold to the lowest income groups. Only people with a lot of confidence choose a house in the Bijlmermeer, design-oriented seekers look for a house in the centre of Amsterdam. Thus, competition with other more attractive areas plays a role. According to the interviewed, the most important factors people consider when choosing a house are the socio-economic conditions of a neighbourhood on the whole.

RECOMMANDATION: RISK IN INVESTING IN APPEARANCE

Concluding he stated that the Florijn could be considered as a successful example of renovation in which a satisfying balance between beauty, requirements and cost has been found.

CONCLUSIONS

The F neighbourhood in the Bijlmermeer is an example of restructuring of large housing estates whose concept is based on low levels of preservation of the existing high-rise. The key words of the urban plan are: (building) ‘densification’ and ‘differentiation’ (of housing supply in terms of building types and market position). After the completion of the demolition and renovation works, the total number of housing units shifted from 1395 dwellings in the social rented sector to 333 dwellings, and 108 in the owner-occupied sector. Actually, densification is implemented increasing by 10% the residential incidence (at least 65 people per hectare). This would also result in a decrease of uncontrolled public spaces and improvement of social safety.
Nine architecture firms were involved in the renovation and new construction. The physical renovation of existing high-rise and the numerous new middle and low-rise constructions nearby awarded the area a character of modern and liveable residential neighbourhood very different from the rest of the Bijlmermeer.

The Florijn high-rise suffered from the common problems affecting buildings in the rest of the neighbourhood. In the readapting the initial housing supply, the tunnel technology strongly affected the changes of floor plan of dwellings. Therefore, the differentiation in term of types and market position of dwellings is the result not only of the program of requirements fixed by the housing association but also of the (rigid) bearing structure. The final product, in fact, is also a result of the close cooperation between architects and structural consultants (constructive advisers). In the case of Florijn, for examples, it was calculated that combination of housing units could have not been realized matching more than a certain number of dwellings.
The housing association defined objectives for renovation mainly on the basis of market analysis. Objectives related to building aesthetics have not been taken into account since the very beginning of the process. Because of the absence of any obligation for implementation of energy savings on building-dwelling level and the cost being still very high, green measures have been excluded from the requirements.
As for their experience in housing renovation, van Schagen Architects were charge with the project. They argued that, excluding the walkways on the first floor, the lifts always out of order and the long storage wall at the ground floor, the block had its own basic qualities to require basic upkeep interventions. According to this, the design of (high-level) renovation focused on the preservation the existing architectural characteristics.
The set of measures adopted to improve the functional and the technical quality of the block can be grouped as:

- alterations of the building surface: addition to the building head (new residential tower and transversal housing block in the rent sector), subtraction by selected demolition

(demolition of the inclined portion between Florijn Noord and Zuid) and extension of total housing surface (additions at the bottom to get spacious atelier);
- interventions within the dwellings: adaptation for special groups (atelier at ground floor and students on the upper floors), horizontal combination (matching two units to get dwellings for student) and vertical combination (matching ground and first floor to get a duplex);
- use of the block bottom: addition of small commercial activities (ground-first floor) and conversions (storages transformed into atelier);
- redefine accessibility: more elevators and subdivision of the galleries by means of elevators and staircase volumes;
- appearance of shared spaces: aesthetical improvement of entrances, staircases and galleries (more space, new materials, colours and paintings) and substitution of parapets (concrete panels into soft-green glass);
- Improvement of technical aspects: addition of insulating layer (from inside), renewal of water supply and sewage system, and installation of district heating.

In addition to the insights into the project itself, other questions were asked to the project manager. The answers were integrated with the results of the study by Thomsen and van der Flier (2005). The followings aspects emerged:

- The most successful factor mentioned by the residents is the cooperation of the parties involved within the renovation process.
- The main fail factor was phasing of the process, especially management of the works and land during the renovation. They are the cause of the slowing down of the process. This aspect was confirmed by the project manager as well.
- Involvement of residents in decision making was quite poor. Rather, participation could be defined as 'tokenism': people have a voice and policy makers are obliged to comply with them. The conclusion by the project manager is that participation could not have been better than it was. Higher level of involvement, in fact, could result in a substantial rise of costs, that rather could be spent in another way, according to the housing association;
- According to the experience in the Bijlmermeer, a negative comment regards this alternative procedure for selecting architectural firms, like a design competition. This process can be very expensive and slow down the realization process. Besides, often the presented designs do not completely meet requirements of the housing association (see the example of the Kleiburg in the Bijlmermeer).
- According to the project manager, there are factors that deserve further attention, like:.

    - Better thermal insulation (but there are no regulations for higher requirements to be satisfied by the housing association in renovating existing housing stock. With the compulsory EPBD that will change after 2008);
    - Improving on all the mentioned factors is important. However, the main constraint is the budget. Better 'look' for buildings to be renovated, for example, could be financially very costly and risky in terms of possible market demand.
    - Innovative projects should be more easily accepted by residents (renovation is also a matter of agreement).

INTRODUCTION TO THE SEVENTH CHAPTER

After the overview on the Dutch context provided by the previous chapters, the seventh deals with the Italian context. Actually, it describes a case study representing a part of the deprived social housing stock in Rome. The neighbourhood is the very well-known Laurentino 38. This is a large social housing estates realized in the 1970s by using the tunnel technology. The entire neighbourhood is now facing with many of the problems described in the Bijlmermeer. The whole context is described over two sections.
The chapter presents the case following the same structure of chapter five and six.

CHAPTER 7
LAURENTINO38
EXAMPLE OF DEPRIVED SOCIAL HOUSING ESTATES IN ROME

INTRODUCTION to this chapter

This chapter describes an example of large social housing estates in Rome. It will provide information on a neighbourhood realized in the early 1970s which is representative for a part of the deprived social housing stock in Rome. The name of this neighbourhood is Laurentino 38, also known as L38. The entire neighbourhood now faces similar problems to the ones described in the Bijlmermeer.
The first part of this chapter, section 7.1 provides a general overview of the neighbourhood by describing its physical characteristics, the main issues in its historical background and the major current problems. The second section describes recent (restructuring and 'renovation') developments at the urban and building level, and opinions of people on these actions that were undertaken to improve the quality of the area. Finally, a description of how improvements were usually implemented is provided, along with conclusions at the end of the chapter.

7.1 GET TO KNOW LAURENTINO 38

INTRODUCTION

The social housing stock in Rome is managed by the housing association ATER Roma. Ater owns a large and much diversified housing stock. In Rome, ATER manages about 55.000 dwellings and other proprieties like commercial rooms and land (see Chapter 3). The numerous residential neighbourhoods differ in terms of age, location, urban layout, building types and constructive technologies. Section 7.1.3 briefly introduces the context in which they were implemented. The case of Laurentino 38 will be used to illustrate and discuss the physical measures derived from Dutch projects to address their weakness and strengths for implementation in the practice of Roma. Since it is not possible to choose a single case representing the majority of social housing in Rome, it was decided to use an example of large social housing estates comparable with the Bijlmermeer. In this way, this study provides a framework of physical measures for renovation directed to the building envelope to support decision making of housing association and other parties, and draw directions for the improvement of the intervention strategy of ATER Roma (Chapter 1, section 1.2.2).

Not in order of importance, the following criteria were used in case selection:

- Size: large number of households (about 30.000 low-income people) living in similar large housing estates.
- Technology: rigid bearing structure like a tunnel. This choice is based on a sort of 'worst scenario'. If physical measure might improve the quality of buildings realized with rigid bearing structure, they would consequently work in cases with more flexible structures like concrete frame (pillars and beams)..Indeed, the tunnel technology was very common in large housing developments in Northern European countries. It is still in use for construction of blocks with more than 250 dwellings (Andeweg, 2007)[1]

1 For examples of housing currently realized by using the tunnel technology see www.outinord.fr (visited in January

- Stigma: bad reputation. The image of the neighbourhood went down by media reports actually reinforcing existing problems.

Laurentino38 fits the listed criteria. In fact, together with other residential areas in Rome, like Tor Bella Monaca, it is among the biggest social housing developments in Rome. Laurentino38 alone houses people in 3.350 dwellings representing about 6% of the total social housing stock in Rome. In size, Laurentino is comparable to the Bijlmermeer.
The tunnel technology has been used in Laurentino 38 as well as in the Bijlmermeer. Differences mainly regard the shape and the function of the ground floor.
The media played a central role in emphasizing the bad reputation of Laurentino38. As it happened in the case of Corviale (another well-known example of large social housing estates in Rome), crime, squatting, drugs, all kind of functional and technical malfunctions were often associated to Laurentino 38. This also applies to the Bijlmermeer since the beginning and the media actually added to a bad reputation over the years.

7.1.1 PHYSICAL CHARACTERISTICS

Laurentino38 was built between 1972 and 1983 in the Southern outskirts of Rome. It is one of those housing experiments of the so-called 'mega structures', the massive residential blocks concentrating large building volumes to save green (Bossalino, 1992). It was the first neighbourhood in Rome constructed with the innovative tunnel technology. Information abut L 38 are also collected into five graphic plans at the end of this section.

The neighbourhood was planned to house 31.000 people on a total area of 164,5 hectares. The plan was initiated by the Municipality of Rome and the local agency for social housing (IACP of Rome)[2]. The majority of the estates were financed by the national public agency (GESCAL)[3] (Barucci, 1979). In total, 3.350 dwellings were constructed, including 2.960 built by IACP and 390 by housing cooperatives.

URBAN LAYOUT

The urban layout was based on the concept of 'independent residential neighbourhood' provided with the necessary non-residential facilities spread all over the area (commercial, education, health and public offices). Another design principle was separation of functions, a concept inherited from the approach to modern living initiated in the '20s[4].. Housing was considered independent from educational and social services, pedestrian and vehicular traffic, and public green.

The urban structure is very articulated. Its layout is based on the repetition of many geometrical rules. The neighbourhood mainly consists of six 'sectors' (Northwest, North, Northeast, Southwest, South and Southeast) placed on a circular, ring road. This road runs for 4 kilometres on the borders of the neighbourhood, because a deep natural valley is located in the centre of the area itself. Designed to support fast-flowing traffic, the ring road crosses all the sectors dividing them into two parts. In accordance with the separation of functions, the pedestrian routes follow different paths. Some of them run along the raised walkways connecting two parts of each sector. The pedestrian routes serve as a link between the town parts.
The space among the described stamps is entirely occupied by public green. Facilities and green together, occupy 59% of the total area.

2008). Outinord is a company that provides technologically advanced concrete forming systems for mid-size to large scale residential developments.
2 IACP is the acronym of Istituto Autonomo Case Popolari (Independent Public Housing Agency). After a recent reform of the regulation, it is named ATER, Azienda Territoriale per l'Edilizia Residenziale pubblica (Territorial Institution for Social Housing). (for translation of the acronym IACP, see Andeweg, 2007). ATER, ex-IACP, is an agency for social housing with local competence (for more information about ATER, see Chapter 3).
3 GESCAL is the acronym of Istituto GEStione CAse Lavoratori (Agency for management of working class housing). It was founded in 1963, after the previous fund INA-Casa (1949-1963), and was the main national fund for social housing in Italy. It was active for 10 years, between 1967 and 1973 (Mezzetti et al. 2003). However, GESCAL's was abolished only in 1998 (www.cecodhas.org).
4 Despite being designed about 10 years later, Laurentino38 has many aspects in common with the Bijlmermeer. (see Chapter 5).

The Northeast and the Northwest sector were built by the IACP using GESCAL's funds. Shortly later and financed by other sources, similar building types were replicated in the North and the Southwest. The remaining sectors towards the south were realized by the cooperatives (Barucci, 1979).
The layout of each sector is best characterized as a repetition of a stamp. The stamp consists of one or two groups of buildings, the so-called 'insula'. Besides providing an effective chance to diversify the urban layout, the use of the insula allowed to save money on construction works (one building site per insula) (Barucci et al., 1979).

BUILDING LAYOUT

A single insula houses between 1400 and 2500 inhabitants, living in up to 300 dwellings in seven buildings: five multifamily blocks (in Italy called 'in line' building), one tower and a sort of 'bridge block' containing primary services and facilities at the local level.
The ground floor of both multifamily blocks and towers is the porticoed[5]. The first group buildings are 8 storeys high (28ml), the second 14 (46,80ml) storeys high.
The bridge block is more complex than the other buildings. It consists of two storeys high on ground floor and partially porticoed. It includes terraces, public spaces and pedestrian paths on different levels. All the building volumes were precisely defined by the urban plan, and the bridge works as a unifying element (Barucci et al., 1979). The bridge holds primary facilities such as small shops, private and public offices, and residential services.

Parking garages are located in the basement of the blocks, together with the storages. Vehicles enter this part from the main road. Only emergency vehicles are allowed to use the porticoed ground floor. The porticoed ground floor, in fact, was designed as a car free open space to be used by inhabitants as a safe place to stay. Such a semi-public space between the blocks were supposed to also have further recreational services placed in the surrounding areas, like rest zones for elderly, playgrounds for children and sport facilities. These facilities were never realized.

5 The law n. 167 imposed the use of pillars on the ground floor. According to the group leader of the building department Pietro Barucci, there is not (functional or technical) motivation for this direction. Rather, this seems to be an awkward attempt to enforce a principle of modern architecture in Rome.

The appearance of the neighbourhood might be considered as quite homogeneous. Slight differences are recognizable in the 14 insula, like the profile of some concrete panels on the façade or the position of loggias and staircases. The differences are there, because the design of blocks was assigned to different groups of architects. Thanks to a good cooperation of the design group, the Northeast is considered the most unitary sector (Barucci, 1979).

HOUSING LAYOUT

All the buildings are multifamily blocks with doorways, elevators and staircases. There are no gallery apartments. Despite the repetitive layout, dwelling types are quite differentiated. Both 'in line' and towers blocks include four housing types, type A, B, C, and C (see the table below).

TYPE	ROOMS	SIZE	BEDROOMS	BATHROOMS (shower and/or bath)
A	4 rooms	64m^2	1	1
B	5 rooms	80m^2	2	2
C	6 rooms	96m^2	3	2
D	7 rooms	112m^2	4	2

TOWER

The tower is to be distinguished into an 'orthogonal' and an 'oblique symmetry' block. Dwellings of similar size and number of rooms differ in terms of floor plan.
Due to the use of the so-called 'crescent' rule or 'geometria variabile' (variable geometry)[6], the tower is more articulated than the in-line. The bundling tapers towards the top by decreasing the number of bedrooms per housing unit (from 4 bedrooms in the lower floors up to 1 on the top-floors).
Elevators and staircases are placed in the core of the building facilitating four dwellings per floor. Entrance, kitchen and living room face the inner core, while bedrooms are located on the external side. Spans and technical equipments are similar to that used in the in-line block.

IN-LINE

The in line typology discriminates between 'plain' and 'hollow' blocks (with and without loggias). Therefore, dwellings of similar size and number of rooms, have slightly different floor plans in the 'in line' comparing to those in the towers. Each elevator serves two dwellings per floor.
Type C, 96 m^2, is the standard unit of the in line buildings. The other types might be derived by adding or subtracting rooms. The C unit consists of three structural spans (2,80m, 3,30m and 2,80m) that, thanks to the tunnel, could be finished in one working day. Each tunnel in the centre of the dwelling is provided with the technical equipments. All dwellings are spacious and with double exposure. The hollow blocks loggias are on both sides.

6 According to the group leader of the building department Pietro Barucci, applying such geometry in the tower allowed the creation of a sort of incremental and harmonic diversification of the floor plan improving the relationship between day and night rooms.

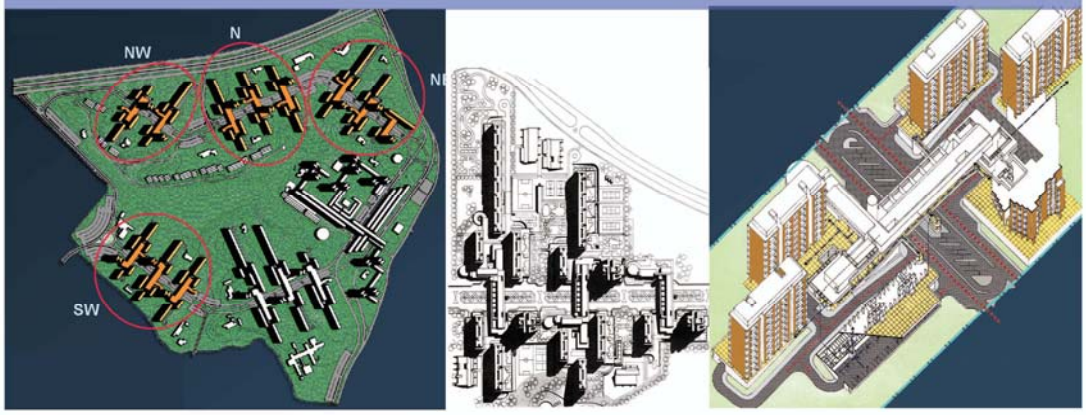
GENERAL INFORMATION

Name of the project: Laurentino38, Roma (South)
Design group: P. Barucci, A. De Rossi, L. Giovannini, C. Nucci, A. Sostegni
Client: I.A.C.P. (now ATER Roma)

CURRENT CONDITIONS

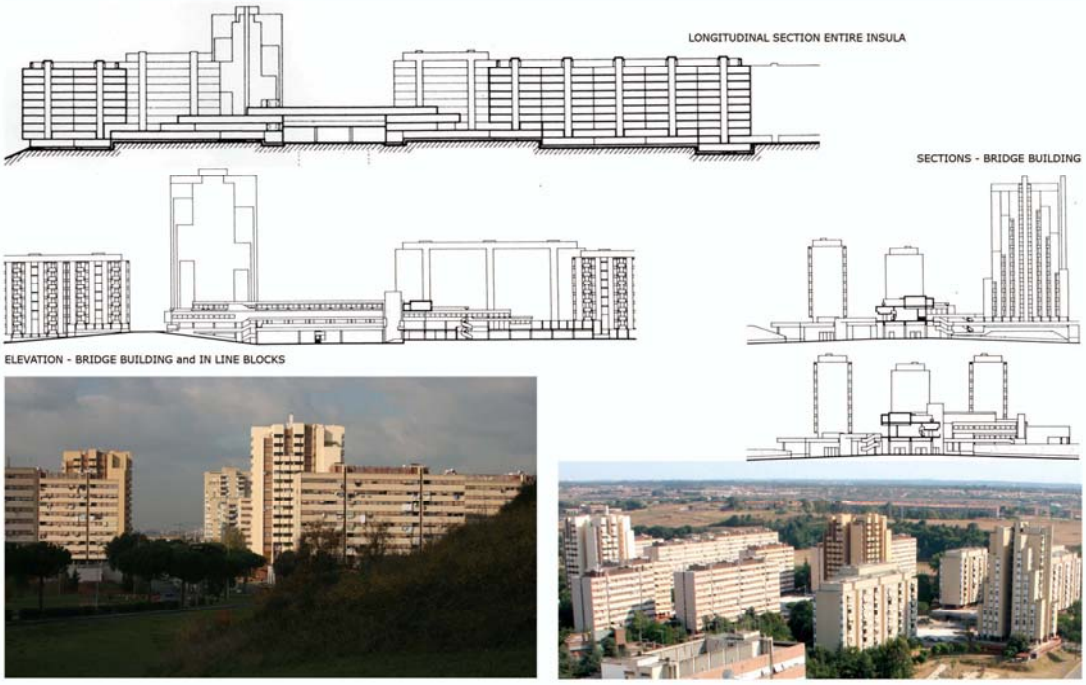
Construction: 1972 - 1983
Sector: 100% social rented dwellings

URBAN LAYOUT



Five stamps around 4 Km ring road surrounded by green.
Housing is combined with non-residential facilities placed in the "bridge" buildings. Each stamp is obtained by reflecting one or two times a basic unit, the so-called insula.

BUILDING LAYOUT



Each *insula* is composed by in line blocks, towers and one "bridge" building.

BEARING STRUCTURE

Reinforced concrete partitions and floors using the tunnel technology.Side walls of dwellings and underside of floors are constructed by pouring concrete in a tunnel formwork. Relevant restrictions due to the rigid layout imposed by this technology drove the architectonic design, especially floor plan of dwellings.

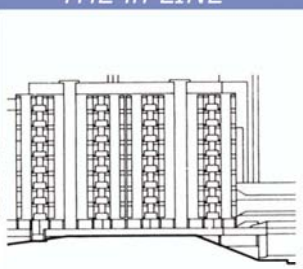
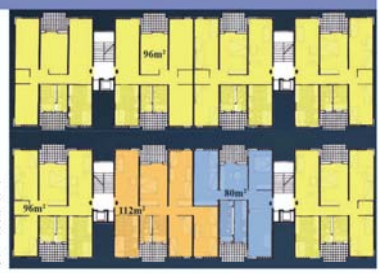
HOUSING TYPES

THE TOWER

Each insula contains 1 tower on 14 storeys, with four dwellings per floor. Dwelling's size are:
4 bedrooms m² 112 (basement)
3 bedrooms 96 m² (middle floors)
2 debrooms 80 m² (middle floors)
1 bedroom 40 m² (latest floors).

The ground floors is porticoed and accommodates the entrance to the building.
Parking places are located underneath the ground level together with the storages.

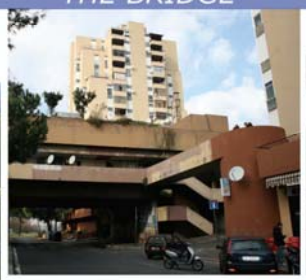
HOUSING TYPES
THE in LINE

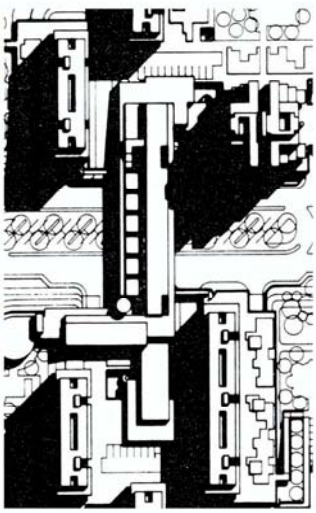






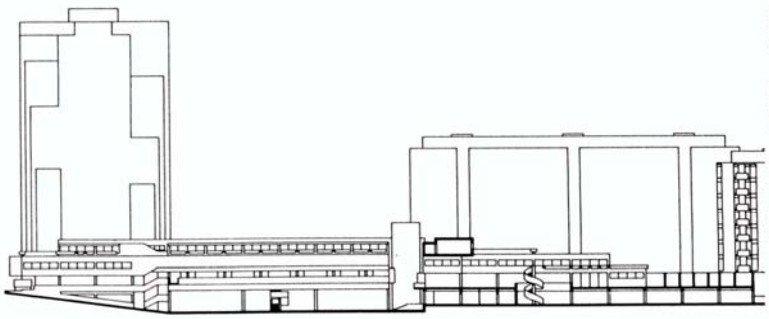
Each insula consists of five in line buildings on 8 storeys, four dwellings per floor. Dwelling's size : 4 bedrooms m² 105, 3 bedrooms 90 m², 2 debrooms 75 m², 1 bedroom 40 m². The ground floors is porticoed and accommodates the entrances to the building. The parking places are located underneath the ground level together with the storages.

HOUSING TYPES
THE BRIDGE

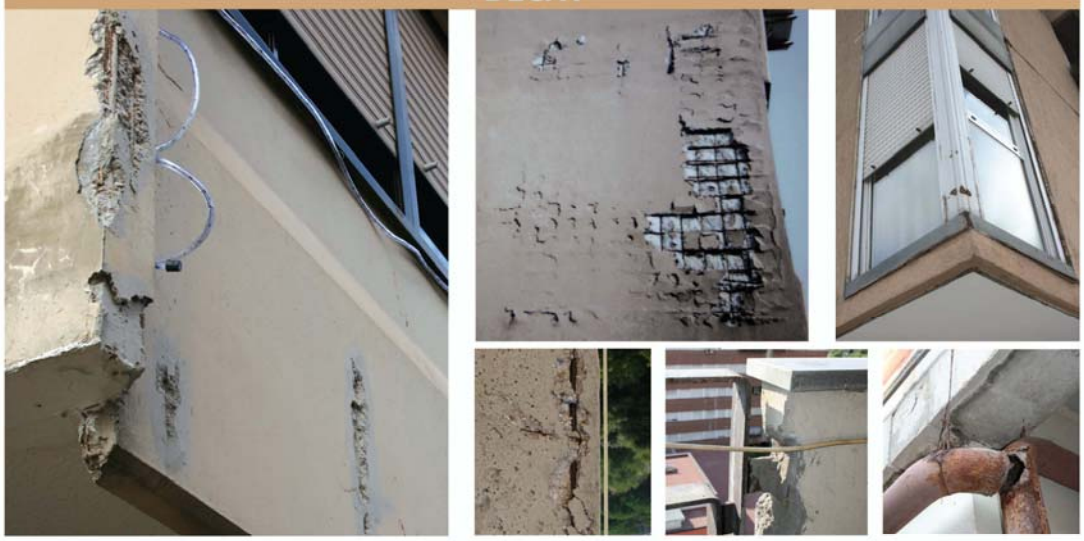



Each insula is divided into two parts by means of the main road running all over the district. A building-bridge connects these two parts and contains a number of primary facilities such as small shops, private and public offices and various services.



PHYSICAL DECAY

DECAY



Due to the absent-low quality maintenance over the years: crumbling of plaster, steel bars corrosion, removal of cladding, corrosion of window frames, and attack of biologic moulds.

DWELLINGS

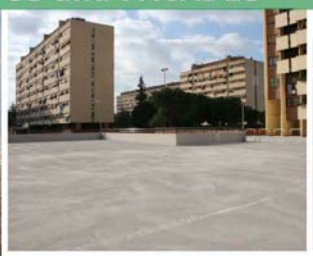
Acoustic and thermal problems, and air penetration due to the low performance of window frames and glazing. Damp stains in the bathroom and the kitchen (concrete walls are barriers against air transpiration). Technical installations require partial substitution, especially the water system. For further repairs, people do not definitively fix the walls. Water infiltrations from the ceilings.

GROUND FLOOR

Similar physical deterioration occurs at the ground floor (entrances to the building, shared spaces) and in the parking garages.

QUALITIES

BUILDINGS and FACADES




In some cases demolition of some bridges improved social and urban quality of the respective insula.
Other bridges have been renovated by paintings with recognizable colors. This intervention attracted a few small commercial activities.
The facade of the blocks owned by the cooperatives have been renovated by fixing a new cladding with insulation on the outside.

GREEN



The neighborhood is immersed in the green.In some cases, people manage it by themselves. Residents appriciate the view from the towers.

SOCIAL NETWORKS


Despite all the difficulties, social cohesion is strong and is often considered by the residents the most important quality of their neighborhood.

