

# City: Rotterdam

## Integrated Action Plan for Urban Resilience

<b>1. INTRODUCTION.....</b>	<b>2</b>
<b>2. CURRENT SITUATION (STRESSES AND SHOCKS).....</b>	<b>4</b>
MAIN RESILIENCE CHALLENGES FOR ROTTERDAM.....	4
RESILIENCE CHALLENGE IN ROTTERDAM DISTRICTS FEIJENOORD AND AFRIKAANDERWIJK.....	5
<b>3. WORKING FOR URBAN RESILIENCE IN URBAN LIVING LABS.....</b>	<b>10</b>
OBJECTIVES OF THE INTEGRATED ACTION PLAN.....	10
APPROACH TO REACH THE GOALS OF THE INTEGRATED ACTION PLAN.....	11
DEVELOPMENT AND APPROACH OF THE OPPORTUNITY MAP MANUFACTURING.....	12
THE URBAN LAB: FEIJENOORD AND AFRIKAANDERWIJK DISTRICTS .....	14
THE LOCAL ACTION GROUP AND STAKEHOLDERS.....	15
<b>4. THE VISION OF URBAN RESILIENCE (VISION AND OBJECTIVES).....</b>	<b>18</b>
URBAN RESILIENCE FOR ROTTERDAM.....	18
VISION FOR URBAN RESILIENCE ON A DISTRICT SCALE.....	19
VISION FOR A RESILIENT FEIJENOORD AND AFRIKAANDERWIJK.....	21
OBJECTIVES FOR A RESILIENT FEIJENOORD AND AFRIKAANDERWIJK .....	22
<b>5. PATHWAYS TO URBAN RESILIENCE.....</b>	<b>25</b>
<b>6. MONITORING AND ASSESSING THE PROGRESS TOWARDS URBAN RESILIENCE.....</b>	<b>30</b>
<b>7. EXPERIMENTING FOR URBAN RESILIENCE .....</b>	<b>35</b>
EXPERIMENTS: OPPORTUNITIES TO STRENGTHEN RESILIENCE ON A LOCAL SCALE.....	35
<i>Afrikaander Market: multi benefits of waste separation and re-use.....</i>	<i>35</i>
<i>Local wastewater treatmentplant: watermanagement on a local scale .....</i>	<i>37</i>
<i>The Peperklip: an apartment building with a challenge.....</i>	<i>38</i>
WHAT DO WE LEARN FROM OUR ACTIVITIES FOR BUILDING URBAN RESILIENCE AS ULG? .....	41
WHAT DO WE ALSO LEARN FROM THE EXPERIMENTS?.....	41
<b>8. CONCLUSION.....</b>	<b>44</b>
RELATED STRATEGIES .....	44
FUNDING SCHEMES .....	44
<b>APPENDICES.....</b>	<b>45</b>

## 1. Introduction

Urban resilience is a priority policy issue since Rotterdam in 2013 joined the 100 Resilient Cities network, pioneered by the Rockefeller Foundation. The Rotterdam Integrated Action Plan, developed within the URBACT-project RESILIENT EUROPE, will focus on the approach and means needed for implementation of actions that meet the challenges for Rotterdam. These challenges are described, on a city-wide scale, in the Rotterdam Resilience strategy that was launched May 2016.

During the strategy development process, and still in progress, raising awareness and commitment on the need of 'resilient city development and governance' on a broad political as well as an organizational level is worked on.

This integrated action plan focusses on 'resilience in practice' on a district level and is elaborated along the lines of the RESILIENT EUROPE proposal: resilient people, resilient places and resilient governance. In this way the action plan contributes to the operationalizing of the overall Rotterdam Resilience strategy.

### *Subject of Rotterdam urban lab and action plan*

The subject of this action plan is the resilience of the city districts of Feijenoord and Afrikaanderwijk. In the Resilience Strategy of Rotterdam these districts are designated as a pilot project for elaborating 'resilience at a district level'. Starting point of this 'elaboration in practice' is the so-called Kanskaart Feijenoord (Opportunity Map Manufacturing Feijenoord = OMMF) that can be seen as a governance instrument that helps raising the resilience of these districts.

The districts Feijenoord and Afrikaanderwijk are the 'urban lab' in which the city government together with citizens, public and private organisations and entrepreneurs practice 'working on resilience' on a local scale. The chosen approach can be seen as an experiment, that can be succesfull or not. The learnings will be used for determining next steps in operationalizing the Rotterdam Resilience strategy.

This integrated action plan gives a clear view of which actions are already taken and underway, which actions are planned and which stakeholders are involved.

Ofcourse it will also describe the urban lab and the cause of the chosen approach of the Opportunity Map Manufacturing.

### **Why urban resilience?**

Cities are where the majority of the population lives and where new citizens in an increasingly urbanizing planet are welcomed. Cities are also the place where to invest in finding new

solutions and in scaling innovations given that the bulk of economic value is created in cities and that innovations are both most likely to happen and most needed in diverse and densely populated areas. The future is hopeful and economists applaud the agglomerative effects of the city: proximity, diversity and density are now considered keys to economic success.

At the same time, these are the same qualities that make cities especially vulnerable to the impacts of acute shocks (e.g. earthquakes, flooding, terrorist attacks) and chronic stresses (e.g. creeping effects of climate change, high unemployment, persistent deprivation, income inequality and poor environmental quality). Proximity, diversity and density challenge the effectiveness of urban governance. In cities where stresses accumulate or sudden shocks occur, the result can be social breakdown, physical collapse or economic deprivation. In this reality, cities are not the solution but the epicentres of the problem. In order for cities to live up to our expectations and continue to deliver on the Europe 2020 targets set on employment, innovation, climate change, education and social exclusion, cities are to respond to opportunities, changes and crises in smart ways in order to become resilient in the way they provide services to their citizens and businesses. Cities need to be able to continue to function no matter what stresses or shocks the people living and working in cities – particularly the poor and vulnerable – encounter.

The policy challenge facing our cities therefore is to increase our city's resilience in order for its inhabitants to survive and thrive and for the city as a whole to successfully deliver on its potential for progress and in this way to contribute to transforming Europe into a smart, sustainable and inclusive society.

### **Resilience themes in the URBACT project RESILIENT EUROPE**

Resilient people: People are the most important asset of the city and comprise its social capital, thus it is important to look at the level of social inclusion and self-reliance of citizens in our cities.

Resilient places: Urban fabric consists of infrastructure and ecosystem elements that jointly structure how cities look and how they can adapt to shocks. To consider the vulnerabilities of infrastructure assets and urban ecosystems in the face of chronic stresses and acute shocks, such as climate changes, crime (e.g. cyber) and terrorism, it is important to examine the ways infrastructure can become more robust and adaptive and to investigate how urban ecosystems can be restored and repurposed to provide multiple benefits.

Resilient institutions: The institutional matrix that cities have in place provide not only the backbone organization of day-to-day operation but also the base for service delivery to citizens and businesses. As such, it is important to consider how institutions can become more adaptive in order to enable greater interconnectedness between decision-maker and delivery agents across city government, the private sector and community groups.

## 2. Current Situation (stresses and shocks)

### Main resilience challenges for Rotterdam

The Rotterdam society is very diverse with 175 nationalities, a relatively high percentage of low-income groups and school drop-out rate. Economically for decades the port and port industries have been the attractor, driving force and employer of a large percentage of Rotterdam citizens. Low-income 'working force' has put its stamp on the social and physical development of the city. The last decades automation and technological development has diminished opportunities for low-educated people. Policies have been developed and programmes have been started and renewed to fight unemployment, physical and societal degradation of neighbourhoods and lift up economically or socially weak citizens. A positive change comes forward slowly now but the balance is deliquate. The pace of change, driven by world-wide transitions like climate change, new economic drivers and technological developments, is strong. The risk is a further growing gap between people that can keep up with the pace and people that can't. 54% of Rotterdam youth grows up in (NL: achterstandswijk) lagging neighbourhoods. In Rotterdam the group of citizens that will not meet requirements of the changing society and economic environment, because they already need their energy to keep up normal life, will probably be larger than in other Dutch cities.

Due to the ethnic differences combined with the socio-economic status of a lot of these Rotterdammers, the integration of part of these groups is lagging. As a result tensions between inhabitants of dutch and non-dutch origin are lurking.

Resilient people are capable of handling crisis situations, are aware of societal developments that will impact them and take action pro-actively. Resilient citizens are therefore the basis for a resilient city. Resilient infrastructure, economy or governance are important, but when people are not resilient in times of crisis or not pro-active negative impact of shocks and stresses will still be prominent.