7.1.2 HISTORICAL BACKGROUND

ROME

As mentioned in the introduction and in Chapter 3, the social housing stock in Rome is large and very diverse. The neighbourhoods differ in terms of age, location, urban layout, building types and constructive technologies. This is a result of the national and local policies at that time. Most of the public housing stock in Italy was built after the Second World War. It was estimated that 1.9 million dwellings were destroyed and 5 millions seriously damaged of more than 30 million present before the conflict. Destruction due to the war, migration to the big cities and significant population growth, were the main factors causing a great demand for housing (Di Giulio in Andeweg, 2007).
In the early post war years, national institutes and laws had a central role in encouraging provision of dwellings and expansion of most of the cities. Cleary, the city of Rome therefore supported the building of Laurentino38 in late post-wars years.
To better understand the context in which Laurentino38 was designed and built, a brief introduction to the main historical developments of the city of Rome is here provided. There are four main periods to be distinguished:

- before WWII (up to the 1930s)
- early post-war (up to the late 1950s)
- late post-war (up to the early 1860s)
- early 1980.

BEFORE WWII

Until the '30s, the city grew within the so-called 'consolidated' borders. The public interventions in the building sector were very limited and other institutes played the role of the government itself. The building activity was mainly carried out by big co-operatives, INCIS[7] and IACP[8] (Bossalino, 1992).
Most of these neighbourhoods were designed using the so-called 'Barocchetto Romano' (late Roman baroque) style. Although the estates were mainly built for low-income people and thus required cheap materials, those buildings were decorated with details inspired to the past. Therefore, these blocks fitted the city quite well.
In the '30s, with the rise of purism in building shapes, the accuracy in details was lost together with a decrease in applied quality of materials and constructive processes. Interventions were implemented in semi-rural areas and people forcedly moved from the city centre[9].

EARLY POST-WAR II

Comparing to the previous decades, in the 1950s the city tripled its size. In those years, there were two urban conditions: the workers' city ('illegal' or 'abusive' city) and the middle-class city (Bossalino, 1992). The first, with spontaneous and peripheral neighbourhoods, was controlled by illegal rules. It resulted in an uncontrolled peripheral growth. Although most of them were demolished or renovated during the 1960s, the illicit building process continued for a long time.
The IACP produced 216.000 dwellings (between 1946 and 1950) over the country, but the true rise in building volume occurred in the beginning of the 1950's with the National Plan INA-Casa[10]. As a part of the Employment Act (law n.43 28/02/1949), its objective was to realize houses at controlled rents and increase the "blue-collar employment".
For two consecutive periods of seven years, the programme was developed at national level (di Biagi, 2001). The first period (1949-1956) was characterized by the use of traditional

7 INCIS is the acronym of Istituto Nazionale per le Case degli Impiegati dello Stato (National Institute for State employees housing).
8 The co-operatives have been active in the construction for low-income housing before the foundation of the IACP (1903). Between 1872 and 1900, they built Celio, Tiburtino, S. Croce and Porta Maggiore.
INCIS constructed housing for the middle-class employed by the government (Piazza Verbano), while IACP for low-income people (S.Saba, Testaccio, Monte Sacro and Garbatella).
9 In this period, the city centre was subjected to large demolition programs to make space for the new buildings of the fascism. People living in those areas were moved to the new semi-rural suburbs which were planned as a kind of independent satellite cities.
10 INA-Casa is the Piano incremento occupazione operaia. Case per lavoratori (Programme to improve the working class employment rate. Social Housing). INA-Casa, and afterwards GESCAL, were the two national public agencies managing public housing in Italy.

technologies and focussed at little apartments with simple floor plans. The second programme (between 1957 and 1963) benefits from the first prefabrication technologies and higher technical and functional quality of dwellings. The Plan addressed entire neighbourhoods (Di Giulio in Andeweg, 2007). In total, about 350.000 dwellings were constructed all over the country during the early post-war years.
In Rome, the 'quarter effect' is considered the most successful feature of this programme. It entailed a proper insertion of the new developments within the consolidated city. This was possible because of the application of traditional urban and housing concepts (Guccione & Segarra Lagunes, 2002). Some of the buildings realized in these years, have historical values and are called 'modern objects'[11].
This coherent adaptation to the existing city also resulted from a national conservative approach. In fact, although reinforced concrete technologies were already diffused, it was obliged the use of traditional technologies[12] and in this way it was possible to employ large segments of the construction sector. Thanks to the quality of traditional building technologies, most of the blocks realized in this period do not face similar deterioration processes that are associated with the buildings realized one or two decades later.

LATE POST-WAR II

From 1965 onwards, the State intervention was committed to GESCAL by means of zone-plans (Di Giulio in Andeweg, 2007). The neighbourhoods were built in partnership with prefabrication manufactures. The residential blocks built in this period are larger and more articulated. Housing types were standardized and different building types were often combined. The table on the next page summarizes the public housing agencies and theirs respective law, period, aim, financial sources and housing features.

P.E.E.P FIRST
P.E.E.P SECOND

In Rome, these developments found their way through two consecutive social housing programmes. These housing programmes were the first comprehensive planned implementations in Rome directed at both the urban and the building scales. Introduced in 1962 by the national law, the two P.E.E.P[13] covered one third of the expanding developments of the city. The first was initiated in 1964, the second in 1985. Regardiong urban and building layout, relationship with the surrounding and experimentation of innovative technologies, these programmes represent the breakthrough of social housing in Rome.

The law obliged all municipalities with more that 50.000 inhabitants to redact social housing programmes and fixed regulations to acquire the building sites. In Rome, because of the urgency in starting building works, available areas were chosen without a clear analysis of the urban shape and its relationships with the existing city. Therefore, most of the first neighbourhoods grew without physical connections with the rest of the city. Also implementation of the programmes was superficially managed. The local authority checked the application of urban standards without paying attention to the impact of the proposals. Moreover, since the costs were superficially estimated, it frequently happened that the blocks were completed without the required urban facilities.

The first P.E.E.P, scheduled for a period of ten years, housed 711.000 inhabitants by means of 72 urban plans (Piani di Zona). The building sites were mostly chosen among the areas of the expanding city. Eight neighbourhoods where planned to host 30.000 people (Rossi, 2000). Most of the interventions set by the first P.E.E.P. were realized between 1964 and 1975, the remaining during the implementation of the second program.
IACP, co-operatives, private companies and other groups participated in the construction of the dwellings.

In a short time, because of the ongoing expansion of the city, the new urban developments were incorporated into the city itself. Moreover, their innovative character was not much accepted by the residents, more used to the shape of the 'traditional city' (Moranti, 1988).Thus, all of those neighbourhoods designed as independent, mono-housing function and modern areas experienced a sort of ghettoization.

11 Tuscolano, for example, was designed between 1950 and 1954 by Adalberto Libera, a famous Roman architect. This quarter is very well-known thanks to experimentation of the "horizontal housing unit".
12 In the book "INA CASA (1949) Suggerimenti, norme e schemi per l'elaborazione e presentazione dei progetti", are listed the guide lines for the traditional production of the first INA-CASA dwellings (1949-1956). Instructions regarding the second production wave, 1957-1963, are described in "INA CASA (1949) Suggerimenti, norme e schemi per l'elaborazione e presentazione dei progetti"
13 P.E.E.P. is the acronym of Piano Edilizia Economica e Popolare (Social Housing Programme)

The limits emerging in the first P.E.E.P. were revised and corrected in the second. Major adaptations regarded location, size and function of the neighbourhoods were provided. They were defined as interstitial building sites within the consolidated city, introducing mix-use (offices, services and social and commercial facilities) and housed around 4.500 inhabitants (Rossi, 2000).

LAURENTINO38

PUBLIC HOSUING AGENCY	LAW	PERIOD	AIM	FINANCIAL SOURCES	HOUSING FEATURES [14]
INA-Casa	Law n.43/1949, n.1148/1955 for the National Plan INA-Casa	43-56	▪ Solve housing and employment problems involving public administrations, professionals and artisans. ▪ Promoting building activity	Workers, building firms and government	Guide lines ▪ Minimum housing requirements (30-90 m2 for 1-5 rooms); ▪ Function: separation from living and sleeping areas; ▪ Building elements: loggias and balconies. ▪ Average floor area: 50-60m2
	Law n.1148/1955 for the National Plan INA-Casa	57-63			Guide lines: ▪ Minimum housing requirements (50-110 m2 for 1-5 rooms); ▪ Function: separation of kitchen and living rooms; ▪ Shared Facilities: pillar on the ground floor ▪ Average floor area: 80-90m2
GESCAL	Law n. 60/1963 for GESCAL fund	65-80	Built social housing neighborhoods	Workers and employers	Regulations: ▪ Minimum housing requirements (64-112 m2 for 2-5 rooms). ▪ Prefabrication allowed more diversified typologies

LAURENTINO 38

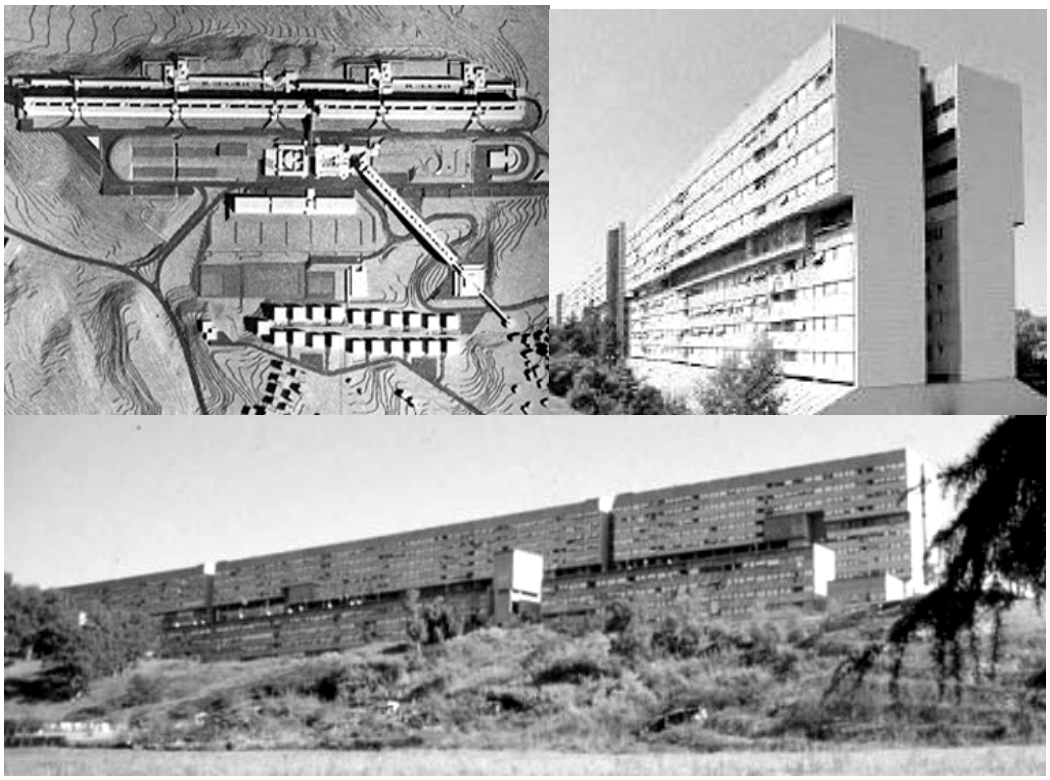
The urban plan of Laurentino38 was initiated in 1972 by the local municipality, GESCAL and IACP. Its implementation coincides with to other two large housing neighbourhoods, Corviale and Vigne Nuove. Each has its own experimental character: 'extensive urban expansion' (Laurentino38), 'urban healing in the periphery' (Corviale. See the pictures in the next page) and 'urban mending of the periphery' (Vigne Nuove) (Barucci et al., 1979).

A design group, composed by four departments, was formed to carry out the project[15]. The group leader of the building department was Pietro Barucci.
Objectives of the design of Laurentino might be summarized as follows:

OBJECTIVES

- Integrated relationship with the surroundings: services within the neighbourhood not only available on the local but also on the urban level;
- Independent character: self-sufficient neighbourhood;
- Enhancement of natural values: environment and archaeological remains;
- Housing meeting modern living requirements: emphasising collectivity. Ensure: public spaces, accessibility, urban – building - housing differentiation and size facilitating management

14 Acocella, A (1980) "L'edilizia residenziale pubblica in Italia dal 1945 ad oggi" and GESCAL (1964) Norme tecniche di esecuzione delle costruzioni con special riferimento alla progettazion
15 In particular, the four groups were: building department, structures and statistics calculations department, technical equipments department, and programming and costs department. To the building department took part de Rossi, Giovannini, Nucci, Sostegni.



BUILDIGN TECHNOLOGY

The size of the neighbourhood and especially the urgency of its implementation required quick building processes. It was necessary to use a technology satisfying the standards provided by law that also reduced constructive costs and allowed phasing of building works (Barucci et al., 1979). With respect to such constraints, the 'tunnel' form work seemed to be the perfect technology.
Since the late '60s to the '80s, it was very popular all over the country to build multifamily housing blocks (Di Giulio in Andeweg, 2007). This came from France and first experimented with in Rome in Laurentino38.

The technology compares to that described for the Bijlmermeer. A similar concept was used in Laurentino38 but, unlike the Bijlmermeer, in this case the ground floor is porticoed (section 7.1.1).
As mentioned, dwellings of Laurentino38 were designed according to the standardized span of the bearing structure. Thanks to the tunnel formwork, it was possible to produce one housing unit per day.

PHASING OF THE WORKS

The daily phases were the followings[16]:
- disarm previous tunnel and arm the next one;
- vertical placement of doors, windows, reinforcing bars and technical equipments;
- horizontal placement of reinforcing bars and technical equipments;
- blast of concrete and its accelerated maturation (by means of heat generator within the tunnel);
- installation of prefabricated (in situ) concrete elements: external walls (single panels), loggias[17] and stairs;
- final concrete blast;
- completion of infill, installations and facades (coloured plaster)

In this way, the in-line and the tower block could be finished in 64 and 56 days, respectively. After completion of the works with the tunnel, four months were required for finalizing works.

16Information about phasing of building works have been kindly given by Arch. Fantastichini (ATER Roma) working on a research on Laurentino 38 on behalf of La Sapienza University, Roma. A book on this subject will published soon.
17 The loggias are composed by two separated parts: an horizontal element (floor and parapet) and a vertical element (closure wall with door)

7.1.3 QUALITIES AND GROUP OF PROBLEMS

PROBLEMS ON NEIGHBOURHOOD LEVEL

Most of the people tend to come to the inevitable conclusion that the spatial concept of the Bijlmermeer is the most important cause of its decline (see Chapter 4, section 4.2.3). This is also true in case of Laurentino38 as emerges in documents from the public body (Municipality of Rome) in planning the restructuring of the neighbourhood.

Using different sources the major aspects causing the current deterioration of Laurentino 38 were grouped. These sources are: an article written by Pietro Barucci, identified in the table in the next page as "P.B.", and two documents for the restructuring of the area produced by the Municipality of Rome that are the Program for Urban Renewal "PRU" and the Neighbourhood Contract "CQ"[18].
The table in the next page shows that the mentioned problems relate to the management of the building process, building technology, integration of physical characteristics with the surroundings, and the mutual relationship of the blocks and the target group. The final product, and in particular its features and its integration within the existing context, are usually perceived as the most relevant problems. However, the spatial relationships of the blocks, the technology used for the bearing structure and tenure are mentioned only by the architect and seem to be perceived as less important by the institutions.

Leferink mentioned massiveness and monotony, identical estates, excess of open spaces, rigid division of functions and intangible size and scale as the major (physical) misfits of the Bijlmermeer (see Chapter five, Section 5.1.3). Wassenberg integrated them with additional groups of problems: liveability, demand and supply, and unfinished character. From the table on Laurentino38, it appears that separation of functions and liveability are present in both neighbourhoods.

NO INTEGRATED INITIATIVES

Two of the sources used in the table are documents written to finance renewal on neighbourhood level (CQ and PRU). No analyses underscored the presence and relevance of mentioned problems. However, the table shows a discrepancy between those problems mentioned by PRU and CQ. This identifies one of the difficulties in managing restructuring neighbourhoods based on sharing knowledge and objectives, namely, lack of integrated initiatives.
In addition to this weakness, that clearly reflects the quality of both proposals, another weakness is that of the ambiguous responsibility of each body. In Laurentino 38, for example, there are two types of open spaces, the public and the semi-public areas (corresponding to the 'parks' nearby the insula and the green between the single blocks). In the past as nowadays, the areas decay because it is not clear which party is be responsible for it (the Municipality or ATER, pers. comm. Cocchia, 2007[19]).
Unlike the Bijlmermeer where inquires were made, the lack of data and scientific investigations in Laurentino38 makes it difficult to describe the actual problems and requirements.

NO ANALYSIS

18 The three source are:
1) Barucci, P. (1979) "il laurentino: un quartiere coordinato a roma, in "spazio e societa'" march, n.5;
2) di Giovine, M., Cocchia, S. M. (200?) "Contratto di Quartiere Laurentino" in http://urbact.eu/fileadmin/subsites/participando/pdf/079_en.pdf (visited in 2007);
3) Comune di Roma, Dipartimento VIi – Ufficio Progetti Urbani (2001) 'Programma Definitivo di Intervento. Laurentino38'
19 Arch. Cocchia is employed in the Dipartimento XIX - Politiche per lo Sviluppo e il Recupero delle Periferie (Policies for Development and Renovation of Peripheries) of the Municipality of Rome. He is focusing his work on Laurentino38.

PROBLEMS	WHO		
	P.B.	CQII	PRU
PROCESS			
MANAGEMENT			
▪ Gap between optimistic expectations of the plan and implementation of the neighbourhood (assignments, design methods and execution process)	X		
▪ Size of the intervention influenced its implementation			X
▪ Size of intervention influenced infrastructural integration with the surroundings			X
BUILDING TECHNOLOGY			
▪ Successful building methods in contrast with fragmented and uncoordinated process	X		
▪ Effective building technology was not as convincing as the final design solutions	X		
PRODUCT			
INTEGRATION			
▪ Isolated elements (insula, archaeological remains and natural reserve)	X	X	
▪ No integration with surrounding neighborhoods		X	
▪ Failure ring road (circular path constrains connections)		x	
▪ Failure bridge building (distinction of traffic and pedestrians, abandonment)		X	
▪ Failure insula (separation of single insula)		X	
▪ Extensive neighborhood overloads obsolete infrastructure of central neighborhoods			X
▪ Marginality of local public services		X	
▪ No valorization of natural and archeological surroundings		X	
▪ Lack of public spaces to meet (central spaces like squares)		X	
SPATIAL RELATIONSHIP OF BUILDINGS			
▪ Unbalance between high and distance of the blocks	X		
BEARING STRUCTURE			
▪ Rigidness of tunnel technology constrains flexibility of dwellings.	X		
TENURE			
▪ Rented housing limited to low-income people restricted the neighborhood to one social group			X
▪ Social rented housing for lowest-income people contributed to decrease of social safety			X

PROBLEMS OPINION OF BARUCCI

Based on an interview with Pietro Barucci, the following weaknesses are to be mentioned:

▪ Gap between optimistic expectations of the plan and implementation of the neighbourhood.
Institutions were untrained for managing such an experimental project. The Municipality was corrupted, lazy and modest. The same was true for the companies involved in the implementation. In this context, it is clear that dualities not only apply to the institutional but also the personal level. This reflected on the management of the process.

▪ Failure ring road (a circular path that constrains physical connections).
Problems related to the ring road stem from the broader concept. This not only involved the design of vehicular traffic but also pedestrian paths, and accessibility to the buildings. The street was thought as a service and not as an element contributing to the urban quality of the neighborhood.

▪ Marginality of local public services.
Location of facilities was academically experimented. It was inspired by examples from abroad. Nowadays, indispensable commercial activity on local level is an obsolete concept. People prefer commercial centres. Therefore, small businesses have difficulties in surviving.

▪ Lack of public spaces for people to meet (central spots like squares).
People did not appreciate the presumed advantages of making use of 'domestic organization' of open spaces. Rather, they still claim the 'city effect' made by shops, crowded lanes, buildings with front door and life in the street. They never accepted the experimental character of the neighbourhood. The same reaction, in fact, emerged in Corviale. However, there is a difference according to educational level of people. The higher educated people were more inclined to appreciate advantages of modernity.

▪ Rigidness of tunnel technology constrains flexibility of dwellings.

Design of dwellings was strongly driven by technology. Location and size of the rooms was often a mere result of a combination of standard modules. This is a conceptual mistake. Even if the final product is quite satisfying, a problem is future adaptability of dwellings.

It worth mentioning similarity in the comments done by the respective professionals about both Bijlmermeer and Laurentino38. Concerning the Bijlmermeer, in fact, Wassenberg concluded that 'most of the planners' ideals changed into disadvantages' (Wassenberg, 2007). Barucci came to a similar conclusion speaking about Laurentino38, 'the best strengths of yesterday are the worst of today'. People living in Laurentino38, are still criticizing those aspects the designers thought of as high standards for quality of living.

WEAKNESS AND STRENGHTS ON BUILDING AND DWELLING LEVEL

To address physical quality of buildings and dwellings (functional and technical) information from literature (Housing statistics in the EU, 2004), results of questionnaires send to employers of ATER, the group leader of the building department of Laurentino38 Pietro Barucci and residents are here combined. All the major problems were grouped into functional, technical and social quality.

▪ Functional quality

FLOOR PLAN

Floor plan. Dwellings in Laurentino38 are very spacious. Of the 2964 dwellings built by ex-IACP, the average floor area is 93,42m2 (Barucci et al., 1979). This is above the average floor size of Italian dwellings in 1991, being 90.3m2 (Housing statistics in the EU, 2004). The same applies to the size of the average dwelling in the Bijlmermeer with 41% to 49% of dwellings have floor sizes of more 80m2 (Aalbers, et al., 2003).
This floor size in Laurentino38 was possible thanks to the national standards for social housing fixed in the '60s. By means of strict norms based on the requirements at that time, they controlled minimum quality of living, design and construction. For instance, dwelling size, number of rooms, windows surface and projections were controlled. Number of rooms varies from 1 to 4. The bigger dwelling is 112 m^2 (see section 7.1.1).
The Italian family nuclei changed in the last years, thus floor size and plan need to be adapted to current requirements. The following table describes the structure of Italian family nuclei living in social housing in 1992. In the early '90s, singleness was already a problem. Families composed by one person were more than 50% (mostly elderly)[20]. This shows the need for adaptation the current housing demand. Since most of the dwellings in Laurentino are very spacious, the choice of dividing some of the units might be considered. This would increase the supply in terms of number of available dwellings and suitable types.
Despite constraints due to the tunnel, the average floor plan is well organized and sufficiently lighted. In particular, according to Barucci, the quality of the in-line block is higher thanks to the double orientation and the clear distinction of night and day rooms. Floor plans of the towers are less functional, because the concentration of night rooms on the borders subtracts daylight from kitchen, living rooms and toilet. The kitchen, living rooms and toilets are centered at the inner core of the block. Consequently, these rooms are colder during winter. Residents are aware of the functional quality of their dwellings.

EQUIPMENTS

Equipments. Based on direct inspections within one dwelling in the in-line block and four in the tower and observation of floor plans, technical equipments might be considered sufficient. All dwellings have at least one spacious bathroom, with shower or bath (often both), a kitchen and in many cases more than one loggia.

INSTALLATIONS

Installations. Condition of technical installations is rather low. They should be substituted, especially the water and gas system. To be able to intervene in case of further damages to the pipes, people often do not definitively fix the walls.

VIEW

View. A feature worth to be mentioned is the view on the surroundings. This particularly applies to dwellings in the towers where it is possible to see the city. Residents do really appreciate this view.

20 AA.VV. (1992) Trasfromazioni sociali e demografiche e nuove esigienze abitative

FAMILY COMPOSITION	NUMBER OF COMPONENTS %									
	1	2	3	4	5	6	7	8	9	total
Single (mostly 70 years old)	52,19									**52,19**
Couple		12,91								12,91
Complete family			5,02	3,2	2,24					10,46
Incomplete family		5,80	3,35	0,97	0,45	0,17	0,06			10,80
Extended family			1,65	4,62	4,59	1,65	0,85	0,23	0,06	**13,65**
Total										100

▪ Technical quality

The existing envelope was realized in prefabricated concrete panels attached to the bearing structure. Each panel, reinforced by a double layer of steel bars, is provided with 5cm thermal insulation on the inside (polystyrene). Steel window frames with single glazing were used. The external side is alternatively finished with paintings or coloured plaster.

MOISTURE

Moisture. According to Di Giulio, moisture is a big issue in Italy, especially inside the blocks. In general, this is caused by low quality of finishing and ineffective ventilation in the rooms where the moisture itself is produced (bathrooms and kitchens) (Di Giulio and Brunoro, in Andeweg, 2007).
This problem also affects Laurentino38. Here the state of decay is even worsened by the absent/low quality maintenance over the years. As a result of qualitative inspections of the blocks, it could be said that among the most common factors affecting facades of Italian social housing estates as identified by Di Giulio and Brunoro, the following are present in Laurentino38: crumbling of plaster, steel bars corrosion, removal of cladding, corrosion of window frames, and attack of biologic moulds.
Because of the lack of air transpiration due to the concrete walls, damp stains in bathrooms and kitchens are strongly claimed by the residents. They should be advised that opening windows would help. Also roof conditions are very low. Especially in the towers, many dwellings suffer from water infiltration from the ceiling. This decreases security within single dwellings as well as causing stains on the walls.

THERMAL INSULATION

Thermal insulation. Low-performance and obsolete window frames and glazing cause air penetration. Together with characteristics of the envelope, thermal insulation is not satisfying. Residents claim very cold rooms in winter, especially residents living in the towers being more subjected to the wind. This is clear for two main reasons. Firstly, the budget available at the time constrained the building expenses to the detriment of the constructive quality. Secondly, the first Italian law concerning minimum requirements of thermal insulation was defined in the beginning of the '90s. Thermal insulation and comfort for working and living units are regulated by the "Energy saving law" (L.373/1976, then L.10/1991 and D.M. 2005). The DPR 26/08/1993 defines so-called 'climatic zones' that are categories, which each areas has to refer to calculations, grouped on base of degrees-days. Finally, D.M. 192 18/08/05 "Energy Efficiency of Buildings" fixes energy requirements for buildings (measured in W/m2year) in relation to the climatic zone. It also defines standard transmission values (U=W/m2K)
Roma is located in zone D, thus the values showed in the table below apply.
The U value of single layer concrete panels is usually 0,8. Assuming this reference value in Laurentino38, adaptations of the building envelope are strongly recommended to decrease the value itself to 0,4 in 2009. (Di Giulio and Brunuoro in Andweg, 2007).

NOISE INSULATION

Noise insulation. According to the technical characteristics described by the architects, it might be assumed that noise insulation is absent. At the time of construction, building regulation did not impose any noise insulation (first law in Italy, 1995). The standard of 40 Db might be obtained with external walls thicker than 25cm (Di Giulio and Burnoro in Andeweg, 2007); in Laurentino38 the concrete panel alone is only 15cm. Moreover, prefabricated concrete panels and quality of windows increase acoustic conductivity. Thus, adaptations of the envelope should also improve acoustic performances.