Resilience is a new lens that can help to look differently to policy actions needed to encounter the above mentioned policy challenge. Resilient citizens need a facilitating government and government policies, but the focus has to be on increasing self-reliance, concerning health, education, employment and social relationships. Striving to an inclusive society has to be a goal. The challenge is how to encourage self-reliance of Rotterdam citizens and at the mean time developing government policies that facilitate them, create a supporting economical and physical environment and don't block citizens initiative and action.

Though 'social resilience' is a priority for Rotterdam, more challenges are faced due to more and more rapidly changes in the economy, social relationships, climate and

the use of ICT. In the light of these external developments (transitions), Rotterdam needs to adapt and wants to seize opportunities these transitions offer.

This is reflected in the Rotterdam Resilience strategy that focusses on these 'resilience' challenges:

1. Enhance the self-reliance, education, health and employability of citizens and the social cohesion of the citizen-groups. Rotterdam has about 170 nationalities living together and a substantial part of the Rotterdam population is low-educated.
2. Although Rotterdam has built up centuries of experience when it comes to integrated water management and innovative climate adaptation, adapting to climate change is urgent: low-lying in a delta in open connection with the sea, densely populated and home of large industrial clusters the city is vulnerable for the effects of climate change.
3. Adapting port and city to the energy transition and the 'next economy': port economic activities and energy supply are fossil based. Environment, society and the need for a resilient economic development require a transition in thinking, approach and activities.
4. Find a way to protect society to cyberattack and at the same time grabbing opportunities digitalisation offers for a more resilient city.
5. Protecting critical infrastructures: the densifying city challenges us to a more efficient use of limited underground space and reduce risks of infrastructure failure. Cybercrime and climate change are adding more risks for a continuous, safe and reliable functioning of the city.
6. Relations between citizens, organizations, business and city government are changing. More and more non-governmental initiatives ask for an active, open approach of the government. Moreover, these initiatives add to the quality and the resilience of the city if approached and connected to government policies and actions in a right and constructive way. Resilient governance is a challenge!

### **Resilience challenge in Rotterdam districts Feijenoord and Afrikaanderwijk**

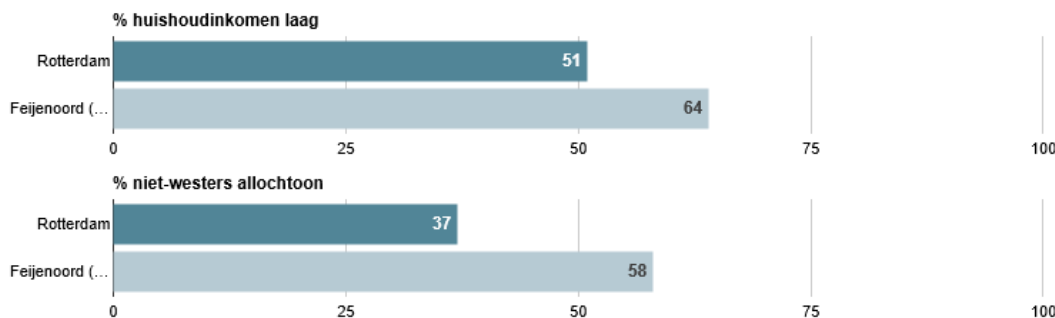
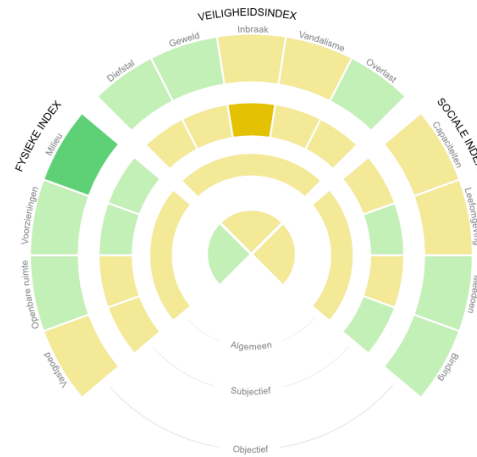
The challenges for Rotterdam are also reflected in the Rotterdam districts Feijenoord and Afrikaanderwijk, the subject of our urban lab.

#### Social challenge ('resilient people')

As stated above a relatively large part of Rotterdam inhabitants already for decades have a low socio-economic status. Often they are low-educated and have a relatively bad health condition and are concentrated in certain neighbourhoods, like Feijenoord and Afrikaanderwijk. Raising their situation in living-condition, health, education and getting a job is a goal in policy development and social programmes in Rotterdam for decades. Developments in economy, migration and social relationships offer new challenges for all but especially these weaker groups of citizens will feel the impact of

change. Due to their situation they often are less self-reliant and the link with more successful citizens is weak or non-existent. The external developments, like the refugee migration, will strengthen this situation. Technological developments causing a high digitalisation degree of society, will increase the gap between those that can keep up and those that can't, social exclusion is the result. These developments challenge the Rotterdam society reflected in a local society as in Feijenoord and Afrikaanderwijk.

Feijenoord and Afrikaanderwijk are both neighbourhoods with a large diversity in cultural backgrounds. The average level of education and income is lower than the average level of the city of Rotterdam. People living in the neighbourhoods are young and many activities are organised, this offers a broad scale of opportunities for the future. The citizens in the neighbourhood are connected to each other by many informal networks. These networks are focused on citizens with the same cultural background and are often a social safety net. Networks focusing on the development of skills and entrepreneurship are less prominent in these districts. Furthermore there is a high level of potential talent present. The challenge is to use the talents to make the neighbourhoods and the people more resilient.



Physical challenge ('resilient places')

There has been considerable investment in recent years in improving the physical environment in the districts, including the connection between the districts. The physical connections to and from the districts can still be improved. The service sector would benefit as well from a better connection between North and South Rotterdam. Furthermore, the possibility to make a housing career in the district needs to be improved.

Due to a practice of high-level protection for centuries the Dutch are used to water challenges and have a publicly governed water protection system. The flip side is that people don't think about water threats anymore, they trust on the government to protect them. An exception in responsibilities in flood protection are the outer dike areas, where in the Rotterdam region about 60.000 people live. People who live there and businesses have an own responsibility to protect against flooding, but this isn't known by most people. Awareness raising and local adaptation strategies are needed. Part of the Feijenoord district is an outer dike area and so flooding is a risk. Thus climate change, a long term stress, can lead to short term shocks when a flooding occurs.

The liveability of neighbourhoods also needs attention in Feijenoord and Afrikaanderwijk. Rotterdam has many neighbourhoods which lack green spaces and a green atmosphere. This results in people identifying their neighbourhoods as stony (stenig). These stony neighbourhoods have a negative impact on the health, experience and liveability of people while the lack of green on the smaller scale also puts pressure on the ecological structure in the city.

The district also lacks a sense of security, the district-profile shows this clearly. Green places can, if properly maintained, play a role and are an added value (example Hefpark). The management of the green spaces can be an opportunity in different ways. Locals without a job could be hired for maintenance of green spaces or it can be combined with education. Children can involve the parents, and in this way vulnerable groups might be reached through education and outdoor space.

Bringing in more green into the "stony" neighbourhoods of Feijenoord and Afrikaanderwijk is therefore an important assignment that can raise resilience in different ways.

#### Governance challenge ('resilient organizations')

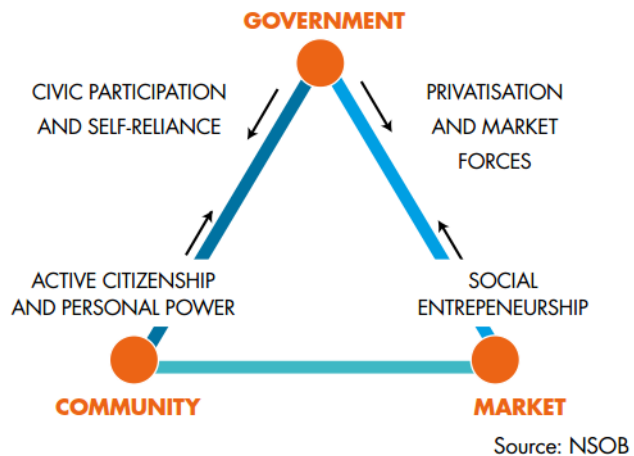
Having the ambition of being a resilient city, the question arises how a city like Rotterdam has to be governed? Put otherwise, what is the needed governance of a resilient city and what is 'resilient governance'? This is the subject of the sixth goal of the Rotterdam Resilience strategy 'Rotterdam network city – our city!'