DAYLIGHT

Daylight. As mentioned, the average dwellings are well lightened, especially those in the in-line blocks. However, solar shadings are absent all over the neighbourhood. On the other hand, according to Barucci, rooms in the towers are too deep for permeability of natural daylight. Residents perceive this as well. Some inhabitants, changed floor plan of their

dwellings even if they are just renting it. In particular, as appeared in direct inspections, residents in the towers themselves changed and paid for works to replace the kitchen with the bedrooms or realize openings in the walls to let the light enter the room.

Residents complained about low quality of all interventions implemented by ATER to improve the quality of the dwellings and the building on the whole. Concerning interventions made to the existing facades, the same problems reoccurred shortly after interventions.

Façades (in 2006)	Façades (in 2009)	Windows (in 2006)	Windows (in 2009)	Single layer concrete panel (1965-1980)	Multi-layer sandwich panel
U=0,5	U=0,40	U=3,1	U=2,8	U=0,8 (20cm)	U=0,6y

▪ Social quality

From direct site inspections, interviews and informal meetings with residents, a number of social aspects emerged that are worth to briefly describe.

SAFETY

Social management. People strongly complain about failure of overall social management. They do not feel safe at all because of the number of crime incidents in the last years. Control by police is almost absent.
ATER is incapable of managing arrearage and especially squatting. An illegal network controls apartments that are immediately occupied as soon as they are empty. According to the residents, it even happens that dwellings are occupied when tenants are hospitalized. Thus, most of the people, especially elderly, are afraid of leaving their apartment for overnight stay, or to go on holidays.

Social safety. Drug addicted are present in the neighbourhood and booster criminality. Since they were concentrated in the demolished bridge building, people hope partial demolition would solve the problem. However, it is still too early to judge.
Clearly, criminality reinforced the bad reputation and unattractiveness of the neighbourhood. With this respect, also media attribute by publishing bad facts[21].

Social cohesion. It is worthwhile to mention that residents do really care about their neighbourhood, especially value social relationship that grew over the years. They found their way to trust the neighbours and built strong social networks.
In some case, as it happens in other deprived neighbourhoods in Rome, the public green nearby the blocks is directly managed by the inhabitants. They personally take care of open spaces even if this is is a responsibility of the Municipality. Open and shared spaces, in fact, are often so deprived that people decides to improve it themselves.
Despite all the mentioned difficulties, social cohesion is very strong. Together with green and favourable location, it is often mentioned by the residents as the most important quality of Laurentino 38.

21 In a way, Laurentino38, together with others large housing estates like Corviale, was chosen by the media as one of the icons of deprived neighborhood. This Roman estates are often on newspapers for complains about the housing policy, actions undertaken by ATER and crime facts. Clearly, all of this reverberates on people living honestly.

7.2 NO RENOVATION?

7.2.1 RECENT DEVELOPMENTS

IMPROVING QUALITY OF NEIGHBOURHOODS

In the last decades, two main actions were undertaken by the Italian government to improve the quality of deprived neighbourhoods like Laurentino38 (Di Giulio in Andeweg, 2007). They are:

- PRU: the new Italian law on Urban Refurbishment, (Programma di Recupero Urbano) provided by art.11 law n.493/1993)
- CQ: the ACT on Neighbourhood Contracts, CQ (Contratto di Quartiere), provided by the D.M. (30/12/2002) for regeneration of neighbourhood heavily affected by social, economic and physical decay.

Laurentino38 was proposed by ATER Roma and the Municipality of Rome as one of the neighbourhoods to get funds for CQ II (D.M. 30/12/2002). The neighbourhood obtained funds for the proposed urban and building restructuring.
Currently, both programs are under implementation. The first, allocated 230 million euros while the second comprises 10 million euro (see table below where financial sources, aim and actions of each program are briefly described).

ACTION	FINANCIAL SOURCES - SCALE	GENERAL AIM	MAIN INTERVENTIONS
PRU	▪ Private and public financial sources. ▪ Acts also outside the neighborhood	Urban renewal: functional and social integration of the neighborhood with the surrounding areas	New construction (tertiary centre on urban level close to the neighborhood). Acquisition of private areas within the natural reserve.
CQ	▪ Integrates PRU with public funds. ▪ Acts within the borders of the original plan (PdZ)	Urban transformations based on participation of residents and other associations	▪ Renewal of the ring road (new streets, renewal of existing streets, cycle and pedestrian routes) ▪ Renovation by means of partial demolition (demolition of bridge buildings in SW insula 9-10-11) ▪ Socio-economic renewal of bridge 6-7-8 by addition of new function (new services) ▪ Improvement of historical and natural qualities (farmhouses, public spaces with facilities, archeological remains)

DEMOLITION OPINION OF RESIDENTS

In May 2006, the demolition of the 11th bridge building started, being the first to be pulled down. Demolition of both the other two bridges in the Southwest sector, the 9th and the 10th, will costs another 5 million euros[22]. The demolished volume is supposed to be substituted by new housing for special groups (young couples and elderly). So far, despite high costs for demolition, the action revealed to be quite successful, at least from a social point of view. From social and technical point of view, in fact, these insula were considered by the residents the most deprived of the neighbourhood.

During the inspections, residents were asked two questions:

1) Are you satisfied with the demolition of the bridges?
2) Do you agree with this solution or would you have suggested other priorities for spending money?

It emerged that residents are quite satisfied with the demolition. They thought it was a good solution for the criminality affecting the neighbourhood, being particularly present in these

22 www.eng.regione.lazio.it (visited in 2007)

bridges. They also mentioned the removal of antigenic and fetid effects caused by malfunctioning of technical equipments in the squatted rooms.
Clearly, those people living nearby the demolition site feel more satisfied because they can experience the intervention. People living in other insula complained about using financial sources for specific interventions rather spread them over the neighbourhood[23].

RE-PAINTING OPINION OF RESIDENTS

Demolition of the bridges was financed by the Region for a total of 7 million euros. Together with other interventions, in 2005 funds were used to repaint some of the bridges using recognizable colours (from the 1th to the 8th)[24]. People were asked to express their opinion on the repainting. Some appreciated the attempt to create a kind of recognizability using colours instead of numbers, but others complained about the short-term value of the solution. More importantly, it emerged that interventions implemented so far are mostly concentrated on common facilities rather on housing blocks where liveability problems are more urgent. Some people living in the Southwest sector also complained that even recent renovations, especially on the concrete panels of the façade, are again subjected to physical decay.

The cooperatives are renovating the existing façades of their blocks. Small panels with thermal insulation are fixed on the outside. Works are under completion, thus it is too early to assess their effectiveness, especially at the technical level (these information is updated on July 2007). However, at least from aesthetical point of view, this intervention provides the block with a quite satisfying 'just renewed image', especially when compared to the rest of the neighborhood.

7.2.2 PROFESSIONALS VS INHABITANTS

To qualitatively address 'on what major aspects people think money for renovation should be spent first', four questions were posed to a group of residents. Then, the same questions were also posed to the architect Pietro Barucci to verify to what extent the two parts agree on the purpose of renovation.[25]
The questions are the followings:

1. *If you received funds to renovate your dwelling, what are the first three major aspects you would like to spend money on?*
2. *If you received funds to renovate the whole building, what are the first three major aspects you would like to spend money on?*
3. *If you knew about a social rented housing block that was built nearby, would you pay higher rent for a dwelling in that block being larger than yours and in very good conditions?*
4. *Assume ATER decides to renovate your block and you are elected by sitting tenants as a consultant for ATER itself. How would you prioritize the following items?*
    - *Building aesthetics (like new façade, loggias, ground floor, entrances and roof)*
    - *Energy consumptions (like update of electrical, heating and cooling system)*
    - *Floor plan of dwellings (like different size and location of rooms)*

Thanks to the local association of residents[26], it was possible to meet a number of tenants renting a dwelling in the in-line and tower blocks. The role of the committee was fundamental to establish a connection with the single inhabitants. In fact, due to social

23The questions were asked to a mixed group of people living in Laurentino during an informal meeting (between 4 and 8 people). Therefore, the reported answers have a qualitative and general value. However, they can contribute to understand how the solutions are perceived by the residents.
24 www.rampelli.it/articolo7.html (visited in 2007)
25 One tenant in the in-line and two tenants in the tower block have been interviewed. This is a very small group but two of them are member of the residents' association, thus were able to represent not only their own opinion but also those of their neighbors.
During the inspections it was possible to visit five dwellings in the tower, which are those in the worst physical conditions. Additional information have been collected in the informal brief encounters.
26 The association of residents in Laurentino38 is called the 'resident association ATER Laurentino – Fonte Ostiense'. Founded in 2006, it is a voluntary non-for profit association of people intended promoting and protecting so-called 'right of housing' (Diritto alla Casa). www.laurentinofonteostiense.it (visited in 2007)

problems in the neighborhood (section 7.1.3), there was a diffuse sense of suspiciousness. Even if accompanied by neighbors, it was often difficult to enter the dwellings or speak to the people. However, as soon as they feel confident, they demonstrate high interest in sharing experiences and discussing about their dwellings and Laurentino38 on the whole.

▪ Opinion of residents

MAJOR ASPECTS OPINION OF RESIDENTS

It emerged that the order of aspects on which people would first spend money on, are:
- technical installations: mainly because of safety. Often the systems need to be updated;
- thermal insulation and heating system: people have to pay energy consumptions apart from the rent, therefore this would save them money;
- External deterioration of the envelope: it is a factor to be threatened by the renovation, but according to their comments, it is not as relevant as the other factors.

Opinions concerning the envelope seem to change when people consider renovation of the whole building rather than dwellings alone. In this case, in fact, physical conditions of the façade are on the top of the list. The three most important elements that would require renovation are:
- building façade (against fall of cladding, corrosion of steel bars and thermal insulation);
- roof (water infiltration within the dwellings);
- elevators (a few do not obey the law for accessibility of disabled). People also complained about the green nearby single blocks that requires higher level of maintenance.

Surprising is that residents will not move from their dwelling even if they would have the chance to live in a new flat paying the same rent. People state this without any doubts. The explanation given is related to the solid and trustworthy social network built during the years. Moving elsewhere would mean risks in shifting from nice to dangerous neighbors. Social relationships are so important that people would prefer trustworthy neighbors at the expense of low housing quality. However, the interviewers are considered by others as living in the 'lucky blocks'. Elsewhere in the neighborhood, in fact, social relationships are not so strong.

Residents would prioritize items for renovation in this order:
- energy consumptions and building aesthetics;
- floor plan of dwellings.

Surprisingly, they did not mention external appearance of the block as the last factor to be threatened by renovation. During the interviews, in fact, it emerged that they would appreciate measures directed to diversify the buildings. More, people seem to perceive energy consumptions as important as aesthetics.
Adaptation of floor plan is not mentioned as a problem. This is clear considering the good functional quality of dwellings (see Section 7.1.3). Inhabitants are conscious about this. However, when changes of floor plan will be undertaken to adapt the flat to new requirements and if they can afford them, people will spend their money on transformations. Despite this is not provided by law, they consider it as a kind of long term investment being the house a good their sons can 'inherit'.

▪ Opinion of architect

MAJOR ASPECTS OPINION OF BARUCCI

As mentioned before, the same questions were posed to Barucci whose answers are naturally focused on design aspects. He had often been accused being responsible for the failures of Laurentino38. His personal comments mostly compare to those described after the completion of the works (Barucci 1979, Barucci et al., 1979). However, new aspects emerged, especially when discussing envelope directed renovation approaches.

With regard to the first question on renovation of single dwellings, he would first spend money on better management of technical equipments. Elevators, for example, are fundamental to enjoy the dwelling. Then, unlike residents, he mentioned adaptation of the existing floor plan. The layout of especially flats in the tower should be adapted. More in general, all dwellings should ensure higher levels of flexibility for future adaptations. The fourth factor he listed, is adaptation of existing façade to current standards.

The answer to the second question does not address the building itself but includes the whole neighborhood. According to Barucci, better asset management, particularly of facilities

and green areas, is crucial. Open spaces left on their own decay soon and problems immediately affect the neighborhood as well. He stated that the precondition of any change is the shift in the management model of the housing association. With this respect, he also claimed the role of policy, institutions and ATER Roma itself. He prioritized major aspects on which spent money in this order:

- change the asset management (focusing more on open spaces);
- return to the urban tissue (make the neighborhood more similar to the traditional city bringing life back to the street); and add commercial centers instead of shops on local level.

In principle, if renovated, he would move to a social rented dwelling in Laurentino38. However, he would prefer to move its studio there rather than renting an apartment. In fact, the location of Laurentino38 within the city is particularly convenient, as the area is well connected to the rest of the city by public transport.

Because of the indubitable relevance, he did not prioritize factors like aesthetics, energy efficiency and housing differentiation. Rather, he would suggest an integrated approach to renovation. But he also mentioned that an integrated approach in the current context would be very difficult, but not impossible to implement. Like architects of ATER, he also claimed the formulation of ad-hoc regulations. Both Barucci and the general director of ATER argued that implementation of experiments would be also subjected to the lack of cultural competence.

Considering all answers, some observations could be made:

- Residents and architects will not spend money for renovation of dwellings on similar items. Inhabitants would mainly improve technical equipments, while the architect would try to solve problems on a higher level like, for example, management of common facilities and open spaces. Both parties mentioned adaptation of existing facade to current technical requirements as a relevant issue (especially thermal insulation).

- Divergences emerged concerning the building parts to be renovated. Unlike the architect, residents would again solve technical problems, like deterioration of external side of the facade or water infiltration. Improvement of building façade is mentioned on the top of the list.

- Different opinions also emerged concerning willingness of people to move elsewhere. Priority for residents is social relationships for which they could accept technical or functional defects of dwellings. The architect would move there only to work.

- Both agree on combining energy consumption and aesthetics for physical renovation of buildings, but residents does not claim the need of readapting floor plans.

The following table summarizes all the factors and their order as mentioned by both inhabitants and architect.

QUESTION	ANSWER	
	RESIDENTS	BARUCCI
1) If you received funds to renovate your dwelling, what are the first three major aspects you would like to spend money on?	1. Technical installations 2. Thermal insulation 3. Heating system	1. Management of shared facilities (like elevators). 2. Adaptation of existing housing types. 3. Change tenure 4. Readapt existing façade to current regulations and requirements

2) If you received funds to renovate the whole building, what are the first three major aspects you would like to spend money on?	1. Building façade (against fall of cladding, corrosion of steel bars and thermal insulation) 2. Roof 3. (water infiltration within the dwellings) and elevators (a few do not obey the law for accessibility of disabled) 4. Green (not only self-maintenance of green nearby single blocks but extended maintenance	1. Change management model (focus on open spaces); 2. Return to the urban tissue (make the neighborhood more similar to the traditional city: life in the street); 3. Commercial centers instead of shops on local level
3) If you knew about a social rented housing block that was built nearby, would you pay higher rent for a dwelling in that block being larger than yours and in very good conditions?	Absolutely not	In principle yes, but prefers to move its studio
4) Assume ATER decides to renovate your block and you are elected by sitting tenants as a consultant for ATER itself. How would you prioritize the following items? ▪ Building aesthetics (like façade, loggias, ground floor, entrances and roof) ▪ Energy consumption (electricity, heating and cooling) ▪ Floor plan of dwellings (different size and location of rooms)	1. Energy consumption and building aesthetics 2. Floor plan of dwellings	Combination of energy consumption, building aesthetics and floor plan of dwellings

7.2.4 MAINTENANCE IN LAURENTINO 38

In Rome, as well as in Laurentino38, interventions to improve the physical quality of deprived large housing estates do not compare to the Dutch practice. As explained in Chapter 4 (see section 3.2) current practice in Italy, and particularly Rome, are merely dominated by maintenance. Major interventions and repairs seldom occur.

To gain more insights into the 'maintenance' practice of ATER and Laurentino38, the following questions were posed to architects employed at the Technical Department of ATER:

- *How is the maintenance process in Laurentino38 managed?*
- *What physical measures are usually applied to improve the quality of the blocks?*
- *Are there any measures to be recommended for future implementations or factors that might deserve further attention?*

MAINTENANCE PROCESS IN L38

The parties involved in the 'maintenance' process of Laurentino38 are technical experts employed by ATER, private enterprises (by means of tender) and the association of residents. However, residents rarely have a say. The Technical Department is the main body driving implementation of maintenance.
Like all other large housing estates, ATER does not employ a standardized procedure to define their intervention strategy. Basic solutions are usually implemented to get a minimum result at minimum costs.

The approach, so-called 'standard maintenance', is based on 'state of emergency'. Single interventions and their priority are listed on base of notifications by residents. Whenever there is a problem, people make a phone call to the office charged with collection of complains. Afterwards, according to the relevance of the problem itself, ATER will order to fix the problem as soon as possible. Indeed, this is the standard procedure adopted in all the neighbourhoods managed by ATER.

Ecological objectives are not implemented in the neighbourhood. A Sub-Department for Sustainable Buildings is charged with implementation of green measures, but it is focused on circumstanced cases. With this respect, there are no examples in Laurentino38. Standards

for energy savings are regulated by the national law on the building stock on the whole (Law 10 n. 46/1990).

Clearly, because of their costs and urgency in solving basic problems and damages, additional improvements, like those directed at the functional quality, are not listed on the agenda. This explains why interventions like, for example, adaptation of housing supply and improvement of building recognizability are not implemented at all.
The only attempt to differentiate the *insula* involves external paintings of the blocks (see Section 7.2.1). The Technical Department investigated alternatives for repainting the facade of the bridge buildings with different colours. This helped to distinguish the red bridge from the blue or the yellow one. Additional finances for restructuring of Laurentino38 came only from CQII. But they do not substantially finance renovation on building level.

PHYSICAL MEASURES IN L38

Physical measures on building and dwelling level did not improve the quality of the blocks. Also, they did not alter the initial characteristics. Clearly, this means no changes of type and size of dwellings, nor the accessibility of the building.
The most common interventions regarded rehabilitation of concrete panels, repainting, restoration of roofs and demolition of the bridge buildings.
Technical interventions implemented so far only concerned improvement of thermal insulation of the blocks owned by the cooperatives (financed by regional funds and not included within the group of buildings managed by ATER).
No methods were used to assess quality of dwellings, but a group of technicians is updating conditions of the whole housing stock managed by ATER.

Despite their efforts, buildings and dwellings conditions are not up to date.
According to a technician of the Technical Department the following items should be dealt with in future interventions: water supply, structural problems (especially stability of the blocks), sewerage system, thermal insulation of existing façade (following the example of the cooperatives but solving thermal bridges and also substituting window frames and glazing), management of public spaces and realization of all the facilities foreseen by the master plan (they were not completed).
The fact that Laurentino 38 got additional funds for renovation (CQII and PRU) did not imply any structural change in intervention strategy. Actions are still very superficial and focused on solving limited problems. There is a lack of integration of interventions.

It is worth mentioning that factors listed as deserving further attention are those that in principle should to be dealt with to guarantee minimum quality of living: water supply system, structural stability and thermal insulation. Those factors underscore again the size and relevance of the problem of renovation of social housing in Rome (See Chapter 3, section 3.2).
Therefore the question that still arises is: what would be the best strategy to restructure neighbourhoods like Laurentino 38 and change these neighbourhoods into nice places to live in?
Considering the current context, there is no answer to this question. Indeed, the priority is not on strategies for single neighbourhoods, like Laurentino 38, rather on substantial transformations of the entire system (see Chapter 3). These changes are strongly related to political power at a regional level. As it is structured now, ATER could not do much more.

CONCLUSIONS

In this chapter an example of deprived large social housing estates in Rome was presented. Its physical characteristics and the historical background (mostly related to developments of social housing in Rome) were presented in the first section.

To investigate problems at the neighbourhood level, three sources were used to analyse the problem. That is: an article by the architect Pietro Barucci (the group leader of the Building Department of the realization of the Laurentino38), and two documents on the restructuring of the area by the Municipality of Rome, i.e. the Program for Urban Renewal “PRU” and the

Neighbourhood Contract "CQ". In a table, all problems identified by these sources were summarized. It includes factors like spatial relationships of the blocks, the technology used for the bearing structure and tenure. Some of these problems were only mentioned by the architect and seem to be considered less important by the institutions.

In an interview, Pietro Barucci listed and explained the following issues, in hhis view being the major failures of Laurentino38:

- Gap between optimistic expectations of the plan and implementation of the neighbourhood.
- Failure ring road (a circular path that constrains physical connections).
- Marginality of local public services.
- Lack of public spaces for people to meet (central spots like squares).
- Rigidness of tunnel technology constrains flexibility of dwellings.

There are similarities in the comments of professionals about both Bijlmermeer and Laurentino38. Concerning the Bijlmermeer, in fact, Wassenberg concluded that 'most of the planners' ideals changed into disadvantages' (Wassenberg, 2007). Barucci came to a similar conclusion speaking about Laurentino38, 'the best strengths of yesterday are the worst of today'. People living in Laurentino38, are still criticizing those aspects the designers thought as high standards for quality of living.

To address physical weakness and strengths on building and dwelling level, information from literature (Housing statistics in the EU, 2004), results of questionnaires send to employers of ATER and interviews with Pietro Barucci and residents were combined. All major problems were grouped into functional, technical and social quality.

- Functional quality

  Floor plan and equipments. Quality in terms of size and equipments of dwellings is satisfying. Dwellings are spacious (up to 112m2) and those in the towers are with double exposure (view from two sides of the building, usually front and back). Often, they have more than one loggia. They are even larger than the average dwelling in the Bijlmermeer (80m2). All dwellings in Laurentino38 have at least one bathroom, with shower or bath, and double loggias. However, the layout needs to be adapted to the new requirements of Italian family, now dominated by households with one person (singles and elderly).

  Installations. Condition of technical installations is rather low. They should be substituted, particularly the water and gas system. Often, people do not definitively fix the walls to make it ready to fix future damages.

  View. It is much appreciated by residents. The towers present a nice view over the city of Rome.

- Technical quality

  Moisture. Moisture is a big issue in Italy, especially inside the blocks. Due to low or absent maintenance in the past, this is true in Laurentino38. Clearly, this is particularly evident in the kitchen and the bathroom. Factors affecting the facades are: crumbling of plaster, steel bars corrosion, removal of cladding, corrosion of window frames, and attack of biologic moulds.

  Thermal insulation. Low-performance and obsolete window frames and glazing cause air penetration. Residents claim very cold rooms in winter, especially the dwellings in the towers are more prone to wind.

  The U value of single layer concrete panels is usually 0,8. Assuming this reference value for Laurentino38, adaptations of the building envelope are strongly recommended to decrease this U-value to 0,4 in 2009. (Di Giulio and Brunuoro in Andweg, 2007).

  Noise insulation. Noise insulation of the façade is absent (first law in Italy, 1995). The standard of 40 Db might be obtained with external walls thicker than 25cm (Di Giulio and Burnoro in Andeweg, 2007), but the concrete panels in Laurentino38 are is only 15cm thick. Together with low quality of windows they increase acoustic conductivity.

  Daylight. Dwellings are well lightened, especially those in the in-line blocks. Barucci claimed rooms in the towers are too deep for permeability of natural daylight. Residents perceive this as well. Some inhabitants adapted the floor plan of their dwellings in towers, even though they just rent it.

Residents complained about low quality of all interventions implemented by ATER. Concerning the renovation of the facade, for example, the same problems occurred shortly after intervention.

- Social quality

  Social management. People strongly complain about failure of social management by ATER. They do not feel safe at all because of the number of crime incidents in the last years. Control by police is almost absent and ATER is incapable of managing arrearage and especially squatting. An illegal network controls apartments that are immediately occupied as soon as they are vacant (even when people go on vacation or are hospitalized).

  Social safety. Drug addicted are present in the neighbourhood and booster criminality. This reinforced the bad reputation and unattractiveness of the neighbourhood. The media contributes by reporting on this topic.

  Social cohesion. Residents do really care their neighbourhood, especially about social relationships that grew over years. They personally take care of open spaces even though this is the responsibility of the Municipality. Despite all mentioned difficulties, social cohesion is very strong. Together with green and favourable location, it is often mentioned by the residents as the most important quality of Laurentino38.

Some physical interventions were implemented in Laurentino38 in the last years. In May 2006 demolition of some of the bridges started. The demolished volume is supposed to be substituted by new housing for special groups, like the elderly and young couples. Despite the high costs, this solution seems to be quite successful. The bridges in fact, where considered by people as the most deprived building in the neighbourhood. In 2005, some of the bridges were repainted. This intervention was appreciated by residents as a way to identify the blocks with colours rather than with numbers. However, they all claimed renovation should not only consider common facilities, but should also address buildings and dwellings where the most urgent liveability problems are concentrated.

To qualitatively address ‘on the renovation major aspects people would like to spend money ’, four questions were posed to a group of residents and Pietro Barucci to reveal to what extent the two parts share the purpose of renovation. It emerged that:

- Residents and architects won’t spend money for renovation of dwellings on similar items. Inhabitants would mainly improve technical equipments, while the architect would try to solve problems at a higher level like, for example, management of common facilities and open spaces. Both parties mentioned adaptation of existing facade to current technical standards as a relevant issue (especially thermal insulation).
- Divergences emerged concerning the building parts to be renovated. Unlike the architect, residents would again solve technical problems, like deterioration of external side of the facade or water infiltration. Improvement of building façade is mentioned on the top of the list.
- Different opinions also emerged concerning willingness of people to move elsewhere. Residents highly value social relationships and accept technical or functional defects of dwellings. The architect would only move into Laurentino38 to work.
- Both agree on combining energy consumption and aesthetics for physical renovation of buildings, but residents does not claim the need of readapting floor plans.

Finally, to get more insights into the ‘maintenance’ practice in Laurentino38, some questions were asked to architects employed in the Technical Department of ATER. The most relevant issues that were put forward are:

- Despite the efforts, conditions of buildings and dwellings are not up to standard.
- The following items should be both dealt with in future interventions and deserve further attention:
  - water supply,
  - structural problems (especially stability of the blocks),
  - sewerage system,

  - thermal insulation of existing façade (following the example of the cooperatives but solving thermal bridges and substituting also window frames and glazing),
  - management of public spaces
  - realization of all the facilities foreseen by the master plan (they have not been completed).
- Availability of funding did not change renovation approach. Interventions are still very superficial and focused on solving limited problems. There is a lack of integration of interventions.

INTRODUCTION TO THE EIGHT CHAPTER

The eight Chapter addresses the last research question: what might be strengths and weakness of implementing Dutch physical measures for renovation in the Roman context?
It provides general directions for improvement of an intervention strategy for renovation of social housing estates in Laurentino38 and a matrix of physical measures for renovation to support decision making of housing associations and other parties.

CHAPTER 8
PHYSICAL MEASURES FOR RENOVATION OF SOCIAL HOUSING ESTATES

INTRODUCTION TO THIS CHAPTER

As announced in Chapter 1 (section 1.3), this chapter regards the answer to the last research question: what might be strengths and weaknesses for implementing Dutch physical measures for renovation in the Roman context?
Directions for improvement of the intervention strategy for renovation of social housing estates in Laurentino 38 (and more in general for the housing stock from the 1960s and 1980s managed by ATER Roma), are drawn on the basis of the investigations described in the previous chapters and the matrix for physical measures presented in this chapter. The matrix is structured observing the Dutch examples described in Chapter 4, 5 and 6. It collects qualitative assessments (strengths and weaknesses) per measure that derive from literature, personal comments of the author and experts on the subject. It also includes specific advices for application in Rome, in Laurentino 38 in particular.

This chapter is organized into two main sections. The first specifically regards the matrix of physical measures. It describes its purpose, structure and instructions for use. The second section provides general directions for the improvement of a renovation strategy of social housing estates. The direction can be extended to the entire housing stock dating from the 1960s and 1980s managed by ATER. In principle, providing the necessary deeper investigations, both directions and measures could be applied in other urban contexts.

8.1) A MATRIX OF PHYSICAL MEASURES FOR RENOVATION

According to the problem definition stated in Chapter 1, the objective of this study is to provide a framework of physical measures for renovation directed to the building envelope to support decision making of Italian housing associations and other involved parties.
The necessity for such a tool emerged in the previous chapters (in particular Chapter 3 and 7), where problems affecting social housing in Rome and Laurentino 38 are described. It was often stressed that renovation in Italy and Rome in particular, is a far cry from being implemented as it is in the Netherlands. A lot can be learnt from the Dutch experience.
Based on the solutions applied in the Dutch examples showed in the previous chapters, a matrix of envelope directed physical measures for renovation is structured. It could be used not only to improve the quality of social housing estates in Rome standing for renovation but, in principle, be extended to other Italian contexts.

8.1.1) STRUCTURE OF THE MATRIX

The purposes for structuring a matrix of physical measures directed to the building envelope can be summarized as follows:

PURPOSE OF THE MATRIX

- supporting the decision making process of institutions. Italian housing associations, like ATER Roma, could use it to plan physical renovation of buildings, especially considering strengths and weaknesses defined for each measure;

- supporting the decision making process of other involved parties. Other parties involved in the renovation process, like architects, could benefit form (creatively) using the physical solutions provided by the matrix;
- improving knowledge on physical renovation. This is achieved by providing an overview on possible physical solutions for renovation already applied in real contexts, which are assembled in the matrix.

The matrix is structured extrapolating physical solutions from the ten projects presented in Chapter 4 (Section 4.1.1), the examples of renovation implemented in the Bijlmermeer in Chapter 5 (5.2.2) and Florijn Noord described in Chapter 6 (section 6.2). This list was also integrated by researching the archives of the National Renovation Prize (2003-2007).

STRUCTURE OF THE MATRIX

The measures are 49 in total and gathered into fours groups that constitute the columns of the matrix:

- directed to physical aspects (existing dwellings, new dwellings, demolition, accessibility, non-residential functions and storage spaces);
- directed to appearance (façade, entrance to the building, stairwells, parapets and bottom);
- directed to energy efficiency (façade, recycling and installations);
- directed to social aspects (physical changes and changing/extending target group).

To support decision making, all measures are provided with their relevant strengths ('S' in the matrix) and weaknesses ('W'). Strengths and weaknesses, that constitute the rows of the matrix, are given with respect to the following four issues:

- physical aspects;
- appearance;
- social aspects;
- feasibility.

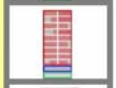
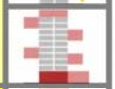
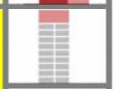
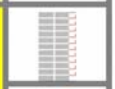
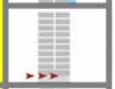
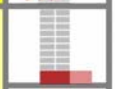
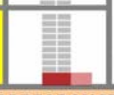
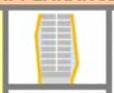
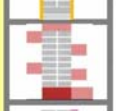
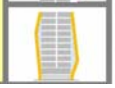
The qualitative assessments (strengths and weaknesses) derive from literature, personal comments of the author and experts on the subject[1]. The matrix also includes advices for specific application in Rome and particularly in the case of Laurentino 38.
The following table shows the entire structure of the matrix.

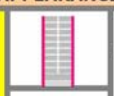
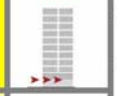
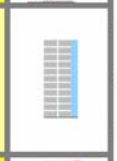
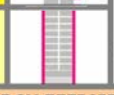
		PHYSICAL ASPECTS	APPEARANCE	ENERGY EFFICIENCY	SOCIAL ASPECTS
		PHYSICAL MEASURES (1 to 49)			
PHYSICAL ASPECTS	**S**				
	W				
APPEARANCE	**S**				
	W				
SOCIAL ASPECTS	**S**				
	W				
FEASIBILITY	**S**				
	W				

A LIST OF MEASURES

In the next two pages all the physical measures are listed, fixed with their icon and name
On the right side of the matrix are 12 columns. The first 10 correspond to the projects described in Chapter 4. The 11th column regards the group of renovation projects in the Bijlmermeer briefly discussed in Chapter 5.(Section 5.2.4) and the Florijn Noord presented in Chapter 6. Finally, the 12th column refers to additional examples from the projects observed by researching the archive of the National Renovation Prize. Therefore, the table also helps to check in what group of projects the measure is implemented and, in a way, how popular it is. For example, the measure number 1 called 'vertical – horizontal combination of existing units on upper floors' is particularly common, being it applied in all the projects.

[1] *The following experts gave their personal comments about various items: ir. H. Westra (feasibility. RE&H), dr. C. van Oel (social aspects. RE&H), Arch. P. Marrone (technical aspects. DiPSA), Prof. dr. ir. A. van Hall (energy efficiency, RE&H), Arch. G. Barucci (technical aspects Lamaro, constructive company Laurentino38), Arch. S. Berretta (physical aspects and feasibility. ATER Roma)*

PHYSICAL MEASURES for TRANSFORMATION			PROJECT											
			1	2	3	4	5	6	7	8	9	10	11	12
Awarded by the NRP (**S**ubmitted, **N**ominated, **W**inner)					S	N		W	N	W	W	W	N	N
Directed to **PHYSICAL ASPECTS (functional - technical)**														
Existing dwellings		1 Vertical - horizontal combination of existing units on upper floors		X	X	X	X	X	X	X	X	X	X	X
		2 Combination of units on upper floors by enlarging existing archways					X						X	X
		3 'Maisonette with street front door at the bottom by matching existing units at the ground and first floor			X			X	X			X	X	X
		4 Extent outer livable space by attaching loggias to the façade					X		X			X		X
		5 Extent livable space by attaching new balconies to the façade covered by glazed surface					X							X
		6 Extent livable space by attaching new volumes to the façade					X							X
New dwellings		7 Addition of units on the top floor ('optoppen')					X	X			X	X		X
		8 Low-rise attached at the bottom ('courtyard')			X									
		9 'Maisonette with patio' attached at the bottom by matching ground and first floor								X			X	X
		10 'Maisonette with private garden' attached at the bottom by matching ground and first floor								X		X	X	
		11 Addition of new 'top-end' (new housing attached to the existing block)					X						X	X
Demolition (selective)		12 Opening new passageways								X				
		13 Enlargement of existing archways					X					X	X	
		14 Chirurgic demolition	X										X	X
Accessibility		15 Add new galleries						X	X	X	X	X		X
		16 Attach new elevators							X	X	X	X	X	X
		17 Add further entrance		X		X		X				X	X	X
Non-residential functions		18 New volume attached at the bottom (medical care - office - education - commercial - social facilities)		X		X							X	
		19 New volume for technical installations on top-floor				X							X	
Storages		20 Move to another volume attached/nearby the existing block			X									
Directed to the **APPEARANCE**														
Façade		21 Entire/partial substitution with a new façade				X	X					X		X
		22 Add new external cladding	X		X			X						X
		23 Substitute front door of gallery apartments with new colored ones	X											
		24 Extend facade with volumes				X	X							
		25 Extend facade with terraces-loggias							X			X		X
		26 Different characteristics of new facade (shape-texture-color) corresponds to different dwellings' types				X	X	X					X	X

PHYSICAL MEASURES for TRANSFORMATION			PROJECT										
			1	2	3	4	5	6	7	8	9	10	11	12
Directed to the **APPEARANCE**														
Entrance to the building		27 Covering with new light colored materials (masonry)	X			X						X	X	X
		28 Openings into existing walls	X										X	
		29 Substitute existing walls with glazed surfaces		X				X	X			X	X	X
Stairwells		30 Change shape and cladding	X				X						X	X
		31 Change existing volume with a colored glazed one											X	X
		32 Add colored lighting from inside	X											
Parapets		33 New parapets with transparent/semitransparent materials (different textures and colors)		X	X								X	X
Bottom		34 Cover with new light colored materials (masonry, wood, green, stones)			X	X						X	X	X
Directed to **ENERGY EFFICIENCY**														
Facade		35 Add movable shadings												X
		36 Double glazed facade with large air cavity containing shared spaces						X					X	X
		37 Add further insulation to existing facade			X			X	X	X	X		X	X
		38 Change windows frames and glazing of existing facade	X	X	X			X	X	X	X		X	X
Recycling		39 Use of the existing casco				X	X			X	X	X		
Installations		40 Add solar panels or PV on the roof and/or top-end facade		X							X		X	X
Directed to **SOCIAL ASPECTS**														
Physical changes		41 Improvement of building recognizability					X						X	X
		42 Dwellings with own entrance						X				X	X	X
		43 Dwellings on the ground floor overlooking the street			X			X		X		X	X	X
Changing - extending target group		44 Combination social housing and homeownership					X	X	X	X		X	X	X
		45 Shift from social housing to homeownership			X								X	X
		46 Entire/partial transformation into dwellings for other target groups (like elderly in need of care, students, atelier, high-income elderly)					X						X	X
		47 Combination of social housing and small commercial activities/offices		X									X	
		48 Combination of housing for elderly and medical care/nursery		X		X								X

8.1.2) HOW TO USE IT

As said in the previous section, the matrix is intended as a tool supporting decision making. The level of transformation to be achieved in a residential block can be combined with a renovation approach. The matrix provides the group of measures for its implementation. By using the matrix, from each measure the respective weaknesses and strengths can be checked.

MATRIX AND RENOVATION APPROACHES

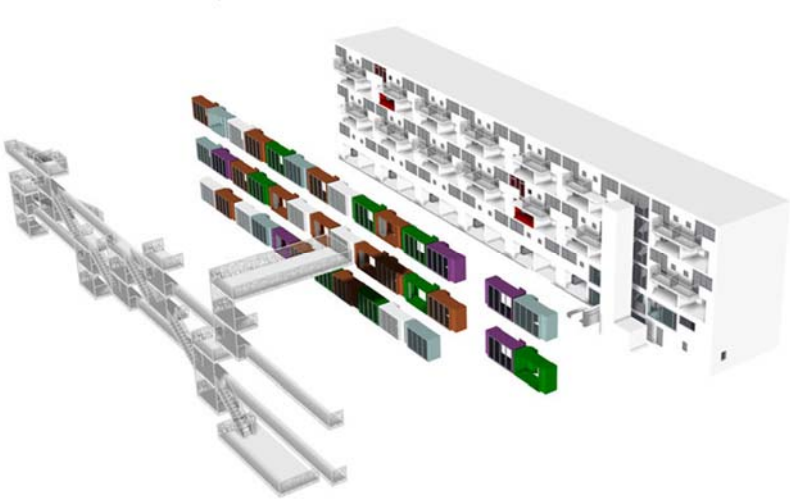
Clearly, the structure can be integrated by any other solution that might derive form future experimentations (Like the Poptahof by Molenaar & Van Winden Architects in, Delft and the Putterlfats in Rotterdam by ADD and Krill. See the pictures below).

Elaborating on the Dutch practice, two main renovation approaches can be distinguished (see Chapter 4, Section 4.1). Without pretending to provide complete definitions, at least in terms of physical transformations, they can be descried as follows:

THREE APPROACHES TO RENOVATION

- **'Renovation-light'**: improvement of initial quality of the building by preserving all existing walls (position and physical characteristics like materials). It is implemented to upkeep the building to the living standards.
  For implementation of renovation light tenants do not need to move out during the works.

- **'High-level renovation'**: Higher and more profound improvement than renovation-light by moving internal walls (change position and physical characteristics like materials) and adding new volumes to the building (like "optoppen". See the example in the picture in the next page Rotterdam Alexander, 2007).
  This approach can profoundly improve, for example, housing differentiation by combining existing housing units and/or attaching new blocks or building elements to the existing block (new top-end or double glazed faces).
  It is usually implemented by preserving major architecture characteristics (like shape, materials, detailing).
  For implementation of high-level renovation, tenants need to move out during the works.



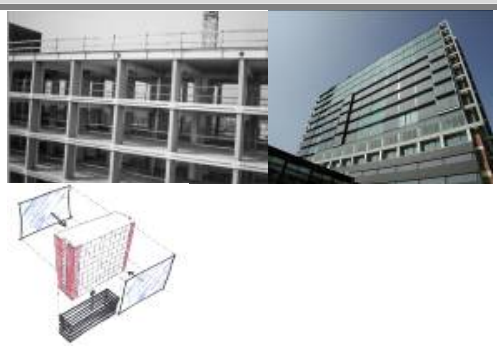
Referring to the exceptional Dutch examples in which the approach consists in preserving the casco structure and redevelop the façade, a third approach can be included:

- **'Envelope directed renovation'**: Highest improvement of initial building quality by preserving the casco structure and attaching a new envelope (no preservation of internal and external walls).
  This approach leads to the highest flexibility of renovation by preserving only the casco structure. By replacing the building shell, it leads to a profound transformation of the appearance of the block comparing to the initial conditions.
  For implementation of envelope directed renovation tenants have to move out during the works.

PHYSICAL TRANSFORMATION RENOVATION APPROACH

The following scheme shows three levels of physical transformation and the respective approach to renovation. Physical transformations are roughly distinguished according to the relevance of the change to be achieved in a block (standard, profound and radical transformation) while the approaches to renovation (renovation-light, high-level and envelope directed) are reported according the description provided above.

TRANSFORMATION LEVEL

PHYSICAL TRANSFORMATION	RENOVATION APPROACH	EXAMPLE
RADICAL	ENVELOPE DIRECTED Highest improvement of initial building quality by preserving the casco structure and attaching a new envelope (no preservation of internal and external walls). This approach leads to the highest flexibility of renovation by preserving only the casco structure. By replacing the building shell, it leads to a profound transformation of the appearance of the block comparing to the initial conditions. For implementation of envelope directed renovation tenants have to move out during the works. (RE)MOVE EXTERNAL WALLS WITH NEW ONES MOVE INNER WALLS MOVE RESIDENTS	
PROFOUND	HIGH-LIVEL RENOVATION Higher and more profound improvement than renovation-light by moving internal walls (change position and physical characteristics like materials) and adding new volumes to the building (like optoppen). This approach can profoundly improve, for example, housing differentiation by combining existing housing units and/or attaching new blocks or building elements to the existing block (new top-end or double glazed faces). It is usually implemented by preserving major architecture characteristics (like shape, materials, detailing). For implementation of high-level renovation, tenants need to move out during the works. ADAPTAT EXISITING EXTERNAL WALLS MOVE INNER WALLS MOVE RESIDENTS	
STANDARD	RENOVATION LIGHT Improvement of initial quality of the building by preserving all existing walls (position and physical characteristics like materials). It is implemented to upkeep the building to the living standards. For implementation of renovation light tenants do not need to move out during the works. NO MOVE EXISITING EXTERNAL MOVE INTERNAL WALLS NO MOVE OF RESIDENT	

MEASURES PER APPROACH

All the measures extrapolated from the Dutch examples can be gathered according to the renovation approaches presented above. The following table shows all the measures and their possible match to one of the approaches: renovation-light, high-level renovation and envelope directed.

Clearly, being only based on the projects described in this study, the table does not pretend to provide an exhaustive overview. As mentioned above, the list is supposed to be integrated by any other solution that might derive form future experimentations.
The entire matrix is provided at the end of this Chapter.

RENOVATION APPROACH	GROUPS OF PHYSICAL MEASURES	
ENVELOPE DIRECTED 	PHYSICAL IASPECTS	1) Vertical - horizontal combination of existing units on upper floors (no bottom) 2) Combination of units on upper floors by enlarging existing archways in the bearing structure (gates) 3) 'Maisonette with street front door' at the bottom by matching existing units at the ground and first floor 4) Extent outer livable space by attaching new loggias to the façade 5) Extent livable space by attaching new volumes to the façade covered by glazed surface (glazed volumes) 6) Extent livable space by attaching new volumes to the façade (opaque volumes) 7) Addition of new housing units on the top floor ('optoppen') 8) New dwellings in low-rise attached at the bottom (placed to create a 'courtyard') 9) 'Maisonette with patio' attached at the bottom by matching existing units on ground and first floor (duplex with inner patio) 10) 'Maisonette with private garden' attached at the bottom by matching existing units on ground and first floor (duplex with garden) 11) Addition of new 'top-end' (new housing attached to the existing block) 12) Opening new passageways in existing structure (partial demolition to open gates) 13) Enlargement of existing archways 15) Add new galleries to the facade to enter the dwellings 16) Attach new external elevators to the facade 17) Add further entrances 18) New volume attached at the bottom (to house medical care - office - education - commercial and/ or social facilities) 19) New volume for technical installations on top-floor 20) Move existing rooms for storages to another volume attached or nearby the existing block
	APPEARANCE	21) Entire substitution of existing envelope with a new façade 24) Extend facade with livable volumes 25) Extend facade with terraces-loggias 26) Different characteristics of the new facade (shape-texture-color) corresponds to different dwellings' types 29) Substitute existing walls of the entrances with new glazed surfaces 30) Change shape and cladding of stairwells 31) Change existing volume of stairwells with a colored and glazed one 32) Add colored lighting from inside into glazed stairwells 33) New parapets with transparent/semitransparent materials (different textures and colors) 34) Cover with new light colored materials (masonry, wood, green, stones)
	ENERGY EFFIC.	35) Add movable shadings 36) Attach a double glazed facade with large air cavity containing shared spaces 39) Preserve existing casco and change the envelope 40) Add solar panels or PV on the roof and/or top-end façade 41) Water savings by updating technical installations
	SOCIAL ASPECTS	42) Improvement of building recognizability 43) Dwellings with own entrance 44) Dwellings on the ground floor overlooking the street 45) Combination of social housing and homeownership 46) Shift from social housing to homeownership 47) Entire and/or partial transformation of existing dwellings for other target groups (like elderly in need of care, students, atelier, high-income elderly) 48) Combination of social housing with small commercial activities and/or offices 49) Combination of housing for elderly and medical care and/or nursery
HIGH-LIVEL RENOVATION 	PHYSICAL ASPECTS	1) Vertical - horizontal combination of existing units on upper floors (no bottom) 2) Combination of units on upper floors by enlarging existing archways in the bearing structure (gates) 3) 'Maisonette with street front door' at the bottom by matching existing units at the ground and first floor 4) Extent outer livable space by attaching new loggias to the façade 5) Extent livable space by attaching new volumes to the façade covered by glazed surface (glazed volumes) 6) Extent livable space by attaching new volumes to the façade (opaque volumes) 7) Addition of new housing units on the top floor ('optoppen') 8) New dwellings in low-rise attached at the bottom (placed to create a 'courtyard') 9) 'Maisonette with patio' attached at the bottom by matching existing units on ground and first floor (duplex with inner patio) 10) 'Maisonette with private garden' attached at the bottom by matching existing units on ground and first floor (duplex with garden) 11) Addition of new 'top-end' (new housing attached to the existing block) 12) Opening new passageways in existing structure (partial demolition to open gates) 13) Enlargement of existing archways 14) Chirurgic demolition 15) Add new galleries to the facade to enter the dwellings 16) Attach new external elevators to the facade 17) Add further entrances 18) New volume attached at the bottom (to house medical care - office - education - commercial and/ or social facilities) 19) New volume for technical installations on top-floor 20) Move existing rooms for storages to another volume attached or nearby the existing block

	APPEARANCE	22) Add new external cladding to existing facade 23) Substitute front door of gallery apartments with new colored ones 24) Extend existing facade with new livable volumes 25) Extend existing facade with new terraces-loggias 26) Different characteristics of the new covering (texture-color) corresponds to different dwellings' types 27) Covering the bottom with new light colored materials (masonry) 28) Openings into existing walls of the entrances 29) Substitute existing walls of the entrances with new glazed surfaces 30) Change shape and cladding of stairwells 31) Change existing volume of stairwells with a colored and glazed one 32) Add colored lighting from inside into glazed stairwells 33) New parapets with transparent/semitransparent materials (different textures and colors) 34) Cover the bottom with new light colored materials (masonry, wood, green, stones)
	ENERGY EFFIC.	35) Add movable shadings 36) Attach a new double glazed facade to the existing block with large air cavity containing shared spaces 37) Add further insulation to existing facade 38) Change windows frames and glazing of existing facade 40) Add solar panels or PV on the roof and/or top-end facade 41) Water savings by updating technical installations 42) Improvement of building recognizability
	SOCIAL ASPECTS	43) Dwellings with own entrance 44) Dwellings on the ground floor overlooking the street 45) Combination of social housing and homeownership 46) Shift from social housing to homeownership 47) Entire and/or partial transformation of existing dwellings for other target groups (like elderly in need of care, students, atelier, high-income elderly) 48) Combination of social housing with small commercial activities and/or offices 49) Combination of housing for elderly and medical care and/or nursery
RENOVATION LIGHT 	PHYSICAL ASPECTS	4) Extent outer livable space by attaching new loggias to the façade 15) Add new galleries to the facade to enter existing dwellings 16) Attach new external elevators to the existing block 17) Add further entrances to the existing block
	APPEARANCE	23) Substitute front door of gallery apartments with new colored ones 27) Covering the bottom with new light colored materials (masonry) 32) Add colored lighting from inside stairwells 33) New parapets with transparent/semitransparent materials (different textures and colors) 34) Cover the bottom with new light colored materials (masonry, wood, green, stones)
	ENERGY EFFIC.	35) Add movable shadings 37) Add further insulation to existing facade 38) Change windows frames and glazing of existing facade 40) Add solar panels or PV on the roof and/or top-end facade 41) Water savings by updating technical installations 42) Improvement of building recognizability
	SOCIAL ASPECTS	45) Combination of social housing and homeownership 46) Shift from social housing to homeownership

8.1.3) OVERVIEW ON STRENGTHS AND WEAKNESSES OF MEASURES

Examining strengths and weaknesses of each physical measure in the matrix, general observations can be done. They regard the most relevant issues considered in the matrix itself that are: housing differentiation, accessibility, non-residential functions, appearance and demolition. The words strengths and weaknesses drive from the so-called 'SWOT analysis", a tool usually applied for auditing an organization and its environment. The name stands for **S**trengths, **W**eaknesses, **O**pportunities and **T**hreats. Strengths and weaknesses are internal factors. Opportunities and threats are external factors[2].

Housing differentiation

Profound transformations (like combinations of existing housing units, additions of dwellings, and selective demolition) contribute improving housing differentiation and market position of dwellings. Strength is that such solution makes dwellings affordable for wider target groups, not only in terms of components but also income. It also extends free choice and allows residents a housing career in the neighbourhood. However, housing differentiation can be also weakness. Mixing groups, in fact, can be difficult and is limited to some segments of the

[2] *A basic explanation of SWOT analysis can be checked on www.marketingteacher.com*

social structure (see the exceptional example in Tab.3 Chapter 4, where homeownership for 'Bijlmermeer believers' was combined with rental social housing on neighbourhood level). However, when social rented dwellings shift to homeownership, social problems might be reduced as people care more about the quality and maintenance of their private goods than of rented goods. Such a shift in tenure constitutes high financial returns on the short term for the housing association, if the dwellings are sold for a market price.

Unused spaces can be used for these transformations: top-floor, washrooms, porticoes, basement, storages and any shared facility. Apart from making use of those rooms, strength is also that this would also decrease expenses on their maintenance.
When transformations improve the physical relationship of the building with its surroundings (like dwellings at the ground floor and opening of new passageways) they can improve not only liveability, but also social safety. They can also prevent improper use and abandonment. However, a weakness is that higher criminality figures (like thefts) and lack of privacy might derive when using the ground floor, especially to place housing.

Limitations for feasibility of the described transformations, thus further weaknesses, might derive from local building and urban regulations, actual structural stability of the block, constructive technology (in the case of the Tunnel-technology this regards openings and selective demolition), available space (limited height of ceilings), need of further facilities (if that is "optoppen elevators might be required) and "the removal of tenants during the works (if high-level and envelope directed renovation people need to move). Removal of residents can be a risky issue since, according to the Dutch practice, not all the people come back to their dwellings after renovation. (In the picture below an example of optoppen in Rotterdam Alexander).

Accessibility.
Improvements of accessibility by new galleries, elevators and further entrances also contribute improving the functional quality of dwellings and make them available for wider target groups. This is a strength particularly true for elderly households, the disabled and families with children. Moreover, these solutions not only improve liveability but also the attractiveness when used to transform the look of the building. This might be relevant to attract new residents after the intervention.
Most of the solutions to improve the accessibility are subjected to limitations similar to those described above.

Non-residential functions.
Addition of non-residential functions, like education, small commercial businesses and medical care, improves not only the liveability of the block but also its surroundings. A strength is also that they could attract people form other neighbourhoods and decrease the

sense of anonymity. However, a weakness could be social problems due to the services closing during the night.
Feasibility might be strongly restricted by the location and negative reputation of the area, and by competition with other neighbourhoods. This is true also for housing differentiation, improvement of accessibility and appearance.

Energy efficiency.
Energy savings for renovation of existing social housing estates is not compulsory, but it will be in the coming years. A weakness of including energy saving measures in renovation could be that housing associations might be reluctant in implementing them because the benefits of their investments go directly to the residents and not to the housing association.
Besides the strength of having more money for living from lower energy bills, implementation of energy measures is important to improve societal awareness of the residents.
Better energy efficiency mainly depends on the technical characteristics of the façade and the roof However, there is a wider range of alternative measures that are worth to be considered apart from improving thermal insulation and adding sun power (hot water) and photovoltaic panels (like heat pumps, heat power, central systems and biogas). Aspects like natural ventilation, overheating, health, condensation, cold bridges and noise due to air circulation need also to be considered in renovation. By means of re-use of the casco structure almost everything is possible with respect to high energy efficiency. Also, the waste of (selective) demolition might be recycled.

Appearance.
A more attractive appearance of the building can be obtained adopting those measures intended for interrupting the repetition and massiveness as well as the silhouette (profile) of a block. Of all the measures particularly those aiming at extending and subtracting volumes, might be effective in breaking monotony of especially large housing estates. In this respect, the entire substitution or integrations of existing façade, like new claddings, addition of double glazed façade, various extensions (boxes, loggias, terraces stairwells and elevators) and new parapets, can profoundly change the appearance of the block. Yet, a weakness is that the repetition of the same solution could replicate the problem and a high degree of differentiation could result in a 'patchwork' at the expense of the appearance.
It needs to be taken strongly into account that radical solutions might not be appreciated by the residents, thus renovation should be subjected to the preferences of people for building facades (shaper, materials, colours, etc.).
Strength of improving the building appearance is that high recognizability can improve the orientation in the neighbourhood as well as sense of identification. The block could function as a landmark increasing the liveability and attractiveness. When renovation is particularly recognizable it can be used to sponsor the restructuring of the area. However, any change of the initial look might be subjected to the approach undertaken by the housing association, and is subjected to the local building regulations (Welstandsnormen).

Demolition.
Above all the mentioned issues the most relevant weakness in implementing the measures is: why to go for demolition rather than renovation? For example, if the commercial value of the land is high and there are no special directions for preservation (like, for example, ‘historical’ value of buildings), it is possible the housing association could decide for demolition. However, there are no clear relationships between relevant motivations for demolition (like technical quality, demand, tenure and asset management approach) and the demolition rate of Dutch housing associations (see Chapter 4, Section. Rather, issues like corporate objectives, image and management policies seem to be more decisive than rational asset analyses (van der Flier and Thomsen, 2006). In the same research the authors mentioned that several involved parties can have a “hidden agenda” for demolition. For instance the municipality has to pay from its yearly budget the renovation costs of infrastructural elements, but in a new development the municipality can put all the costs of the infrastructural elements in the land price.
However, also presence of residents can make the difference between renovation and new construction (van der Flier & Thomsen, 2005).

8.2) IMPROVEMENT OF INTERVENTION STRATEGY

INTRODUCTION

As specified in Chapter 1, the objective of this study is to structure a framework of physical measures for renovation. However, a matrix as defined in the previous section, could actually contribute to and support the decision making of housing association and other involved parties only if solutions on higher levels are adopted. For this reason, this study also aims at drawing directions for the improvement of the intervention strategy of Italian housing associations like ATER Roma. This is a precondition for implementation of effective renovations.
To meet this aim, three main research questions are defined. According to the structure of the research defined in Section 1.3, the respective answers are provided in the previous chapters. All the major elements that emerged from all the chapters served as a based to draw ten indicators. They regard two groups:

- First group: indicators directed to the model of Italian housing associations, like ATER Roma,
- Second group: indicators directed to the implementation of renovation.

The indicators are reported considering the conclusions regarding how to improve the intervention strategy of ATER Roma by extrapolating solutions from the Dutch housing management model (see Chapter 3), the observation of the Dutch examples of renovation (see Chapter 4, 5 and 6) and taking into account the actual context of Rome (see Laurentino 38 in Chapter 7 and 8, Section 8.1). Also theoretical elements are considered (Chapter 2). Many of the issues of especially the second group of indicators are defined assembling strengths and weaknesses of physical solutions from the matrix described in this chapter. The table below list all the indicators per group.

GROUPS OF INDICATORS

FIRST GROUP Model of the housing association	SECOND GROUP Implementation of renovation
Less restrictive rent policy and more market conformity of selling prices	Ad-hoc regulations for transformations of existing housing blocks
Introduction of a professional (re)development department within ATER	Differentiate the housing supply to meet the requirements of specific target groups.
Divide ATER into two bodies: a social housing organization and commercial enterprise	Combine housing differentiation with reduction of uncontrolled public spaces.
	Improve energy efficiency of the building envelope.
	Transform physical characteristics of the building envelope to get attractive housing blocks and neighbourhoods.
	Design physical transformations in agreement with construction advisers.
	Employ new housing as temporary accommodations for tenants

The first group constitutes the prerequisites for implementation of directions in the second group. Both groups are explained in the next section.

Clearly, as already mentioned in Chapter 3, directions from the first group need further exploration and assessment to check if they are really feasible or not. Furthermore, it should be noted that a combination of directions of both groups is probably more effective or may be even necessary to achieve a sustainable future for ATER and successfulness of high-level or envelope directed strategy for renovation. These observations could be extended to other Italian housing associations as well.

8.2.1) INDICATORS: MODEL OF HOUSING ASSOCIATION AND IMPLEMENTATION OF RENOVATION

With reference to the table above, it follows a description of the ten indicators.

MODEL OF HOUSING ASSOCIATION

MODEL OF HOUSING ASSOCIATION

How manage more effective renting selling prices?

- **Less restrictive rent policy and more market conformity of selling prices**

The application of much less restrictive regulations towards rent setting and selling prices is a basic prerequisite. The Region of Lazio could distinguish a core social housing stock, for which rents need to be restricted, and a liberalized housing stock, for which ATER can follow a more market-oriented rental policy. Limits could be set to the increase of the total rent sum of ATER, while ATER could be given the opportunity to differentiate rent levels to achieve more market-oriented rent levels. Additionally, selling prices could be brought up much closer to market level. If the objective is to make home-ownership available to a larger group of households, higher discounts can be given, but these could be combined with the restriction that the landlord retains the right or duty to buy the dwelling back against a similar discount, when the household decides to move.
Dutch housing associations must sell their dwellings against a minimum of 90% of the market value. However, if the buying household makes use of the Purchasing Grant - established as part of the Act on the Promotion of Home-Ownership ("Wet Bevordering Eigen-Woningbezit" - BEW) - associations may give reductions to 20% for new households and 30% for actual tenants. Additional reductions are possible if the development of value of the home after the sale is shared between the buyer and the housing association.

How to develop more profitable strategies?

- **Introduction of a professional (re)development department within ATER**

If ATER fails to employ the financial capacity of its stock, it will not be able to survive in a financial sense. A solution might be the introduction of a professional department to set up and carry out restructuring policies for its housing stock, with a particular emphasis on profitable opportunities. This organization should look at ATER's real estate portfolio from a social housing perspective, and analyze its housing stock and land from a market perspective.

How to implement more market-oriented strategies?

- **Divide ATER into two bodies: a social housing organization and commercial enterprise**

The former direction could be taken further by dividing ATER into a social housing organization and commercial enterprise. While the social housing organization maintains the core social housing stock, a commercial enterprise could be set up that manages the more expensive stock and locations that are more popular on the housing market. It could also have the task to undertake (re)development activities within and outside of the ATER housing stock. The commercial organization could be set up as a daughter organization to the social mother as a single shareholder. Nevertheless, the commercial enterprise should have a separate board and should also be exempted from the restrictive rent policy and selling price regulations as well as the political context of the mother organizations. Consequently, it will be enabled to more effectively employ the market value of the housing stock and land to generate extra financial means. Such a separation would explicitly stimulate the implementation of more market oriented strategies, since the commercial

organization will have the objective to generate a positive financial return for its mother shareholder. Furthermore, the transfer of the stock from the social mother organization to the commercial daughter could be partly financed from private loans, based on a part of the market value of the transferred stock, thereby making extra funding available to the mother organization within a relatively short period.

The risks of those directions might be related to the introduction of more market-oriented housing policy in the social rented sector. This could lead to social problems. Thus, the political parties in Lazio should balance additional financial support of ATER against the potential danger of introducing market principles in its operations.

IMPLEMENTATION OF RENOVATION

IMPLEMENTATION OF RENOVATION

How can high-level and envelope directed renovation be implemented in Italy?

- **Ad-hoc regulations for transformation of existing housing blocks**.

Social housing in Italy is regulated by specific laws that are different from the ones regarding housing in the private sector. These regulations fix, for example, minimum size and number of rooms per dwellings. Therefore, transformations like the increase of building volume (cubature), housing differentiation and transformation of initial functions are in principle very difficult to be achieved (see Dutch examples of additions, combinations and transformations in Chapter 4, 5 and 6). High-level and envelope directed renovation could be carried out only if special regulations and processes for approval are defined (pers. com. Arch. Barucci – project leader of Laurentino 38 and architect of the Technical Department of ATER).

For whom are dwellings to be renovated? Are they only for low-income people or also for other groups like middle income households, elderly, students, young couples and so on?

- **Differentiate the housing supply to meet the requirements of specific target groups.**

Social housing in Italy needs to be updated to meet current requirements. The actual layout of dwellings defined by the standards of the '60s does not fit the demand anymore (for example in terms of type, size and number of rooms). By transforming the existing housing units, the current supply can be differentiated to be affordable to wider groups (different households and income level). Social and market analysis could help in finding the right target groups thus managing differentiation to meet actual requirements.

Weaknesses and strengths of implementing measures directed to improving housing differentiation were discussed in the previous section (see Section 8.1.4). Among the major strengths are: extension of free choice, housing career in the neighbourhood, higher care of people when shifting from social rented to homeownership, higher returns for the housing association if dwellings sold at market prices, make use of unused shared spaces and reduce their expenses for maintenance, better liveability and social safety when improving the close surroundings (less abandonment or improper use), For what concerns care of goods it has not be scientifically proven that people do care more about owned private goods than rented goods. Rather, is this general belief used in a lot of places to create money for the interventions. The same goes for the shift to more expensive rental dwellings.

Main weakness can be: difficulties in mixing very different groups (income levels), increase of criminality figures when adding dwellings at the ground floor and lack of privacy. Regarding the feasibility limitations might derive from the local regulations, the actual physical condition of the building, the need of additional technical facilities (like elevators in the case of op-toppen) and management of the works (like move of residents).

How to reduce insecurity of open spaces nearby the blocks?

- **Combine housing differentiation with reduction of uncontrolled public spaces**.

Renovation on building level can also improve the physical and social conditions of the open spaces nearby the block. The 'F' neighbourhood in the Bijlmermeer is a good example in which the conditions of the public green surrounding the building have been improved (see Chapter 6). This was achieved by attaching 'maisonette with small garden' (and non-residential facilities) at the ground floor of the existing high-rise and by increasing the actual housing density of the area by new

construction in the homeownership sector. Dwellings more popular on the housing market, like low-rise, were built to decrease the incidence of green (courtyard dwellings on maximum three storeys, row houses with street front door and garden on the back or facing stretches of water). This physical solutions improved liveability and social safety.
Better security (prevention of improper use and abandonment) can be also obtained by improving the relationship of the existing block with its surroundings by means, for example, of enlarging or opening new passageways and adding non-residential functions, like education, small commercial business and medical care. As described in the previous section, a strengths concerning the latest solution is that people form other neighbourhoods might be attracted by those additional facilities. However, a lack of social security might derive from all of those closed during the night. General limitations to successfulness of housing densification could be the location and bad reputation of the area, as well as competition with other neighbourhoods.
According to the instruments currently available in Italy and the model of housing associations like ATER, in principle this could be realized proposing a "Contratto di Quartiere" (see Chapter 7, section 7.2.1) for that neighbourhood (pers. com. architect of the Technical Department of ATER). But as implemented in cases like Laurentino 38, such a process did not produce exemplary restructuring. This matter refers again to the first direction: need of ad-hoc regulations.

Why should the housing association invest on renovation driven by measures directed to energy efficiency?

- **Improve energy efficiency of the building envelope.**

Like all European countries, Italy is subjected to the European directive on energy performance of buildings (EPBD 2002/91 CE). The Directive regards new construction as well as existing buildings, thus also the present social housing stock. By July 2009, energy certification in Italy will be obligatory for all dwellings to be put on the market. Therefore there is a clear need for implementing renovation based on energy savings.
Despite demanding higher financial effort than standard transformation, improving energy performance of existing envelopes (facades, roofs and foundations), should be seen by the housing associations as an investment on the long run, Especially when the envelope is substituted with high-quality long-lasting materials there might be not only higher comfort within the dwellings and savings on energy bills but also less expenses for maintenance of the exteriors and prolongation of their 'just renovated' effect. Moreover, solutions directed to the building envelope alone can extent the life cycle of the building up to 20-25 years.
When preserving the casco structure almost everything is possible with respect to high energy efficiency. Also, waste of (selective) demolition might be recycled. As mentioned in the previous section, it worst considering a wider range of measures for energy savings, especially their integration on building and urban level. In addition to the improvement of thermal insulation and addition of photovoltaic panels other solutions like heat pumps, heat power, central systems and biogas should be taken into account. Concerning the dwellings, aspects like natural ventilation, overheating, health, condensation, cold bridges and noise due to air circulation should also be considered in renovation.
In the previous section other strengths of implementing energy efficiency of the building envelope were mentioned like improvement of societal awareness and, in the case of ATER, preventing phenomenon of arrearage making dwelling more affordable even for lower income groups (ATER Rome estimated that expenses on maintenance and heating alone raise the monthly rent of 180€).

How make social housing more attractive?

- **Transform physical characteristics of the building envelope to get attractive housing blocks and neighbourhoods**

In principle, restructuring of social housing estates should also solve social problems like ghetto-ization and improve the bad reputation of deprived neighbourhoods. Attracting wider groups of potential residents is a key factor. This could be achieved by diversifying the existing housing supply and making the entire living environment more appealing. Changing physical characteristics of residential facades, like shape and materials can substantially transform the appearance of the built environment, especially in those neighbourhoods dominated by poor architecture with monotonous layouts and scarce attention to materialization and detail.

To transform the appearance of existing residential buildings those measures aiming at interrupting the repetition and the massiveness of the envelope, and diversifying its silhouette (profile) should be adopted (especially in large housing estates). A list of those solutions directed to the substitution or integration of building elements is provided in the previous section (see new cladding and parapets, and various additions to and extensions of the façade). Weaknesses in implementing the measures are: excessive repetition of the same solution (replication of the initial problems and 'patchwork' effect), lack of appreciation by the residents (they usually prefer traditional design) and the approach of the housing association. Regarding the latest item, it can be said that the aesthetics of building exteriors in renovation of social housing is often underestimated by Dutch housing associations. It is usually considered a very expensive aspect of renovation thus most of them prefer to spent money on safer investments.
Major strengths of improving attractiveness of existing envelopes could be: better orientation within the neighbourhood, identification with own dwelling and improvement of liveability and attractiveness of the built environment,
In the case of Laurentino 38, the inhabitants, architects from the Technical Department of ATER and the group leader of the project expressed all the need for higher differentiation of the housing blocks to make them more recognizable. ATER Rome could consider envelope directed approach to transform the estates by diversifying their architectural identity. Innovative techniques like Neighbourhood Branding, currently under implementation in many large social housing areas in northern Europe, could help in managing such a process.

What might be restrictions for the design of a renovation project?

- **Design physical transformations in agreement with construction advisers.**

All the physical interventions aiming at changing the existing layout of the building (like combination of existing units or substitution of the façade) must be planned according to its actual constructive stability. In the case of the Gigantic by ANA architects, for example, the numerous dwelling types obtained by moving existing walls were designed fitting the technical transformability of the block (Tab.5 Chapter 4). Structural perspectives, in fact, are relevant limitations for the design of renovation. Therefore, in the cases like Laurentino 38 where the tenants made lost of changes into their dwellings (like move of walls and new openings), a prerequisite is a clear update of all the transformations. In many cases, ATER is not aware of such modifications.

How to manage removal of residents during the works?

- **Employ new housing as temporary accommodations for tenants**

Both high-level and envelope directed approach require tenants to move out during the works. This aspect can be very important for feasibility of renovation. Move of residents, as mentioned when discussing weakness and strengths of housing differentiation, can be a risky issue. According to the Dutch practice, al low percentage of people comes back their dwellings after renovation. If the renovation employs addition of new housing units (by means of solutions like optoppen, new low-rises and top-end attached at the bottom or maisonettes at the ground floor) those dwellings could be temporarily used to house the tenants during the works. However, special measures should be undertaken to prevent social problems like squatting during the process (particularly in neighbourhoods in troubles like Laurentino 38).

CONCLUSIONS

The objective of this study is to structure a framework of physical measures for renovation. A matrix could actually contribute the supporting decision making process of Italian housing associations, like ATER Rome, and other involved parties. However, this is feasible only if solutions on higher levels are adopted. For this reason, directions regarding changes in the model of Italian housing associations and improvement of intervention strategy are also

provided. These directions are general preconditions for implementation of more effective renovations strategies, thus to employ the matrix of physical measures.

The purpose of the matrix is to support the decision making process of institutions and other parties (like housing associations and architects) and to improve the knowledge on renovation. It is structured assembling the physical measures adopted in the Dutch examples of renovation described in the previous chapters. According to their purpose, all the 49 measures are gathered into four groups: physical aspects, appearance, energy efficiency and social aspects.
To the level of transformation to be achieved in a residential block (standard, profound or radical transformation) can be matched a renovation approach (renovation-light, high-level and envelope directed). A table lists all the measures and their possible match to one of the approaches. Clearly, being only based on the projects presented in this study, the table does not pretend to provide an exhaustive overview rather its structure can be integrated by any other solution that might derive form future experimentations (see for example the case of the Poptahof – Delft - that is currently under development).

By using the matrix, of each measure can be checked the respective weakness and strengths. Examining strengths and weakness of each physical measure, general observations can be done. Those observations regard the relevant issues considered in the matrix itself that are: housing differentiation, accessibility, non-residential functions, appearance and demolition.

The matrix could actually contribute supporting decision making of housing association and other groups only if solutions on higher levels are adopted. Such solutions might be inspired by the following ten directions grouped as those directed to the model of housing association and to implementation of renovation.

Directions from the first group:

- less restrictive rents and selling prices,
- introduction of a professional (re)development department within ATER
- split up ATER into a social and commercial organization.

Directions from the second group:

- Ad-hoc regulations for transformations of existing housing blocks
- Differentiate housing supply to meet requirements of specific target groups.
- Combine housing differentiation with reduction of uncontrolled public spaces.
- Improve energy efficiency of the building envelope.
- Transform physical characteristics of the building envelope to get attractive neighbourhoods.
- Design physical transformations in agreement with structural advisers.
- Employ new housing as temporary accommodations for tenants

The first group constitutes the prerequisite for implementation of directions in the second group. Clearly all of them need further explorations and assessments to check the actual feasibility.

INTRODUCTION TO THE NINTH CHAPTER

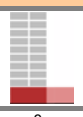
The ninth and last chapter concerns the major conclusions of this study. It also provides recommendation for practice and for further research of the subject of renovation. This is particularly important in the view of the complex problem of renovation. However, the recommendations are drawn not only for the Italian but also for the Dutch context.

Directed to PHYSICAL ASPECTS (functional - technical)

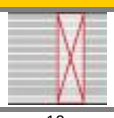
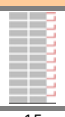
EXISTING DWELLINGS

		1 Vertical - horizontal combination of existing units on upper floors	2 Combination of units on upper floors by enlarging existing archways	3 'Maisonette with street front door' at the bottom by matching existing units at the ground and first floor	4 Extent outer livable space by attaching loggias to the façade	5 Extent livable space by attaching new balconies to the façade covered by a glazed surface		
PHYSICAL ASPECTS (technical-functional)	S	Improvement of housing differentiation; Vertical-horizontal extension/contraction of dwellings;	Improvement of housing differentiation; Vertical-horizontal extension/contraction of dwellings;	Improvement of housing differentiation; Vertical extension of dwellings; Make use of the short span at the ground floor; If porticos at the ground floor remove horizontal thermal insulation to get higher ceiling; Better energy savings when filling porticoes at the ground floor;	Horizontal extension of dwellings; Shading the facade	Improvement of housing differentiation; Vertical-horizontal extension/contraction of dwellings; Wider glazing improving day lighting; Shading the facade	PHYSICAL ASPECTS (technical-functional)	S
	W	Local regulation (in Italy size and number of rooms of social dwellings are subjected to restrictions provided by law); Available floor surface; Structural capacity of the block (in many Italian residential blocks, like **Laurentino 38**, tenants made inner changes. Alterations they made, like moving of walls and/or big openings, have to be calculated to design the combinations); Technical restrictions if used the tunnel technology (if openings into (possible) bracing walls vertical continuity has to be guaranteed; openings into internal or external walls do not have to interfere with horizontal/vertical tie-rods; opening of new architraves is restricted to their distance from the border of the wall; new architraves are also subjected to specific resistance values and need vertical/horizontal reinforcements).	Local regulation (in Italy size and number of rooms of social dwellings are subjected to restrictions provided by law); Available floor surface; Structural capacity of the block (in many Italian residential blocks, like **Laurentino 38**, tenants made inner changes. Alterations they made, like moving of walls and/or big openings, have to be calculated to design the combinations); Technical restrictions if used the tunnel technology (enlargements into internal or external walls do not have to interfere with horizontal/vertical tie-rods; vertical/horizontal reinforcements need to be reintroduced; attention to technical equipments incorporated into walls and floors).	Local regulation (in Italy size and number of rooms of social dwellings are subjected to restrictions provided by law); Available floor surface; High of ceiling (in Italy the minimum high is 270cm. Matching could be difficult when the bottom is only 240cm. See Tab. 8, Chapter 4); Structural capacity of the block (in many Italian residential blocks, like **Laurentino 38**, tenants made inner changes. Alterations they made, like moving of walls and/or big openings, have to be calculated to design the combinations); Technical restrictions if used the tunnel technology (to place new openings into the floors consider location of reinforcements (horizontal tie-rods); high of rooms should not interfere with reinforcements of walls (tie-rods and clamps are usually placed up to 240cm from the façade); thermal insulation of new external walls is required.). Thermal insulation of new external walls is required.	Local regulation (in Italy size and number of rooms of social dwellings are subjected to restrictions provided by law); Obstruction of day lighting due to extended projections; Structural capacity of the block (in many Italian residential blocks, like **Laurentino 38**, tenants made inner changes. Alterations they made, like moving of walls and/or big openings, have to be calculated to design the combinations); Technical restrictions if used the tunnel technology (anchorages of extensions restricted to location of walls/floors of the tunnel, and its horizontal tie-rods; better new structures hanged to the tunnel to prevent overloading of existing floors; thickness of new horizontal structures needs to be compatible with existing floors).	Local regulation (in Italy size and number of rooms of social dwellings are subjected to restrictions provided by law); Obstruction of day lighting due to extended projections; Possible decreases of inner comfort in summer due to overheating; Structural capacity of the block (in many Italian residential blocks, like **Laurentino 38**, tenants made inner changes. Alterations they made, like moving of walls and/or big openings, have to be calculated to design the combinations); Technical restrictions if used the tunnel technology (anchorages of extensions restricted to location of walls/floors of the tunnel, and its horizontal tie-rods; better new structures hanged to the tunnel to prevent overloading of existing floors; thickness of new horizontal structures needs to be compatible with existing floors).		W
APPEARANCE	S	No alteration of the exteriors if only moving inner walls	** Depending on size and shape, breaks massiveness	* Facilitate differentiation of ground and upper floors	*** Break of repetitiveness. Transform massiveness and silhouette; Better appearance if using materials that remind good quality housing (no cheap materials like masonry or plastic)	*** Break of repetitiveness. Transform massiveness and silhouette ; Better appearance if using materials that remind good quality housing (no cheap materials like masonry or plastic)	APPEARANCE	S
	W	Renovation is not visible outside	Size and shape of openings might alter building proportions, thus attractiveness	Lack of integration with the rest of the block; Short lasting materials shorten 'wow effect' of renovation	Repetition of the same solution (like shape and material) could replicate initial problems; Short lasting materials shorten 'wow effect' of renovation	Repetition of the same solution (like shape and material) could replicate initial problems; Short lasting materials shorten 'wow effect' of renovation		W
SOCIAL ASPECTS	S	Provision of housing for wider groups; Preventing ghettoization; Adaptation to current standards to extent of free choice; Mix different groups (income level and nationality) could be difficult but can improve the livability of the neighborhood	Provision of housing for wider groups; Preventing ghettoization; Adaptation to current standards to extent of free choice;	Social control of the ground level; Housing at the bottom prevents abandonment or improper use of open spaces; Reduction of uncontrolled/unattended public spaces; Increase of vividness, attractiveness and livability of neighborhood; Allows housing of disabled	Improvement of sense of identification with own block and dwelling; Improvement of orientation within the neighborhood by new appearance; Addition of outdoor space which is though to be very important both in terms of well-being (more space, fresh air, smoking outside) and offering place to dry wash which improves indoor air quality; If balconies are adjacent, it might increase social contacts with neighbors; Increased social control of outdoor public spaces (spotting children form your balcony)	Improve sense of identification with own block and dwelling; Improvement of orientation in the neighborhood by new appearance; Addition of outdoor space which is though to be very important both in terms of well-being (more space, fresh air, smoking outside) and offering place to dry wash which improves indoor air quality;	SOCIAL ASPECTS	S
	W	Mix of different groups could be difficult (income level and nationality) ; Elderly people and families with young kids are best situated at the lower storeys. Singles, families with older children and couples on the upper floors. Less accessible for the disabled	Mix of different groups could be difficult (income level and nationality); Singles, families and couples are better situated on the upper floors	Possible lack of safety because of the direct spatial relationship of housing and surroundings; Less housing privacy (this is true in the Italian context where apartments at the ground floor are protected with solid fences to prevent overlooking. Curtains are often not enough to get the feeling of being visually protected from the street); Higher chance of criminality (thieves could have easier access)	People could feel uncomfortable with very extended projections; Effectiveness of the renovation design is subjected to preferences of people; Lower floors might have higher risk of thefts (access from balcony)	People could feel uncomfortable with very extended projections; Effectiveness of the renovation design are subjected to preferences of people; Lower floors might have higher risk of thefts (access from balcony especially if they are opened on the front side)		W
FEASIBILITY	S	Differentiation of housing supply leads to differentiation of market position of dwellings; Improvement of housing quality by moving the walls; Could lead to a decrease of shared spaces resulting in less expenses for maintenance; Substantial improvement of the dwelling's quality; No special expertise is required;	Differentiation of housing supply leads to differentiation of market position of dwellings; Improvement of housing quality by moving the walls; Substantial improvement of the dwellings' quality;	Differentiation of housing supply leads to differentiation of market position of dwellings; Improvement of housing quality by moving the walls; Could lead to a decrease of shared spaces resulting in less expenses for maintenance; Substantial improvement of the dwellings' quality; No special expertise is required;	Could lead to improvement of the dwellings' quality; Works could be quick; Tenants can stay their dwellings during the works; Relevant transformation of appearance could be used as a window sponsoring the restructuring of the area; Could be used as a selling point;	When the external wall is in good physical conditions, the new extension can improve the performances of the envelope preserving the existing facade (advantages in terms of technical and financial effort) (this could be particularly effective in those Italian residential blocks like **Laurentino 38** where it has been used the tunnel technology); Leads to differentiation of market position of dwellings; Substantial improvement of quality of dwellings; Improvement of housing quality without moving the walls; Renovation works could be very quick (a few weeks); Tenants can stay their dwellings during the works; Relevant transformation of appearance could be used as a window sponsoring the restructuring of the area; Could be used as a selling point;	FEASIBILITY	S
	W	Need for an ad-hoc regulation to manage the transformation; Location and competition with other neighborhoods could be an obstacle in attracting other target groups; Tenants should move another place during the works, that means expenses for grants and temporary accommodations; In the Netherlands, far less than 50% of tenants return their dwellings that could lead to letting problems and vacancy after renovation; If the commercial value of the site is high and there are no special restrictions for that location, it is possible the housing association will decide for demolition;	Need for an ad-hoc regulation to manage the transformation; Location and competition with other neighborhoods could be an obstacle in attracting other target groups; Tenants should move another place during the works, that means expenses for grants and temporary accommodations; In the Netherlands, far less than 50% of tenants return their dwellings that could lead to letting problems and vacancy after renovation; Need of technical expertise; If the commercial value of the site is high and there are no special restrictions for that location, it is possible the housing association will decide for demolition;	Need for an ad-hoc regulation to manage the transformation; Location and competition with other neighborhoods could be an obstacle in attracting other target groups; Tenants should move another place during the works, that means expenses for grants and temporary accommodations; In the Netherlands, far less than 50% of tenants return their dwellings that could lead to letting problems and vacancy after renovation; If the commercial value of the site is high and there are no special restrictions for that location, it is possible the housing association will decide for demolition;	Need for an ad-hoc regulation to manage the transformation; Location and competition with other neighborhoods could be an obstacle in attracting other target groups; Need of technical expertise; Attract different target groups could be difficult even when the appearance substantially change; Relevant transformation of the appearance could be subjected to the approach undertaken by the housing association; If the commercial value of the site is high and there are no special restrictions for that location, it is possible the housing association will decide for demolition;	Need for an ad-hoc regulation to manage the transformation; In the case of tunnel technology, adaptation of existing openings when the external wall is in good condition or entire substitution of the wall can be expensive and technically difficult (this is the case of the blocks in **Laurentino 38**); Location and competition with other neighborhoods could be an obstacle in attracting other target groups; Need of technical expertise; Attract different target groups could be difficult even when the appearance substantially change; Relevant transformation of the appearance could be subjected to the approach undertaken by the housing association;	FEASIBILITY	W

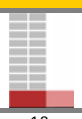
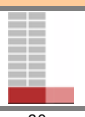
Directed to PHYSICAL ASPECTS (functional - technical)

EXISTING DWELLINGS	NEW DWELLINGS					
						
6 Extent livable space by attaching new boxes to the façade	7 Addition of units on the top floor (‘optoppen’)	8 Low-rise attached at the bottom (‘courtyard’)		9 ‘Maisonette with patio’ attached at the bottom by matching ground and first floor	10 ‘Maisonette with private garden’ attached at the bottom by matching ground and first floor	
Improvement of housing differentiation; Vertical-horizontal extension/contraction of dwellings; Wider glazing improve day lighting; Shading the facade	Improvement of housing differentiation; Vertical-horizontal extension/contraction of dwellings; Make use of unused rooms: Italian wash-houses on top floor of residential blocks could be converted into housing (see the case of the in-line and towers blocks in **Laurentino 38**);	Improvement of housing differentiation; Vertical - horizontal extension of dwellings; Soften the shift from high to eventual low-rise nearby; Make use of the short span at the ground floor; When porticoes at the ground floor improving of energy savings;		Improvement of housing differentiation; Vertical - horizontal extension of dwellings; Soften the shift from high to eventual low-rise nearby; Make use of the short span at the ground floor; When porticoes at the ground floor improving of energy savings;	Improvement of housing differentiation; Vertical - horizontal extension of dwellings; Soften the shift from high to eventual low-rise nearby; Make use of the short span at the ground floor; When porticoes at the ground floor improving of energy savings;	PHYSICAL ASPECTS (technical-functional) S
Local regulation (in Italy size and number of rooms of social dwellings are subjected to restrictions provided by law, as well as increase of cubature); Local regulation with respect to its integration with the surroundings; Obstruction of day lighting due to extended projections; High of ceiling can be a limitation when the addition is placed at the bottom (in Italy 270cm is the minimum high for housing. Extension could be difficult when the bottom is 240 cm high) Structural capacity of the block (in many Italian residential blocks, like **Laurentino 38**, tenants made inner changes. Alterations they made, like moving of walls and/or big openings, have to be calculated to design the combinations); Technical restrictions if used the tunnel technology (anchorages of extensions restricted to location of walls/floors of the tunnel, and its horizontal tie-rods; better new structures hanged to the tunnel to prevent overloading of existing floors; thickness of new horizontal structures needs to be compatible with existing floors).	Local regulation (in Italy size and number of rooms of social dwellings are subjected to restrictions provided by law, as well as increase of cubature); Local regulation with respect to its integration with the surroundings; Required elevator if more than 4 storeys; Structural capacity of the block (in many Italian residential blocks, like **Laurentino 38**, tenants made inner changes. Alterations they made, like moving of walls and/or big openings, have to be calculated to design the combinations); Need of light building technologies (wood - steel structures); Technical restrictions depend on the bearing structure: location, span (when used the tunnel up to 5m or fixed 2.8, 3.5, 4.5m) and orientation of baring walls, or to the elements discharging the weigh on them	Local regulation (in Italy size and number of rooms of social dwellings are subjected to restrictions provided by law, as well as increase of cubature); Need of space for new construction; High of ceiling when addition uses the bottom (in Italy 270cm is the minimum high for housing. Attaching new low-rise could be difficult when the bottom is 240 cm high. See solution in Tab. 8, Chapter 4); Technical restrictions if used the tunnel technology (to place new openings into the floors consider location of reinforcements (horizontal tie-rods); high of rooms should not interfere with reinforcements of walls (tie-rods and clamps are usually placed up to 240cm from the façade); Thermal insulation of new external walls is required.		Local regulation (in Italy size and number of rooms of social dwellings are subjected to restrictions provided by law, as well as increase of cubature); Local regulation with respect to its integration with the surroundings; Need of space for new construction; High of ceiling when addition uses the bottom (in Italy 270cm is the minimum high for housing. Attaching new low-rise could be difficult when the bottom is 240 cm high. See solution in Tab. 8, Chapter 4); Technical restrictions if used the tunnel technology (to place new openings into the floors consider location of reinforcements (horizontal tie-rods); high of rooms should not interfere with reinforcements of walls (tie-rods and clamps are usually placed up to 240cm from the façade); Thermal insulation of new external walls is required.	Local regulation (in Italy size and number of rooms of social dwellings are subjected to restrictions provided by law, as well as increase of cubature); Need of space for new construction; High of ceiling when addition uses the bottom (in Italy 270cm is the minimum high for housing. Attaching new low-rise could be difficult when the bottom is 240 cm high. See solution in Tab. 8, Chapter 4); Technical restrictions if used the tunnel technology (to place new openings into the floors consider location of reinforcements (horizontal tie-rods); high of rooms should not interfere with reinforcements of walls (tie-rods and clamps are usually placed up to 240cm from the façade); thermal insulation of new external walls is required); Thermal insulation of new external walls is required.	PHYSICAL ASPECTS (technical-functional) W
***	*/**	*/**		*/**	*/**	APPEARANCE S
Break of repetitiveness. Transform massiveness and silhouette ; Better appearance if using materials that remind good quality housing (no cheap materials like masonry or plastic)	Depending on type and architectonic characteristics, transforms silhouette and massiveness; Better appearance if using materials that remind good quality housing (no cheap materials like masonry or plastic)	Depending on the design; Better appearance if using materials that remind good quality housing (no cheap materials like masonry or plastic)		Depending on the design; Better appearance if using materials that remind good quality housing (no cheap materials like masonry or plastic)	Depending on the design; Better appearance if using materials that remind good quality housing (no cheap materials like masonry or plastic)	
Repetition of the same solution (like shape and material) could replicate initial problems; Short lasting materials shorten 'wow effect' of renovation	Lack of integration with the rest of the block; Vertical extension of the block alters the urban shape; Short lasting materials shorten 'wow effect' of renovation	Lack of integration with the rest of the block; The most relevant transformation regards the surroundings rather than the block itself; Short lasting materials shorten 'wow effect' of renovation		Lack of integration with the rest of the block; The most relevant transformation regards the surroundings rather than the block itself; Short lasting materials shorten 'wow effect' of renovation	Lack of integration with the rest of the block; The most relevant transformation regards the surroundings rather than the block itself; Short lasting materials shorten 'wow effect' of renovation	APPEARANCE W
Improve sense of identification with own block and dwelling; Improvement of orientation in the neighborhood by new appearance; Addition of outdoor space which is though to be very important both in terms of well-being (more space) as well as offers place to dry wash which improves indoor air quality.	Provision of housing for wider groups; Italian wash-houses on top floor of residential blocks could be converted into housing (see the case of the in-line and towers blocks in **Laurentino 38**); Extension of free choice; Improvement of sense of identification with own block and dwelling; Improvement of orientation in the neighborhood by new appearance; Increasing attractiveness for other groups	Provision of housing for wider groups; Extension of free choice; Prevention of abandonment or improper use of open spaces; Reduction of uncontrolled public spaces (this could work in very deprived Italian neighborhoods like **Laurentino 38** to prevent also thefts); Improvement of privacy being the building core within the courtyard; People back to the street;		Provision of housing for wider groups; Extension of free choice; Improvement of social control at the bottom; Prevention of abandonment or improper use of open spaces; Reduction of uncontrolled public spaces (this could work in very deprived Italian neighborhoods like **Laurentino 38** to prevent also thefts); Increasing attractiveness for other groups	Provision of housing for wider groups; Extension of free choice; Improvement of social control at the bottom; Prevention of abandonment or improper use of open spaces; Reduce the share of uncontrolled public spaces (this could work in very deprived Italian neighborhoods like **Laurentino 38** to prevent also thefts); Increasing attractiveness for other groups; Increase livability and green in the neighborhood	SOCIAL ASPECTS S
Possible lack of safety when attaching livable volumes at the bottom (this could be particularly true in very deprived Italian neighborhoods like **Laurentino 38**); People could feel uncomfortable with very extended projections; Effectiveness of the renovation design are subjected to preferences of people;	Effectiveness of the renovation design are subjected to preferences of people; Increasing attractiveness for other groups	Possible lack of safety because of the direct spatial relationship of housing and surroundings (this could be particularly true in very deprived Italian neighborhoods like **Laurentino 38**);		Possible lack of safety because of the direct spatial relationship of housing and surroundings (this could be particularly true in very deprived Italian neighborhoods like **Laurentino 38**); Less housing privacy (this is true in the Italian context where apartments at the ground floor are protected with solid fences to prevent overlooking. Curtains are often not enough to get the feeling of being visually protected from the street); Higher chance of criminality (thieves could have easier access); Increasing attractiveness for other groups	Possible lack of safety because of the direct spatial relationship of housing and surroundings (this could be particularly true in very deprived Italian neighborhoods like **Laurentino 38**); Less housing privacy (this is true in the Italian context where apartments at the ground floor are protected with solid fences to prevent overlooking. Curtains are often not enough to get the feeling of being visually protected from the street); Higher chance of criminality (thieves could have easier access); Increasing attractiveness for other groups	SOCIAL ASPECTS W
When the external wall is in good physical conditions, the new extension can improve the performances of the envelope preserving the existing facade (advantages in terms of technical and financial effort) (this could be particularly effective in those Italian residential blocks like **Laurentino 38** where it has been used the tunnel technology); Differentiation of housing supply leads to differentiation of market position of dwellings; Leads to a substantial improvement of the dwellings' quality; Renovation works could be very quick (a few weeks); Tenants can stay their dwellings during the works; Relevant transformation of appearance could be used as a window sponsoring the restructuring of the area; Could be used as a selling point Cutting the reinforcements to detach the panels might be technically difficult - expensive (see 4, 5);	Differentiation of housing supply leads to differentiation of market position of dwellings; Relevant transformation of appearance could be used as a window sponsoring the restructuring of the area;	Differentiation of housing supply leads to differentiation of market position of dwellings; Could lead to a decrease of shared spaces resulting in less expenses for maintenance; No special expertise is required;		Differentiation of housing supply leads to differentiation of market position of dwellings; Could lead to a decrease of shared spaces resulting in less expenses for maintenance; No special expertise is required;	Differentiation of housing supply leads to differentiation of market position of dwellings; Could lead to a decrease of shared spaces resulting in less expenses for maintenance; No special expertise is required;	FEASIBILITY S
Need for an ad-hoc regulation to manage the transformation; In the case of tunnel technology, adaptation of existing openings when the external wall is in good condition or entire substitution of the wall can be expensive and technically difficult (this is the case of the blocks in **Laurentino 38**); Location and competition with other neighborhoods could be an obstacle in attracting other target groups; Need of technical expertise; Attract different target groups could be difficult even when the appearance substantially change; Relevant transformation of the appearance could be subjected to the approach undertaken by the housing association;	Need for an ad-hoc regulation to manage the transformation; Location and competition with other neighborhoods could be an obstacle in attracting other target groups; Need of technical expertise; Attract different target groups could be difficult even when the appearance substantially change; Relevant transformation of the appearance could be subjected to the approach undertaken by the housing association;	Need for an ad-hoc regulation to manage the transformation; Location and competition with other neighborhoods could be an obstacle in attracting other target groups; If renovation regards also the surroundings, effective management of the building site is required;		Need for an ad-hoc regulation to manage the transformation; Location and competition with other neighborhoods could be an obstacle in attracting other target groups; If renovation regards also the surroundings, effective management of the building site is required;	Need for an ad-hoc regulation to manage the transformation; Location and competition with other neighborhoods could be an obstacle in attracting other target groups; If renovation regards also the surroundings, effective management of the building site is required;	FEASIBILITY W

Directed to PHYSICAL ASPECTS (functional - technical)

NEW DWELLINGS	DEMOLITION			ACCESSIBILITY		
						
11 Addition of new 'top-end' (housing attached to the existing block)	12 Opening new passageways	13 Enlargement of existing archways	14 Chirurgic demolition	15 Add new galleries		
Improvement of housing differentiation; It could affect the quality of existing top-end dwellings; Contribution to better energy savings	Connection of areas separated by the block;	Improvement of existing connection with surroundings;	Circumstanced interventions could improve the quality of the building;	Improvement of accessibility to the dwellings; Contribute to differentiation of accessibility according to dwelling types	PHYSICAL ASPECTS (technical-functional)	S
Local regulation (in Italy size and number of rooms of social dwellings are subjected to restrictions provided by law, as well as increase of cubature); Local regulation with respect to its integration with the surroundings; Need of space for new construction; Need for expansion joints between new and existing structure	Local regulation (in Italy size and number of rooms of social dwellings are subjected to restrictions provided by law, as well as increase of cubature); Structural capacity of the block (in many Italian residential blocks, like **Laurentino 38**, tenants made inner changes. Alterations they made, like moving of walls and/or big openings, have to be calculated to design the openings); Technical restrictions if used the tunnel technology (enlargements into internal or external walls do not have to interfere with horizontal/vertical tie-rods; vertical/horizontal reinforcements need to be reintroduced; attention to technical equipments incorporated into walls and floors).	Local regulation (in Italy size and number of rooms of social dwellings are subjected to restrictions provided by law, as well as increase of cubature); Structural capacity of the block (in many Italian residential blocks, like **Laurentino 38**, tenants made inner changes. Alterations they made, like moving of walls and/or big openings, have to be calculated to design the openings); Technical restrictions if used the tunnel technology (enlargements into internal or external walls do not have to interfere with horizontal/vertical tie-rods; vertical/horizontal reinforcements need to be reintroduced; attention to technical equipments incorporated into walls and floors);	Structural capacity of the block (in many Italian residential blocks, like **Laurentino 38**, tenants made inner changes. Alterations they made, like moving of walls and/or big openings, have to be calculated to design the openings); Should not be demolished: corner elements, bearing and bracing walls, connections floor-wall and tie-rods;	Local regulation (in Italy size and number of rooms of social dwellings are subjected to restrictions provided by law, as well as increase of cubature); Local regulation with respect to its integration with the surroundings; Building layout and dwelling types; Structural capacity of the block (in many Italian residential blocks, like **Laurentino 38**, tenants made inner changes. Alterations they made, like moving of walls and/or big openings, have to be calculated to design the openings); Technical restrictions if used the tunnel technology (anchorages of extensions restricted to location of walls/floors of the tunnel, and its horizontal tie-rods; better new structures hanged to the tunnel to prevent overloading of existing floors; thickness of new horizontal structures needs to be compatible with existing floors).		W
*/** Depending on type and architectonic characteristics, transforms silhouette and massiveness; Depending on the design; Better appearance if using materials that remind good quality housing (no cheap materials like masonry or plastic)	** Depending on size and shape, breaks massiveness	* Depending on size and shape, breaks massiveness	* Transformation of massiveness and silhouette;	** Break of repetitiveness. Transform massiveness and silhouette; Better appearance if using materials that remind good quality housing (no cheap materials like masonry or plastic)	APPEARANCE	S
Lack of integration with the rest of the block; The solution affects a limited portion of the block; Short lasting materials shorten 'wow effect' of renovation	Size and shape of openings might alter building proportions	Size and shape of openings might alter building proportions	Size and shape of openings might alter building proportions	Repetition of the same solution (like shape and material) could replicate initial problems; Short lasting materials shorten 'wow effect' of renovation		W
Provision of housing for wider groups; Extension of free choice; Sense of identification with own block could be improved (especially in the case of a tower); New appearance could improve orientation within the neighborhood; Increasing attractiveness for other groups;	Improvement of livability (use) in the surroundings; Increase feelings of safety and access (disabled)	Improvement of livability (use) in the surroundings; Contribute preventing abandonment - improper use of existing archway		Improvement of accessibility, especially for elderly, disabled and families with children	SOCIAL ASPECTS	S
Increasing attractiveness for other groups; Increasing residential density and people might dislike the distortion of open space behind their home (extended view)	Prevention of abandonnemet- improper use of open spaces - could be difficult;	Prevention of abandonment- improper use of open spaces - could be difficult;		Possible social conflicts in collective stairwells; Effectiveness of the renovation design could be subjected to preferences of people;		W
New construction combined with renovation of dwellings at the top-end leads to the differentiation of the housing supply and the improvement of the market position of existing top-end dwellings; Could lead to improvement of quality of top-end dwellings by moving the walls; Could lead to a decrease of shared spaces resulting in less expenses for maintenance; Tenants can stay their dwellings during the works; Relevant transformation of appearance could be used as a window sponsoring the restructuring of the area;	Selective demolition is a scientific procedure where special expertise is required. In the case of Italy, the lack of experience could be a limitation (this is particularly true in the case of neighborhoods like **Laurentino 38** where it has been used the tunnel technology)	No special expertise is required; Tenants can stay their dwellings during the works;	Could lead to a decrease of shared spaces resulting in less expenses for maintenance; No special expertise is required; Tenants can stay their dwellings during the works;		FEASIBILITY	S
Need for an ad-hoc regulation to manage the transformation; Location and competition with other neighborhoods could be an obstacle in attracting other target groups; If renovation regards also the surroundings, effective management of the building site is required; Attract different target groups could be difficult even when the appearance substantially change; Implies substantial investments on the long run; If the commercial value of the site is high and there are no special restrictions for that location, it is possible the housing association will decide for demolition;	Need for an ad-hoc regulation to manage the transformation; In the case of tunnel technology, adaptation of existing openings in the external wall can be expensive and technically difficult (this is the case of the blocks in **Laurentino 38**); Tenants should move another place; Effective management of the building site is required; Need of technical expertise; If the commercial value of the site is high and there are no special restrictions for that location, it is possible the housing association will decide for entire demolition; No direct financial returns;	Need for an ad-hoc regulation to manage the transformation; In the case of tunnel technology, enlargement of existing archways can be expensive and technically difficult (this is the case of the blocks in **Laurentino 38**); No effects on market position of dwellings; If the commercial value of the site is high and there are no special restrictions for that location, it is possible the housing association will decide for entire demolition; No direct financial returns;	In the case of tunnel technology, even chirurgic demolition could be expensive and technically difficult (this is the case of the blocks in Laurentino 38); No relevant effects on market position of dwellings; No direct financial returns; In **Laurentino38** the concrete panels of the façade were prefabricated in situ. When placed by using a crane they were fixed by means of concrete casting. Cutting the reinforcements to detach the panels might be technically difficult and expensive.	Need for an ad-hoc regulation to manage the transformation; Relevant transformation of the appearance could be subjected to the approach undertaken by the housing association; In **Laurentino38** the concrete panels of the façade were prefabricated in situ. When placed by using a crane they were fixed by means of concrete casting. Cutting the reinforcements to detach the panels might be technically difficult and expensive.		W

Directed to PHYSICAL ASPECTS (functional - technical)

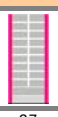
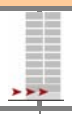
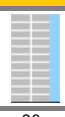
ACCESSIBILITY		NON-RESIDENTIAL FUNCTIONS		STORAGES		
						
16 Attach new elevators	17 Add further entrances	18 New volume attached at the bottom (medical care, officies, education, commercial and social facilities)	19 New volume for technical installations on top-floor	20 Move to another volume attached/nearby the existing block		
Improvement of accessibility to the dwellings; Contribute to differentiation of accessibility according to dwelling types;	Better accessibility to the building; Contribute to the differentiation of accessibility;	Establishment of new functional relationship between residential and non-residential (residents make use of the facility)	Make use of unused and available room (particularly in Italian blocks where washrooms on top-floor are not used anymore) Easy technical inspection	Make space for transformation of the bottom (also when porticoes at the ground floor);	PHYSICAL ASPECTS (technical-functional)	S
Building layout and dwellings types; If elevators attached outside the block, there might be technical restrictions when used the tunnel technology (anchorages of extensions restricted to location of walls/floors of the tunnel, and its horizontal tie-rods; better new structures hanged to the tunnel to prevent overloading of existing floors; thickness of new horizontal structures needs to be compatible with existing floors). Local regulation with respect to its integration with the surroundings;	Building layout and dwellings types; Restrictions due to the tunnel technology if openings into outside walls;	Local regulation (in Italy size and number of rooms of social dwellings are subjected to restrictions provided by law, as well as increase of cubature); Local regulation with respect to its integration with the surroundings; Building layout; Need of space for new construction; High of ceiling when addition uses the bottom (in Italy 270cm is the minimum high for housing. Attaching new low-rise could be difficult when the bottom is 240 cm high. See solution in Tab. 8, Chapter 4); Technical restrictions if used the tunnel technology (to place new openings into the floors consider location of reinforcements (horizontal tie-rods); high of rooms should not interfere with reinforcements of walls (tie-rods and clamps are usually placed up to 240cm from the façade); Thermal insulation of new external walls is required.	Local regulation (in Italy size and number of rooms of social dwellings are subjected to restrictions provided by law, as well as increase of cubature); Local regulation with respect to its integration with the surroundings; Building layout; Need of light building technologies (wood - steel structures); Their placement is restricted to the location of the bearing walls, their span (when used the tunnel up to 5m or fixed 2.8, 3.5, 4.5m) and orientation or to the elements discharging the weigh on them; Structural capacity of the block (in many Italian residential blocks, like **Laurentino 38**, tenants made inner changes. Alterations they made, like moving of walls and/or big openings, have to be calculated to design the combinations); Need of light building technologies (wood - steel structures);	Local regulation (in Italy size and number of rooms of social dwellings are subjected to restrictions provided by law, as well as increase of cubature); Need of space to place the new volume		W
**	*	**	**	*	APPEARANCE	S
Break of repetitiveness; Best result when elevators interrupt repetition of galleries apartments; Better appearance if using materials that remind good quality housing (no cheap materials like masonry or plastic)	Modest transformation of repetitiveness	Transformation of repetitiveness; Better appearance if using materials that remind good quality housing (no cheap materials like masonry or plastic)	Depending on type and architectonic characteristics, transforms silhouette and massiveness; Better appearance if using materials that remind good quality housing (no cheap materials like masonry or plastic)	No alteration of architectonic characteristics of the existing block if only moving inner walls		
Repetition of the same solution (like shape and material) could replicate initial problems; Lack of integration with the rest of the block; Short lasting materials shorten 'wow effect' of renovation	Repetition of the same solution (like shape and material) could replicate initial problems; Lack of integration with the rest of the block; Short lasting materials shorten 'wow effect' of renovation	Lack of integration with the rest of the block; The most relevant transformation regards the surroundings rather than the block itself; Short lasting materials shorten 'wow effect' of renovation	Lack of integration with the rest of the block; Vertical extension of the block alters the urban shape; Short lasting materials shorten 'wow effect' of renovation	Renovation is not visible outside		W
Improvement of accessibility, especially for elderly and disabled;		Improvement of livability within the neighborhood; Facilities could attract people from other neighborhoods; Use of the bottom contributes to better social safety		Improvement of safety by making the storages more functional and more attractive, ergo more attendance of people	SOCIAL ASPECTS	S
Galleries of gallery apartment blocks need to be interrupted to improve privacy and break sense of anonymity among the tenants; Effectiveness of the renovation design could be subjected to preferences of people;		Facilities functioning during the day could cause lack of social safety in the night				W
		Could leads to improvement of market position of dwellings; Contribute to the financial return of the renovation (renting/selling the rooms); Combination with the existing block could decrease the amount of shared spaces resulting in less expenses for maintenance; No special expertise is required; Tenants can stay their dwellings during the works;			FEASIBILITY	S
Relevant transformation of the appearance could be subjected to the approach undertaken by the housing association;		Need for an ad-hoc regulation to manage the transformation; Functioning of facilities could be obstructed by location, bad reputation of the area, competition with other neighborhoods and local demand; Effective management of the building site is required;	Need for an ad-hoc regulation to manage the transformation;	Need for an ad-hoc regulation to manage the transformation;		W

Directed to the APPEARANCE

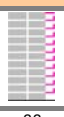
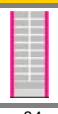
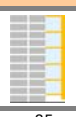
FACADE

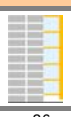
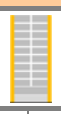
21 Entire/partial substitution with a new façade	22 Add new external cladding	23 Substitute front door of gallery apartments with new colored ones	24 Extend facade with volumes	25 Extend facade with terraces-loggias		
Improvement of performance of existing envelope (like thermal and sound insulation, ventilation, day light and shadings); Improvement of total energy consumptions.	Improvement of performance of existing envelope (like thermal and sound insulation, ventilation, daylight and shadings); Improvement of total energy consumptions.	When front doors facing the outside, inner comfort can be improved	Improvement of housing differentiation; Vertical-horizontal extension/contraction of dwellings; Improvement of day lighting if wider glazing; Shading the facade	Horizontal extension of dwellings; Shading the facade	PHYSICAL ASPECTS (technical-functional)	S
Local regulation (in Italy size and number of rooms of social dwellings are subjected to restrictions provided by law, as well as increase of cubature); Local regulation with respect to its integration with the surroundings; Structural capacity of the block (in many Italian residential blocks, like **Laurentino 38**, tenants made inner changes. Alterations they made, like moving of walls and/or big openings, have to be calculated to design the combinations); Building technology when used the tunnel: anchorages of extensions restricted to location of walls/floors of the tunnel, and its horizontal tie-rods; better new structures hanged to the tunnel to prevent overloading of existing floors; thickness of new horizontal structures needs to be compatible with existing floors.	Critical deterioration of the envelope; Local regulation with respect to its integration with the surroundings;	Effectiveness on building level is restricted to the gallery apartment blocks	Local regulation (in Italy size and number of rooms of social dwellings are subjected to restrictions provided by law, as well as increase of cubature); Local regulation with respect to its integration with the surroundings; Structural capacity of the block (in many Italian residential blocks, like those in **Laurentino 38**, tenants made inner changes. Alterations they made, like moving of walls and/or big openings, have to be calculated to design the extension); Obstruction of daylighting due to extended projections; When new glazed facade, possible decreases of inner comfort in summer due to overheating; High of ceiling when extentions uses the bottom (in Italy 270cm is the minimum high for housing. Extentions could be difficult when the bottom is 240cm high). Building technology when used the tunnel: anchorages of extensions restricted to location of walls/floors of the tunnel, and its horizontal tie-rods; better new structures hanged to the tunnel to prevent overloading of existing floors; thickness of new horizontal structures needs to be compatible with existing floors.	Local regulation (in Italy size and number of rooms of social dwellings are subjected to restrictions provided by law); Local regulation with respect to its integration with the surroundings; Obstruction of day lighting due to extended projections; Structural capacity of the block (in many Italian residential blocks, like **Laurentino 38**, tenants made inner changes. Alterations they made, like moving of walls and/or big openings, have to be calculated to design the combinations); Technical restrictions if used the tunnel technology (anchorages of extensions restricted to location of walls/floors of the tunnel, and its horizontal tie-rods; better new structures hanged to the tunnel to prevent overloading of existing floors; thickness of new horizontal structures needs to be compatible with existing floors).		W
***	**	*	***	***	APPEARANCE	S
Break of massiveness. Transform massiveness and silhouette; Better appearance if using materials that remind good quality housing (no cheap materials like masonry or plastic)	Break of repetitiveness especially when colors and textures are changed; Better appearance if using materials that remind good quality housing (no cheap materials like masonry or plastic)	If gallery apartments	Break of massiveness. Transform massiveness and silhouette; Better appearance if using materials that remind good quality housing (no cheap materials like masonry or plastic)	Break of massiveness. Transform massiveness and silhouette; Better appearance if using materials that remind good quality housing (no cheap materials like masonry or plastic)		
Repetition of the same solution (like shape and material) could replicate initial problems; Lack of integration with the surroundings; Short lasting materials shorten 'wow effect' of renovation	Repetition of the same solution (like shape and material) could replicate initial problems; Lack of integration with the surroundings; Short lasting materials shorten 'wow effect' of renovation	Restricted to the gallery apartment blocks; Short lasting materials shorten 'wow effect' of renovation	Repetition of the same solution (like shape and material) could replicate initial problems; Short lasting materials shorten 'wow effect' of renovation	Repetition of the same solution (like shape and material) could replicate initial problems; Short lasting materials shorten 'wow effect' of renovation		W
Improvement of sense of identification with own block and dwelling; New appearance could improve orientation in the neighborhood; The block could function as a landmark increasing livability by higher attractiveness	Improvement of sense of identification with own block and dwelling; New appearance could improve orientation in the neighborhood; The block could function as a landmark increasing livability by higher attractiveness		Improvement of sense of identification with own block and dwelling; New appearance could improve orientation in the neighborhood; Increasing livability by higher attractiveness	Improvement of sense of identification with own block and dwelling; New appearance could improve orientation in the neighborhood; The block could function as a landmark	SOCIAL ASPECTS	S
Effectiveness of renovation could be subjected to preferences of people;	Effectiveness of renovation could be subjected to preferences of people;		When residential extensions using the bottom, possible lack of safety because of the direct spatial relationship of housing and surroundings (this could be particularly true in very deprived Italian neighborhoods like **Laurentino 38**); People could feel uncomfortable with very extended projections; Effectiveness of renovation could be subjected to preferences of people;	People could feel uncomfortable with very extended projections; Effectiveness of renovation design could be subjected to preferences of people;		W
Leads to the improvement/change of market position of dwellings and could attract wider groups; Relevant improvement of quality of dwellings; Combination of units could lead to a decrease of shared spaces resulting in less expenses for maintenance; If no housing combination, renovation works could be quick (a few weeks), thus move of tenants could be managed more easily at less expenses; Relevant transformation of appearance could be used as a window sponsoring the restructuring of the area; Waste of (selective) demolition could be reused for new construction in the neighborhood (see Germany); Could be used as a selling point	No special expertise is required; Improvement of housing quality - inner comfort; Renovation works could be very quick; Tenants can stay their dwellings during the works;		Leads to the improvement of quality of dwellings and their market position; If no move of walls, renovation works could be quick (a few weeks), thus move of tenants could be managed more easily causing less expenses; Tenants can stay their dwellings during the works; Relevant transformation of appearance could be used as a window sponsoring the restructuring of the area; Could be used as a selling point	Could improve market position of dwellings; Leads to the improvement of the dwellings' quality; Works could be quick; Tenants can stay their dwellings during the works; Relevant transformation of appearance could be used as a window sponsoring the restructuring of the area; Could be used as a selling point	FEASIBILITY	S
Demolition is necessary and special expertize required. Location and competition with other neighborhoods could be an obstacle in attracting other groups; Tenants have to move during the works, meaning expences for grants + temporary accommodations; In the Netherlands, less than 50% of tenants return their dwellings that could lead to letting problems and vacancy; If the commercial value of land is high and there are no special restrictions, it might be decided for demolition; Attract different groups could be difficult even when the appearance changes; Transformation of appearance could be subjected to the approach of the housing association; High-level renovation implies substancial investments; New facade could lead to savings on energy costs but is a financial return only for tenants; High-energy-performance could imply high investments; In **Laurentino38** the concrete panels of the façade were prefabricated in situ. When placed by using a crane they were fixed by means of concrete casting. Cutting the reinforcements might be technically difficult and expensive.			Need for an ad-hoc regulation to manage the transformation; Location and competition with other neighborhoods could be an obstacle in attracting other target groups; Need of technical expertise; Attract different target groups could be difficult even when the appearance substantially change; Relevant transformation of the appearance could be subjected to the approach undertaken by the housing association; Transformation implies higher initial investments; In **Laurentino 38** cutting the reinforcements to detach the panels might be technically difficult and expensive (see 4) .	Need for an ad-hoc regulation to manage the transformation; Location and competition with other neighborhoods could be an obstacle in attracting other target groups; Need of technical expertise; Attract different target groups could be difficult even when the appearance substantially change; Relevant transformation of the appearance could be subjected to the approach undertaken by the housing association; If the commercial value of the site is high and there are no special restrictions for that location, it is possible the housing association will decide for demolition; In **Laurentino38** the concrete panels of the façade were prefabricated in situ. When placed by using a crane they were fixed by means of concrete casting. Cutting the reinforcements to detach the panels might be technically difficult and expensive.		W

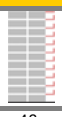
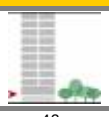
Directed to the APPEARANCE

FACADE	ENTRANCE TO THE BUILDING			STAIRWELLS / ELEVATORS		
						
26 Different characteristics of new facade (shape-texture-color) corresponds to different dwellings' types	27 Covering with new light colored materials (masonry)	28 Openings into existing walls	29 Substitute existing walls with glazed surfaces	30 Change shape and cladding		
Improvement of housing differentiation; Vertical-horizontal extension/contraction of dwellings; Improvement of performance of existing envelope (like thermal and sound insulation, ventilation, day light and shadings); Improvement of total energy consumptions.	If cladding with special technical performances: improvement of quality of existing envelope (like therma and sound insulation, ventilation, daylight and shadings); Improvement of total energy consumptions.	Contribute to the differentiation of accessibility; Restrictions due to the tunnel technology if openings into outside walls;	Contribute to the differentiation of accessibility; Restrictions due to the tunnel technology if openings into outside walls;	Improvement of accessibility to the dwellings; Contribute to differentiation of accessibility; Transformation into green-houses could stimulate better ventilation	PHYSICAL ASPECTS (technical-functional)	S
Local regulation (in Italy size and number of rooms of social dwellings are subjected to restrictions provided by law); Local regulation with respect to its integration with the surroundings; Structural capacity of the block (in many Italian residential blocks, like **Laurentino 38**, tenants made inner changes. Alterations they made, like moving of walls and/or big openings, have to be calculated to design the combinations); Technical restrictions if used the tunnel technology (anchorages of extensions restricted to location of walls/floors of the tunnel, and its horizontal tie-rods; better new structures hanged to the tunnel to prevent overloading of existing floors; thickness of new horizontal structures needs to be compatible with existing floors).	Critical deterioration of the envelope; Local regulation with respect to its integration with the surroundings;	Structural capacity of the block (in many Italian residential blocks, like those in **Laurentino 38**, tenants made inner changes. Alterations they made, like moving of walls and/or big openings, have to be calculated to design the combinations); Building technology when used the tunnel (enlargements into internal or external walls do not have to interfere with horizontal/vertical tie-rods; vertical/horizontal reinforcements need to be reintroduced; attention to technical equipments incorporated into walls and floors).	Structural capacity of the block (in many Italian residential blocks, like those in **Laurentino 38**, tenants made inner changes. Alterations they made, like moving of walls and/or big openings, have to be calculated to design the combinations); Building technology when used the tunnel (vertical/horizontal reinforcements need to be reintroduced; attention to technical equipments incorporated into walls and floors).	Building layout and dwellings types; If elevators attached outside the block, there might be technical restrictions when used the tunnel technology (anchorages of extensions restricted to location of walls/floors of the tunnel, and its horizontal tie-rods; better new structures hanged to the tunnel to prevent overloading of existing floors; thickness of new horizontal structures needs to be compatible with existing floors). Local regulation with respect to its integration with the surroundings;		W
***	*	**	**	**	APPEARANCE	S
Better appearance if using materials that remind good quality housing (no cheap materials like masonry or plastic)	Break of repetitiveness especially when colors and textures are changed; Better appearance if using materials that remind good quality housing (no cheap materials like masonry or plastic)	Perception of bigger inner spaces; Better appearance of interiors if using materials that remind good quality housing (no cheap materials like masonry or plastic)	Perception of bigger inner spaces; Better appearance of interiors if using materials that remind good quality housing (no cheap materials like masonry or plastic)	Break of repetitiveness; Better appearance if using materials that remind good quality housing (no cheap materials like masonry or plastic)		
High degrees of differentiation could result in a 'patchwork' at the expense of the appearance; Repetition of the same solution (like shape and material) could replicate initial problems; Short lasting materials shorten 'wow effect' of renovation	Repetition of the same solution (like shape and material) could replicate initial problems; Lack of integration with the surroundings; Short lasting materials shorten 'wow effect' of renovation	Short lasting materials shorten 'wow effect' of renovation	Short lasting materials shorten 'wow effect' of renovation	Repetition of the same solution (like shape and material) could replicate initial problems; Lack of integration with the rest of the block; Short lasting materials shorten 'wow effect' of renovation		W
Improvement of sense of identification with own block and dwelling; New appearance could improve orientation in the neighborhood; The block could function as a landmark	Improvement of sense of identification with own block and dwelling; New appearance could improve orientation in the neighborhood; The block could function as a landmark	Improvement of sense of identification with own block and dwelling; New appearance could improve orientation in the neighborhood; The block could function as a landmark	Improvement of sense of identification with own block and dwelling; New appearance could improve orientation in the neighborhood; The block could function as a landmark	Decrease of sense of anonymity: residents can identify themselves with their own dwelling; Improvement of orientation within the neighborhood by distinguishing single entrances to the block	SOCIAL ASPECTS	S
Effectiveness of renovation design could be subjected to preferences of people;				Effectiveness of renovation design could be subjected to preferences of people;		W
Relevant transformation of appearance could be used as a window sponsoring the restructuring of the area; Could be used as a selling point					FEASIBILITY	S
Attract different target groups could be difficult even when the appearance substantially change; Relevant transformation of the appearance could be subjected to the approach undertaken by the housing association; In **Laurentino38** the concrete panels of the façade were prefabricated in situ. When placed by using a crane they were fixed by means of concrete casting. Cutting the reinforcements to detach the panels might be technically difficult and expensive.				Relevant transformation of the appearance could be subjected to the approach undertaken by the housing association;		W

Directed to the APPEARANCE

STAIRWELLS		PARAPETS	BOTTOM	FACADE		
						
31 Change existing volume with a colored glazed one	32 Add colored lighting from inside	33 New parapets with transparent/semitransparent materials (different textures and colors)	34 Cover with new light colored materials (masonry, wood, green, stones)	35 Add movable shadings		
Contribute to differentiation of accessibility according to dwelling types; Transformation into green-houses could stimulate better ventilation		Improvement of the view from inside the dwellings (according to shape, materialization and location, also shading can be improved)	If cladding with special technical performances: improvement of quality of existing envelope (like therma and sound insulation, ventilation, daylight and shadings); Improvement of total energy consumptions.	When the structure supprting the shadings is attached outside the block it prevents overheating in summer; Shading the facade people can regulate themself;	PHYSICAL ASPECTS (technical-functional)	S
Local regulation with respect to its integration with the surroundings;	Requires integration with other physical solutions	Local regulation with respect to its integration with the surroundings;	Critical deterioration of the envelope; Local regulation with respect to its integration with the surroundings;	Structural capacity of the block depending on the shading system (in many Italian residential blocks, like **Laurentino 38**, tenants made inner changes. Alterations they made, like moving of walls and/or big openings, have to be calculated to design the extension); Local regulation with respect to its integration with the surroundings;		W
** Break of repetitiveness; Better appearance if using materials that remind good quality housing (no cheap materials like masonry or plastic)	* Break of repetitiveness during the night	** Break of repetitiveness; Better appearance if using materials that remind good quality housing (no cheap materials)	** Break of repetitiveness; Better appearance if using materials that remind good quality housing (no cheap materials like masonry or plastic)	** Break of repetitiveness. Transformation of massiveness and silhouette	APPEARANCE	S
Lack of integration with the rest of the block; Short lasting materials shorten 'wow effect' of renovation	Lack of integration with surroundings and buildings nearby; It does not work during the day (sunlight)	Repetition of the same solution (like shape and material) could replicate initial problems; Short lasting materials shorten 'wow effect' of renovation	Repetition of the same solution (like shape and material) could replicate initial problems; Lack of integration with the surroundings; Short lasting materials shorten 'wow effect' of renovation	Repetition of the same solution (like shape and material) could replicate initial problems; Short lasting materials shorten 'wow effect' of renovation		W
Decrease of sense of anonymity: residents can identify themselves with their own dwelling; Improvement of orientation within the neighborhood by distinguishing single entrances to the block	Decrease of sense of anonymity: residents can identify themselves with their own block; Improvement of orientation within the neighborhood by distinguishing single entrances to the block	Decrease of sense of anonymity: residents can identify themselves with their own block; Improvement of orientation within the neighborhood by distinguishing single blocks; Increasing livability by higher attractiveness	Decrease of sense of anonymity: residents can identify themselves with their own block; Improvement of orientation within the neighborhood by distinguishing single blocks; Increasing livability by higher attractiveness	If they are attached to a glazed facade wrapping shared spaces (like galleries and terraces) they can stimulate better social cohesion: people would use those spaces because their livability; People might really think it is important that sustainable issues are implemented. Societal awareness.	SOCIAL ASPECTS	S
		Too radical solutions might not be appreciated by the residents. Radical solutions might rather be attractive to certain groups as artist-like people that are very important in improving livability of the neighborhood; Effectiveness of renovation design could be subjected to preferences of people;		The design should be subjected to preferences of people: architectonic characteristics of the shadings might not be appreciated by residents.		W
		Relevant transformation of appearance could be used as a window sponsoring the restructuring of the area;		Leads to the improvement of the dwelling's quality; Could improve market position of dwellings; No special expertise is required; Renovation works could be very quick; Tenants can stay their dwellings during the works;	FEASIBILITY	S
		Relevant transformation of the appearance could be subjected to the approach undertaken by the housing association;		Relevant transformation of the appearance could be subjected to the approach undertaken by the housing association; Limited energy savings. However, they do not constitute a financial return for the housing association but only for tenants; Energy savings for renovation of existing social housing estates is not compulsory, but it will be in the next future; 'Sustainable renovation' is an investment on the long run;		W

Directed to ENERGY EFFICIENCY						
			RECYCLING	INSTALLATIONS		
						
36 Double glazed facade with large air cavity containing shared spaces	37 Add further insulation to existing facade	38 Change windows frames and glazing of existing facade	39 Use of the existing casco	40 Add solar panels or PV (on roof and/or top-end facade)		
Depending on the technical characteristics of the glazing it leads to the improvement of the performances of existing facade; Combined with mechanical ventilation within the air cavity, improves total energy consumption;	Improvement of sound and thermal insulation; Insulation from outside leads to relevant energy savings and solve thermal bridges; Insulating from outside do not subtract floor space within the dwelling; Using ETICS (Thermal Insulation Composite System) life span of the facade could be extended of 1-2 decades; Using ETICS deterioration do not need to be threatened;	Improvement of sound and thermal insulation, and ventialtion; Contribution to energy savings	This is not a single measure rather an approach to sustainable renovation. By means of reusing of casco structure almost everything is possible with respect to physical quality and energy efficiency. By preserving the bearing structure the whole facade can be entirely substituted. The highest housing differentiation can be obtained by moving existing walls, making openings into the floors and extending the facade;	Add them on top-floor or top-end facade is the easiest and most diffused solution. However, there is a wider range of alternative measures that worth be considered (like heat pumps, heat power, central systems and biogas). Could be used as a shading system; Could substitute existing parapets; Could function as a cladding improving thermal insulation of the facade	PHYSICAL ASPECTS (technical-functional)	S
Local regulation (in Italy size and number of rooms of social dwellings are subjected to restrictions provided by law); Local regulation with respect to its integration with the surroundings; High risk for a decrease of the inner comfort in summer due to overheating; When it is used mechanical system for air ventilation in the cavity, there might be noise due to air circulation; Health consequences need to be considered (like, for example, air flows and depuration regarding the ventilation system, the selection of safe materials) Structural capacity of the block if the double facade is hanged to the building (in many Italian residential blocks, like **Laurentino 38**, tenants made inner changes. Alterations they made, like moving of walls and/or big openings, have to be calculated to design the new facade);	Critical deterioration of the envelope; Condensation could be caused by high difference in temperature between inside and outside	Critical deterioration of the envelope; Condensation could be caused by high difference in temperature between inside and outside	Structural capacity of the block (in many Italian residential blocks, like **Laurentino 38**, tenants made inner changes. Alterations they made, like moving of walls and/or big openings, have to be calculated to design the new facade); It is technically more difficult and limited in flexibility of solutions where it was used the tunnel technology (see restrictions in measures from 1 to 20. Clearly, this is true also in the case of Laurentino 38); In choosing a new envelope, also health need to be considered (in terms, for example, of ventilation system and safety materials).			W
**	**	*	***	**	APPEARANCE	S
Break of repetitiveness. Transformation of massiveness and silhouette; Better appearance of air cavity if using materials that remind good quality housing (no cheap materials like masonry or plastic)	When added from the outside: changes the appearance of exteriors and improves appearance if using materials that remind good quality housing (no cheap materials like masonry or plastic); break of repetitiveness especially when colors and textures are changed; improve the appearance if using materials that remind good quality housing (no cheap materials like masonry	Better appearance if using materials that remind good quality housing (no cheap materials like masonry or plastic); Window system can be changed preserving the appearance;	Highest transformation potential of entire block	If integrated in the architecture design		
Limited to one side of the building; Repetition of the same solution (like shape and material) could replicate initial problems (like a plain façade); Short lasting materials shorten 'wow effect' of renovation	Clearly, no improvement of appearance when thermal insulation is added from inside. But there is a decrease of inner surface of the dwelling	Short lasting materials shorten 'wow effect' of renovation	Integration with buildings nearby	No improvement of appearance when simply placed where space available		W
Address societal concerns; Reduces noise annoyance; Improves residential satisfaction	Address societal concerns; Reduces noise annoyance; Improves residential satisfaction; Leaves money for living saved from lower energy bills	Address social control; Reduces noise annoyance and improves residential satisfaction	A label (plate) attached outside the dwelling showing new energy consumptions could make tenants more aware of energy issues and solicitude energy based behaviors. However, this measure alone does not work in practice. Combination with other initiatives is required.	Addresses societal concerns, people value visible measures	SOCIAL ASPECTS	S
						W
Leads to a substantial improvement of the dwellings' quality; No special expertise is required; Improvement of housing quality without moving the walls; Tenants can stay their dwellings during the works; Relevant transformation of appearance could be used as a window sponsoring the restructuring of the area; Could be used as a selling point	Leads to a substantial improvement of the dwelling's quality - inner comfort; Special expertise is required to prevent any moisture and health problem; Improvement of housing quality without moving the walls; Renovation works could be very quick. Thus, if additional insulation form inside, move of tenants could be managed more easily and causing less expenses; If additional insulation form outside tenants can stay their dwellings during the works.	Quick improvement of housing quality; No special expertise is required;	High potential for changing market position of dwellings; Effective energy consumptions could serve as a selling point; Can be a good alternative to demolition (in terms of financial returns on the long term and energy efficiency, and when demolition is obstacle due to the location). However, it requires substantial investments; Waste of (selective) demolition could be reused for new construction in the neighborhood (see Germany); Dutch law provides that demolition waste has to be reused - mostly for roads and concrete contraction works; Depending on the characteristics of the new envelope the process can be a very quick (even just two weeks); Recycling of waste obtained from the works (also facade and windows) is technically feasible;		FEASIBILITY	S
Need for an ad-hoc regulation to manage the transformation; Need of technical expertise; Relevant transformation of the appearance could be subjected to the approach undertaken by the housing association; Energy savings for renovation of existing social housing estates is not compulsory, but it will be in the next future; 'Sustainable renovation' is an investment on the long run;	Savings on energy costs do not constitute a financial return for the housing association but only for tenants; Energy savings for renovation of existing social housing estates is not compulsory, but it will be in the next future		Need for an ad-hoc regulation to manage the transformation; Selective demolition is necessary for which special expertize is required. In the case of Italy, the lack of experience could be a limitation (this is particulalry true in the case of neighbourhoods like **Laurentino 38** where it has been used the tunnel technology); Tenants should move another place during the works, that means expences for grants and temporary accommodations; In the Netherlands, far less than 50% of tenants return their dwellings that could lead to letting problems and vacancy after renovation; Need of technical expertise; Implies substancial initial investments with financial returns are on the long term; If the commercial value of the site is high and there are no special restrictions for the location, it is possible the housing association will decide for demolition. However, the existing social structure can have a lot of influence;	Need of technical expertise; Savings on energy costs do not constitute a financial return for the housing association but only for tenants; Energy savings for renovation of existing social housing estates is not compulsory, but it will be in the next future;		W

Directed to SOCIAL ASPECTS						
PHYSICAL CHANGES			CHANGE TARGET GROUP			
						
41 Improvement of building recognizability	42 Dwellings with own entrance	43 Dwellings on the ground floor overlooking the street	44 Combination of social housing and homeownership	45 Shift from social housing to homeownership		
Improvement of housing differentiation; Vertical-horizontal extension/contraction of dwellings; Improvement of performance of existing envelope (like thermal and sound insulation, ventilation, day light and shadings) and total energy consumptions.	Improvement of accessibility to the dwellings; Contribute to differentiation of accessibility according to dwelling types;	Improvement of accessibility to the dwellings; Contribute to differentiation of accessibility according to dwelling types; Soften the shift from high to eventual low-rise nearby; Make use of the short span at the ground floor; When porticoes at the ground floor improving of energy savings;	Improvement of housing differentiation; Vertical-horizontal extension/contraction of dwellings;	Improvement of housing differentiation; Vertical-horizontal extension/contraction of dwellings;	PHYSICAL ASPECTS (technical-functional)	S
Local regulation (in Italy size and number of rooms of social dwellings are subjected to restrictions provided by law); Local regulation with respect to its integration with the surroundings; Structural capacity of the block (in many Italian residential blocks, like **Laurentino 38**, tenants made inner changes. Alterations they made, like moving of walls and/or big openings, have to be calculated to design the combinations); If the exisiting facade is integrated or substitued see restrictions measures directed to physical aspects.	Building layout and dwelling types; Accessibility system could need substancial adaptations (see also measure 15, 16)	Building layout and dwelling types (see also measures from 8 to 11)	See all measures directed to physical asepcts (from 1 to 20)	See all measures directed to physical asepcts (from 1 to 20)		W
***	*	*	***/absent	***/absent	APPEARANCE	S
If implemented by entire substitution of façade: breaks massiveness, transforms massiveness and silhouette; Better appearance if using materials that remind good quality housing (no cheap materials like masonry or plastic)	Facilitate differentiation between bottom and upper floors	Facilitate differentiation between bottom and upper floors	No alteration of architectonic characteristics of the existing block if moving only inner walls	No alteration of architectonic characteristics of the existing block if only moving inner walls		
Repetition of the same solution (like shape and material) could replicate initial problems; Lack of integration with the surroundings; Short lasting materials shorten 'wow effect' of renovation			Renovation is not visible outside	If no transformation of external walls, transformation is not visible outside		W
Contribution to the improvement of social safety; Improvement of recognizability of single blocks and sense of identification; Improvement of orientation within the area; Contribution detaching bad reputation; New look could function as a landmark increasing livability and attractiveness;	Preventing social conflicts in collective stairwells	Improvement of social safety nearby the block; Higher livability by more green also contributing decreasing stress; Improvement of attractiveness	Provision of housing for wider groups; Social mix preventing ghettoization; Provides opportunities for housing career; Gaining ownership might reduce social problems as people care more about private goods than rented goods. Empowerment	Contribution to housing differentiation on neighborhood level; Gaining ownership might reduce social problems as people care more about private goods than rented goods. Empowerment	SOCIAL ASPECTS	S
Contribution to the improvement of social safety; Improvement of recognizability of single blocks and sense of identification; Improvement of orientation within the area; Contribution detaching bad reputation;			Effective mix of different groups (income level and nationality) could be difficult; When combination uses the bottom, possible lack of safety because of the direct spatial relationship of housing with the surroundings (this could be particularly true in very deprived Italian neighborhoods like **Laurentino 38**)	Effective mix of different groups on neighborhood level (income level and nationality) could be difficult; When shifting to entire homeownership, possible lack of safety due to the direct spatial relationship of housing with the surroundings (this could be particularly true in very deprived Italian neighborhoods like **Laurentino 38**) Effectiveness of renovation design could be subjected to preferences of people;		W
Relevant transformation of appearance could be used as a window sponsoring the restructuring of the area; Could be used as a selling point			Differentiation of housing supply leads to differentiation of market position of dwellings;	Leads to a substantial improvement of the dwelling's quality; High financial returns on the short term;	FEASIBILITY	S
Attract different target groups could be difficult even when the appearance substantially change; Relevant transformation of appearance could be subjected to the approach undertaken by the housing association; If the commercial value of the site is high and there are no special restrictions for that location, it is possible the housing association will decide for demolition;			Need for an ad-hoc regulation to manage the transformation; Location and competition with other neighborhoods could be an obstacle in attracting other target groups; Tenants should move another place during the works, that means expenses for grants and temporary accommodations; In the Netherlands, far less than 50% of tenants return their dwellings that could lead to letting problems and vacancy after renovation; If the commercial value of the site is high and there are no special restrictions for that location, it is possible the housing association will decide for demolition;	Need for an ad-hoc regulation to manage the transformation; Location and competition with other neighborhoods could be an obstacle in attracting other target groups; Tenants have to move elsewhere; Attract different target groups could be difficult even when the appearance substantially change; Relevant transformation of the appearance could be subjected to the approach undertaken by the housing association; If the commercial value of the site is high and there are no special restrictions for that location, it is possible the housing association will decide for demolition;		W

Directed to SOCIAL ASPECTS				
CHANGE TARGET GROUP				
				
46 Entire/partial transformation into dwellings for other target groups (like elderly in need of care, students, atelier, high-income elderly)	47 Combination of social housing and small commercial activities/offices	48 Combination of housing for elderly and medical care/nursery		
Improvement of housing differentiation; Vertical-horizontal extension/contraction of dwellings;	Enrichment of functions usable not only on building but also on neighborhood level; Establishment of new functional relationship between residential and non-residential (residents make use of the facility)	Enrichment of functions usable not only on building but also on neighborhood level; Establishment of new functional relationship between residential and non-residential (residents make use of the facility)	PHYSICAL ASPECTS (technical-functional)	S
See all measures directed to physical asepcts (from 1 to 20)	See all measures directed to physical asepcts (from 1 to 20, in particular non-residential functions from 18 to 20).	See all measures directed to physical asepcts (from 1 to 20, in particular non-residential functions from 18 to 20).		W
*/*** Different appearance depends on the extent of the transformation	*/*** Different appearance depends on the level of alteration of architectonic characteristics of the existing block	*/*** Different appearance depends on the level of alteration of architectonic characteristics of the existing block	APPEARANCE	S
	Lack of integration with the rest of the block	Lack of integration with the rest of the block		W
Increasing livability as students are less inclined to racial tensions. Also artists improve livability	This could ensure higher level of social safety and livability during the day (especially when activities are placed at the bottom). Also small shops are not anonymous; The facilities could be used by all the people living in the neighborhood (this could be particularly effective in those Italian neighborhoods where there is a lack of small business and/or offices like **Laurentino 38**);	Advantage to stay in the local neighborhood that is very familiar with those you already know since ages and close to children; Medical care and/or educational facilities could be used by all the people living in the neighborhood (this could be particularly effective in those Italian neighborhoods where there is a lack of social services like **Laurentino 38**); When housing is combined with education there might be a mutual social exchange (see example in Tab. 4 Chapter 4, where elderly people are involved with the activities of the nursery school attached at the bottom)	SOCIAL ASPECTS	S
Effective mix of different groups on neighborhood level (income level and nationality) could be difficult; When mixing many housing types using the bottom, possible lack of safety due to the direct spatial relationship of housing with the surroundings (this could be particularly true in very deprived Italian neighborhoods like **Laurentino38**)	During the night, when non-residential activities placed at the bottom do not work, there might be a lack of social safety (especially in very deprived Italian neighborhoods like **Laurentino 38**)	During the night, when non-residential activities placed at the bottom do not work, there might be a lack of social safety (especially in very deprived Italian neighborhoods like **Laurentino 38**)		W
Differentiation of housing supply leads to differentiation of market position of dwellings;	Could lead to improve market position of dwellings; Contribute to the financial return of the renovation (renting/selling the rooms); Combination with the existing block could decrease the amount of shared spaces resulting in less expenses for maintenance; No special expertise is required; Tenants can stay their dwellings during the works;	Contribute to the financial return of the renovation (renting/selling the rooms); Combination with the existing block could decrease the amount of shared spaces resulting in less expenses for maintenance; No special expertise is required; Tenants can stay their dwellings during the works;	FEASIBILITY	S
Need for an ad-hoc regulation to manage the transformation; Location and competition with other neighborhoods could be an obstacle in attracting other target groups; Tenants should move another place during the works, that means expenses for grants and temporary accommodations; In the Netherlands, far less than 50% of tenants return their dwellings that could lead to letting problems and vacancy after renovation; If the commercial value of the site is high and there are no special restrictions for that location, it is possible the housing association will decide for demolition;	Need for an ad-hoc regulation to manage the transformation; Functioning of the facilities could be obstructed by the location of the existing estate, bad reputation of the area, competition with other neighborhoods and local demand; Effective management of the building site is required;	Need for an ad-hoc regulation to manage the transformation; Functioning of the facilities could be obstructed by the location of the existing estate, bad reputation of the area, competition with other neighborhoods and local demand; Effective management of the building site is required;		W

CHAPTER 9
CONCLUSIONS AND RECOMMENDATIONS

INTRODUCTION to this chapter

This research originates from the following problem: How to improve the quality of the post-war social housing stock in Rome considering the actual context? The aim is to provide a framework of physical measures for renovation directed to the building envelope to support the decision making process of the housing institution and draw directions for improvement of its intervention strategy. Both directions and physical measures could be extended to other Italian housing institutions as well.

To meet the aim of this research, three main research questions are formulated. The conclusions are assembled in this chapter.
R.Q.1) What solutions to improve renovation of social housing estates in Rome can be found in the Dutch housing management model?
R.Q.2) What envelope directed physical measures have been applied in good examples of renovation of social housing estates in the Netherlands?
R.Q.3) What might be strengths and weakness of implementing Dutch physical measures for renovation in the Roman context?

Accordingly, Section 9.1 presents the main conclusions of this study following each research question and its respective conclusions. Section 9.2 provides a number of recommendations distinguished into recommendations for the practice and for further research (Section 9.2.1 and 9.2.2).

9.1) MAIN CONCLUSIONS

In this section conclusions to each of the three main research questions are provided.

9.1.1) RESEARCH QUESTION 1

RQ 1) What solutions to improve renovation of social housing estates in Rome could be identified in the Dutch housing management model?

RESEARCH QUESTION 1

Solutions to improve renovation of social housing estates in Rome are provided distinguishing two groups of indicators: related to the management model of the housing association and to the implementation of renovation.
The first group is discussed in Chapter 3 and is defined elaborating on those elements of the Dutch housing model that might be transferred to ATER Roma. As a result of a qualitative investigation, in fact, it emerged that a restructuring of the company is unrealistic if the management model and the organizational structure are not changed.
Indicators of the second group are described in Chapter 8 and are assembled considering the most relevant aspects that emerged from the matrix of physical measures for renovation. The matrix was developed extrapolating the solutions from a number of Dutch examples of renovation.
Since in Section 8.2 of Chapter 8 the two groups are already assembled and discussed, in this chapter a list of all the indicators and a brief description is presented.

It has to be mentioned here that the indicators from the first group, the management model, constitutes a precondition for implementation of those in the second one, the implementation of renovation strategies. In the specific case of ATER Roma, however, differences in the two contexts, Italy and the Netherlands, also make it clear that a simple transfer of Dutch solutions to ATER are not feasible. Nevertheless, taking into account the differences in the context, the suggested directions necessarily are not restricted to ATER itself, but also have consequences for the external regulations and regional housing policies as well. Since they all lead to introducing a much more market-oriented housing policy in the social rented sector of the Regione Lazio, politicians need to balance an additional financial support of ATER against the potential danger of introducing market principles in ATER's operations.

THE MANAGEMENT MODEL

MANAGEMENT MODEL

Introduce a less restrictive rent policy and more market conformity of selling prices

- Distinguish a core social housing stock, for which rents need to be restricted, and a liberalized housing stock, for which ATER can follow a more market-oriented rental policy.
- Set up limits to the increase of the total rent sum of ATER for the social housing stock part, while ATER has the opportunity to differentiate rent levels to achieve more market-oriented rent levels (Chapter 3, Section 3.3).
- Set the selling prices much closer to market levels (see the Netherlands, were social dwellings are sold at 90% of their market value. Additional reductions can come from the Purchasing Grant (BEW): 20% additional discount for new households and 30% for actual tenants). (Chapter 8, Section 8.2.1).

Introduction of a professional (re)development department within ATER

- Set up a new professional department to carry out restructuring policies for its housing stock, with a particular emphasis on profitable opportunities.
- The department has to analyze the housing stock and land properties of ATER from a market perspective (Chapter 3, Section 3.3). The main questions would be:
    - Which estates can be sold and/or redeveloped into the commercial segments of the housing market?;
    - Which locations where ATER owns land can be exploited to generate profits?
    - Where in the Lazio region do opportunities exist to develop commercial dwellings and other real estate?

Divide ATER into two bodies: a social housing organization and commercial enterprise

- The social housing organization manages and maintains the core social housing stock.
- The commercial enterprise, set up as a daughter organization to the social mother (by means of stock transfer partly financed by private loans), manages and maintains the more expensive stock and locations that are more popular on the housing market. It undertakes also (re)development activities within and outside the housing stock of the ATER.
- The commercial enterprise has to generate positive financial returns for its mother shareholder. It should have a separate board, be exempted from restrictive rent policies and selling price regulations and be independent from the political context of the mother organizations. (Chapter 3, Section 3.3)

IMPLEMENTATION OF RENOVATION (PHYSICAL SOLUTIONS)

IMPLEMENTATION OF RENOVATION

To define indicators to facilitate implementation of physical solutions, the Dutch examples (see Chapter 4, 5 and 6), the actual context of Rome (Chapter 7), the theoretical background (Chapter 2) and the strengths and the weaknesses described in matrix of physical measures are considered (Chapter 8, Section 8.1.3).

Ad-hoc regulations for transformation of existing housing blocks.

- In the Italian social housing sector are valid two types of regulations: those specifically for social housing (like the standards setting the exact dwellings' size according to the number of people, or the maximum cost for new construction) and those that apply to the homeownership sector (like the law on energy savings defined in the early '90s). This overlap makes the implementation of the solutions discussed in Chapter 8 particularly difficult (especially densification and transformations of cubature). Moreover, the regulations in the first group are obsolete.
- High-level renovation would be possible if the system of regulations is changed to guarantee higher flexibility of transformation and speed up the whole process.

Differentiate housing supply to meet requirements of specific target groups.

The Social housing stock in Italy needs to be updated to meet the current requirements. The actual layout of dwellings defined by the standards of the '60s does not fit the demand anymore (for example in terms of type, size and number of rooms). By transforming the existing housing units, the current supply can be differentiated to be affordable to wider groups (different households and income level). Social and market analysis could help in finding the right target groups thus managing differentiation to meet actual requirements.

Combine housing differentiation with reduction of uncontrolled public spaces.

- Matching renovation of existing social housing estates with 'densification' of the public green by construction of new homeownership housing can improve liveability and social safety of the neighbourhood (see Chapter 6, Section 6.1). This also leads to fewer expenses for maintenance.
- Effective decrease in the incidence of uncontrolled open areas can be achieved by building dwellings more popular on the housing market, like row-houses (like in the F neighbourhood). This could also prevent improper use and abandonment of spaces.
- In the case of existing high-rise, their spatial relationship with the surroundings can be improved by attaching new low-rise at the bottom (like new studio-apartments. Chapter 6, Section 6.2) and by enlarging or opening new passageways.
- According to the instruments currently available in Italy and the model of housing institutions like ATER, these transformations could be achieved by developing a "Contratto di Quartiere" (Chapter 7, section 7.2.1).

Improve energy efficiency of the building envelope.

- When preserving the casco structure almost everything is possible with respect to high energy efficiency. The Life span of the building is extended up to 25 years or more. Also, waste of (selective) demolition might be recycled.
- High-quality and long-lasting envelope materials lead to: higher comfort within the dwellings, higher savings on energy bills, less expenses for maintenance of the exteriors and prolongation of the 'just renovated' effect (physical characteristics that make the perception of the renovation as implemented short time ago).
- Both the improvement of energy savings and a higher functional quality of existing dwellings can be obtained by combining substitution of the envelope with addition of new building volumes where the greatest thermal dispersions are placed (Tiburtino III. Chapter 4).
- Substitution of the existing envelope combined with addition of new building volumes where the greatest thermal dispersions are placed, leads to high energy savings. Therefore, better energy performances of the envelope can be matched with the differentiation of the housing supply to get higher energy savings as well as improving the functional quality of the dwellings.
- Savings on energy bills might prevent rent arrearage by making the dwelling more affordable for lower income groups.

Transform physical characteristics of the building envelope to get attractive neighbourhoods.

- Attracting wider groups of potential residents could be achieved by diversifying the existing housing supply and making the built environment more appealing.
- The appearance of existing buildings can be improved by transforming the physical characteristics of the facades (like shape and materials).

- The physical measures that lead to transform the appearance of the facades are those that aim at an interrupting of the repetition and the massiveness of the envelope, and diversifying its silhouette (profile) (Matrix in Chapter 8).

Design physical transformations in agreement with structural advisers.

- All the physical interventions aiming at changing the existing layout of the building (like combination of existing units or substitution of the façade) must be planned according to its actual constructive stability and load bearing possibilities.
- In the cases like Laurentino 38, where the tenants made lots of changes inside their dwellings (like the moving of walls and making new openings), a prerequisite is a clear update of all the transformations.

Employ new housing as temporary accommodations for tenants

- Since in both implementation of high-level renovation and envelope directed approach tenants have to move out during the works, the addition of new housing units (like optoppen, new low-rises and top-end attached at the bottom or maisonettes at the ground floor) could be used as temporary accommodation.
- Special measures should be undertaken to prevent social problems like squatting during the process (particularly in neighbourhoods in troubles like Laurentino 38).

9.1.2) RESEARCH QUESTION 2

RQ 2) What envelope directed physical measures have been applied in good examples practices of renovation of social housing estates in the Netherlands?

RESEARCH QUESTION 2

Learning form best practice and good examples can be inspiring in contexts standing for alternative approaches to renovation. This is the reason why it has been decided to observe some examples already realized in the Netherlands. Conclusions concerning Research Question 2 are spread over Chapter 4 (ten examples of renovation), Chapter 5 (the Bijlmermeer) and Chapter 6 (the Florijn Noord). The answer to this question it is not provided by presenting the entire list of physical solutions (see the matrix in Chapter 8) rather by describing groups of measures, their purpose and location within the existing block.

Especially when awarded or nominated by the National Renovation Prize the projects included in this study are not only useful in the view of possible transferability of measures to other contexts, but also to improve the knowledge on the possible solutions for physical transformation for existing buildings (list in Section 8.1.1). However, as already discussed in the previous section, their actual applicability could be strongly subjected to specific local restrictions (like, for example, building regulations). This is the reason why the two groups factors described above are relevant for the feasibility of such transformations, especially those indicators related to the model of the housing association. Considering the current social housing system in Rome, in fact, most of them would not be applicable.

Fours groups of measures are extrapolated from the Dutch renovations.

In terms of purpose the range of physical solutions applied in the projects presented in this study are quite homogeneous and can be grouped as follows:

- Measures directed to physical aspects (technical and functional quality).
  Those regarding transformation of existing dwellings, addition of new dwellings, (selective) demolition, improvement of accessibility, conversion-addition of non-residential functions and placement of storages;

- Measures directed to appearance.
  Those regarding the façade (mainly cladding and new volumes), the entrances to the building, the bottom of the building, stairwells and elevators, and parapets (like shape, colour and material);

- Measures directed to energy efficiency.
  Those aiming at improving the technical performances of the façade (like additional thermal insulation), recycling and technical installations (photovoltaic panels);

- Measures directed to social aspects.
  Physical changes (mainly to improve sense of identification) and changing/extending the target group (by combining social rented with homeownership and/or other functions).

Those groups supported the structure of the matrix in Chapter 8 (section 8.1.1).

Common aspects of renovation and location of physical solutions: the Bijlmermeer.

Despite of being under extended demolition plans, the Bijlmermeer assembles many solutions to improve the physical quality of the blocks. Observing some of the examples implemented so far (list and the table with pictures in Chapter 5, Section 5.2.4), there are four common aspects threatened by renovation:

- Functional quality on building level.
  Improvement of the accessibility to the block and/or the dwellings (usually by means of additional elevators), social safety and liveability of shared spaces (demolition or improvement of inner walkways);

- Housing differentiation.
  Adaptation of the existing dwellings by combination of existing units (not very often due to costs);

- Technical performances.
  Improvement of thermal insulation of the existing façade;

- Appearance.
  Initial architectural features of the exteriors are mostly preserved. Major transformations regard the bottom of the building (maisonette and entrances) and the elevators. Quite common is the re-painting of the top-end of the block with recognizable drawings. After the renovation, the original façade is often still recognizable especially in the structural form of two-level base with superstructure and vertical elements (Chapter 6, Section 6.2.2).

According to their location within the buildings, interventions can be roughly gathered into two groups:

- Bottom and the first floor.
  Mainly solutions directed to the improvement of the accessibility to the building and the dwellings (also restyling of existing entrances), addition of social facilities (school, special services) and housing differentiation by combination of existing housing units and storages (maisonette - atelier).
  Common are interventions like upgrading or enlarging of the existing passageways.

- Upper floors.
  Usually are improved the accessibility to the dwellings (like interruption of long galleries by attaching new elevators) and the housing differentiation by combination of existing units (less common. Chapter 6, Section 6.2.1).
  Technical interventions usually regard additional thermal insulation and/or change of window frames/glazing or front-doors facing the galleries. The most visible changes are directed to the elevators (upgrading and additions) and change of parapets. Because of their technical state and/or to enlighten the flats, concrete parapets are often substituted with transparent materials. The 110cm high parapets, in fact, obstructed the view and penetration of natural light (Chapter 5, Section 5.2.4).

Physical solutions adopted in the Florijn Noord.

Some of the solutions implemented in this project, especially those regarding housing differentiation, might be inspiring for future renovations.

- Change of the total high-rise cubature (building volume).
  Regards the addition of a new the top-end (residential tower and transversal low-rise housing), the subtraction by selective demolition (inclined building portion between Florijn Noord and Zuid) and the extension by attaching new housing volumes (ateliers at the bottom).

- Interventions within the dwellings.
  Adaptation for special groups by vertical and/or horizontal combination (atelier for artists and dwellings for students).

- Use of the bottom.
  Conversion of existing housing units into rooms for rent (commercial activities) and of some of the storages into ateliers.

- Redefine accessibility.
  Addition of elevators and subdivision of long galleries. New entrances.

- Appearance of shared spaces.
  Aesthetical improvement of entrances, staircases and galleries (more space, new materials, colours and paintings) and substitution of parapets (concrete panels into soft-green glass);

- Improvement of technical aspects.
  Addition of insulating layers (from inside), renewal of water supply and sewage system, and installation of district heating and upkeep of installations within the dwellings.

By observing the projects presented in this research two major negative aspects have to be reported:

1) Envelope directed approach for renovation (preserving the bearing casco and substituting the existing façade), is not common in the Netherlands.

There are only exceptional projects in which the building envelope was adapted or completely changed to improve the quality of the building and transform its identity (like De Leeuw van Vlaanderen and Osdorperhof in Amsterdam.). This approach, in fact, does not represent the actual practice. Renovation is rather dominated by interventions improving the quality of the block, meanwhile preserving the initial architectural appearance by conserving its relevant characteristics. This emerged comparing ex-ante and ex-post renovation of examples like Enschedelaan (Den Haag) and most of the other projects by van Schagen Architekten (Chapter 4). Clearly, this is not to say that such an approach is wrong or limited. Rather, that it is the one mostly implemented so far and that other approaches, like radical transformations aiming at substantially change the 'look' of the block, like envelope directed approach, remain on paper (Gigantic and Kleiburg) or are exceptionally developed. In this respect, the renovation of high-rise blocks in the Poptahof (Delft) will be very interesting, where the building envelope is going to be substituted and integrated to get a completely new appearance (Chapter 8, Section 8.1.2) .

2) Energy savings in renovation is very limited

Few of the Dutch examples until now are driven by a kind of 'energy efficiency approach to renovation'. Thermal insulation of existing envelope is the most common solution. This is quite surprising in the view of the European Performance Building Directive - EPBD (refer to 'Improve energy efficiency of the building envelope' in the previous section and Chapter 4).

9.1.3) RESEARCH QUESTION 3

RQ 3) What might be strengths and weaknesses of implementing Dutch physical measures for renovation in the Roman context?

RESEARCH QUESTION 3

In Chapter 8 a matrix of physical measures for renovation aiming at supporting decision making is presented. Each of the 48 solutions is provided with its respective strengths and weaknesses in terms of physical aspects, appearance, social aspects and feasibility. All strengths and weaknesses can not be listed and commented here, therefore are only reported general observations.

Housing differentiation

- Major strengths of transformations to improve the existing housing supply can be the following. Dwellings become affordable for wider groups (size, age and income of households) and free choice possibilities are extended ('housing career'). Shifting to homeownership gives a short term financial return for the housing association (if dwellings are sold at market price) and can reduce social problems (people care more about private than rented goods. But there is no no scientific evidence to substantiate this). Unused spaces within the block can be used for transformation leading to less uncontrolled spaces and less expenses for maintenance. Higher livability and more social safety can be obtained when the relationship of the building with its surroundings is improved (new dwellings at the ground floor, new passageways, etc.
- Weaknesses can be: mixing different groups is difficult (could be limited to some segments of the social structure) and lack of privacy or higher criminality figures (thefts) might derive when using the ground floor, especially to place housing.
- Limitations for feasibility can be summarized as local regulations, structural stability of the block (and technology), available space (like height of ceilings), need for further facilities (if "optoppen: elevators might be required) and removal of tenants during the works.

Accessibility

- The existing accessibility system, thus the functional quality of the entire building, can be improved by: restyling and/or adding new galleries, elevators (and staircases) and further entrances (Chapter 4 and 5).
- These changes make also dwellings available for wider groups (like elderly, disabled and families with kids). By using specific solutions, transformation of the accessibility can not only improve the livability but also improve the attractiveness and the recognizability of the building (see the matrix in Chapter 8).
- For transformation of accessibility the limitations listed above are valid.

Non-residential functions

- Most common non-residential functions added to the existing buildings presented in the study are education, social services, small commercial business and medical care. They can: improve the livability of the block and its surroundings (better relationship of the residents with facilities of their building.), attract people form other neighbourhoods and decrease sense of anonymity (Chapter 4. tab. 4).
- A weakness is that social problems might emerge, due to the fact that those functions mostly are closed at night.
- Feasibility might be restricted by: location and bad reputation of the area, competition with other neighbourhoods. This is also true for the two previous issues.

Energy efficiency

- General strengths of implementing measures directed to energy efficiency can be that they leave more money for the residents for living expenses, thanks to lower energy bills. These measures also can improve the societal awareness of the residents (they are also citizens).
- Major weaknesses related to the implementation of energy efficiency measures are that they are not yet compulsory, require higher investments but constitute a financial return only for the residents. They are usually not integrated with other solutions (like heat pumps, heat power, central systems and biogas) and often do not treat aspects related to inner comfort (natural ventilation, overheating, health, condensation, cold bridges and noise due to air circulation).

Appearance

- Strengths of adopting those measures aiming at improving the 'look' of the building can be: improvement of its recognizability thus the orientation within the

neighbourhood and the sense of identification (see the power of 'landmark' renovation), particularly recognizable renovation can be used to sponsor the restructuring of the area (also leading to higher confidence by people).
- Weaknesses can be that the repetition of the same solution could replicate the problem, high degrees of differentiation could lead to a 'patchwork' effect, radical solutions might not be appreciated by the residents (only certain groups) and change of the initial look might be subjected to the approach undertaken by the housing association and the local building regulations.

Demolition
- Above all the mentioned issues the most relevant factor in implementing the discussed group of physical measures is: why go for demolition rather than renovation?
  Motivations in favour of demolition can be the high commercial value of the land where there are no special restrictions (like historical or environmental), presence of residents, corporate objectives, image, management policies and even an "hidden agenda" (van der Flier and Thomsen, 2005 and 2006) (Chapter 4 and 8).

9.2) RECOMMENDATIONS

9.2.1) GENERAL RECOMMENDATIONS FOR THE PRACTICE

Based on the information described in this study, a list of general recommendations that might serve as a reference when implementing renovation projects is added:

GENERAL RECOMMENDATIONS

- Social housing systems, management models and solutions for implementation of strategies adopted in other countries should inspire alternative models for the Italian social housing context.

- For renovation to be successful the approach should be integrated assembling physical, social and (micro) economic factors. Solution sonly on physical aspects alone will not succeed.

- Architecture is not the key factor for successful renovation but can substantially contribute in revising the decay process on neighborhood level. It should not be overestimated but rather be considered as one of the crucial aspects of renovation.

- Attractiveness of the built environment for wider groups is a crucial issue. On the building level, this could be achieved by improving the differentiation of the existing housing supply combined with the physical transformation of the exteriors (the building envelope).

- If based on preferences of people for residential facades, the improvement of the appearance of deprived social housing estates could be employed to change bad reputation and improve neighborhood image. However, it should be integrated within restructuring plans on a neighbourhood level.

- Successfulness of renovation also depends on the scale of the interventions. Solutions should not be directed to the single buildings alone but also to the surroundings. The role and incidence of open areas, the border between public and private proprieties, the accessibility system and the mix with non-residential functions should deserve more attention.

- On the physical level, combination of solutions directed to the housing differentiation, the improvement of the accessibility, the mix of different functions, the appearance of exteriors and higher energy efficiency can contribute improving the livability.

- Energy efficiency in renovation demands more attention, especially in regards to the goals of the European Union.

- Envelope directed renovation approach is not very much diffused. In Italy it is absent. Specific investigations and pilot projects should be implemented to verify further perspectives and feasibility. Measures should be undertaken to prevent innovative solutions fade into the background. This also regards the practice in The Netherlands.

- Asset management of social housing buildings should be “hands on”. Only than squatting and rent arrears can be prevented. Special regulations should assign the responsible parties the right power to intervene.

9.2.2) DIRECTIONS FOR FURTHER RESEARCH

As stated in Chapter 1, a purpose of this study is also to improve the knowledge on renovation approaches to improve physical quality of social housing estates. The research focused on the Netherlands, but there are other countries that should be investigated to build up a broader framework on renovation strategies (like, for example, England, Germany, France and Denmark).
According to the issues emerging in this study, two main directions for further research are recommended. In a way, they derive from the two groups of indicators described in Chapter 8: the model of Italian housing associations and the implementation of renovation.

FURTHER RESEARCH

The first direction refers to the feasibility of renovation considering in the actual Italian context. This would require, for example, deeper insights into the social housing system on national, regional and municipal level, technical comparisons with alternative effective management models of social housing, insights into the costs for renovation (attention to the economic side of housing management in relation to rent policies, selling strategies, etc..). and investigations within other Italian housing associations, like for example, those in better financial conditions (Do they develop high-level renovation? How? Why?)

The second direction refers to the implementation of renovation. Aspect to be investigated could be the relationship of the building with the surrounding open areas and sustainable transformation of existing blocks. As discussed above, also the appearance of the built environment deserves further attention. In relation to the latest aspect, a question could be: How to implement attractive renovation of social housing estates? Additional investigations might be focused on the building envelope and in particular on those attributes of residential facades people appreciate the most (like shape and materialization). How to take advantage of seductive renovation, by maximizing attractiveness of building exteriors exteriors, to attract people living in the neighbourhood? Additional insights might derive from extending the investigations not only to the Netherlands but also to other countries like, for example, Italy.

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