Rotterdam consists of and functions on the basis of its past, present and future residents, businesses, knowledge institutions, public and private organizations. Together, these make up the city's system of governance. The city belongs to us all. A resilient city builds up its strength from the bottom (self-organization), and develops resilient networks. The government is able to act on the basis of its multiple roles, and deliver customized solutions using the power of improvisation, allowing

much space for experimentation and new initiatives. It thus serves as a role model for large institutional actors.

The Netherlands is internationally renowned as a well-organized country, with well-organized local government, intermediary organizations and a high degree of empowerment among its citizens. However, the system on which this is based – which for many years has been designed to carry out certain public tasks effectively, efficiently and according to the rule of law – is now becoming less relevant in certain fields. The very robustness with which these tasks are organized and carried out is increasingly becoming a drawback, it seems, because it leaves little room for tailor-made solutions and flexibility.

Traditional (institutional) players in the city are losing their traditional position in favour of the emergence of new types of social and private partners. Management methods increasingly appear to be shifting away from hierarchical forms of control towards a more equal relationship between the partners in a chain or network. There is a shift from citizen participation to government participation.



This change is having a significant impact on the question of what really determines the resilience of the city's system of governance. Resilience is, therefore, increasingly a characteristic of networks and chains, rather than of organizations or individuals. This is also reflected in how resilience can be achieved in areas such as energy, social issues, climate change and cyber-crime. It will therefore be necessary to respond to the changing characteristics of our system of governance and to enable other actors to play a role in this. The traditional relationship between government, the market and the citizen (community) is changing rapidly.

We can refer to this trend as 'socialization'. In parallel to this process, the public domain is coming to be characterized by a range of hybrid activities and partnerships. Non-public parties are now helping to create public value. We are witnessing a rapid increase in citizens' initiatives and social entrepreneurship, with civil society organizations and citizens themselves taking a lead role in the provision and management of – for example – social care, sustainability, neighbourhood management or secu-



rity. At the same time, the municipality (and the public sector more generally) is increasingly withdrawing to its core functions and forming partnerships with other actors from this position. This trend is linked to the complexity of the problems that now need to be tackled, the growing scale of these challenges, and diminishing public resources. All these developments mean that social issues are, more and more, being addressed through chains and networks. This is causing a blurring of the boundaries between the public, private and social sectors, with the public sector expected to respond in a flexible manner to developments that have been initiated elsewhere.

The above asks for a new approach of governance, resilient governance, resulting in resilient organisations. They will be capable of dealing with the large societal transitions that are going on and can cope with sudden shocks that happen.

In the Rotterdam Resilience strategy the Feijenoord and Afrikaanderwijk districts are also pointed out as areas to experiment with resilient governance. The Opportunity Map Manufacturing Feijenoord is an example of an initiative from society. In this case from two entrepreneurs who see a lot of opportunities to work on the raising of skills of inhabitants of the districts, creating new jobs in the districts by matching needs of entrepreneurs and civil organisations with jobless people living in the districts.

The urban lab is therefore also focused on the 'resilient governance question', how can organisations and in specific the municipal organisations work together in such a way that all knowledge, experience and ideas from citizens, private and public organisations come together and is adding to the quality of life in this part of the city? The method of the Opportunity Map Manufacturing is an experimental method to facilitate this goal and in this way can be seen as a governance instrument that helps raising the resilience of these districts.

### 3. Working for urban resilience in urban living labs

#### Objectives of the integrated action plan

The overall objective of the Resilient Europe URBACT project is to strengthen urban resilience to encounter shocks and stresses. Summarized the shocks and stresses that influence Rotterdam as well as the districts Feijenoord and Afrikaanderwijk (Urban Lab) are:

- A perseverant low socio-economic status of inhabitants presenting itself in high unemployment rates, poverty and loneliness
- A changing economy and digitalization of society that needs skills that don't match with that of a lot of the inhabitants.
- Consequences of migration of new citizens to Rotterdam either by moving in to the districts and by the 'atmosphere of discussion'.
- Criminal, undermining, activities that result in a lack of a sense of security.
- Climate change that creates the need for adaptation measures and an energy transition that also will impact inhabitants of these districts (e.g. energy bill).
- An increase in citizens' initiatives and social and private entrepreneurship to tackle societal challenges and government tasks, asking government taking another position and different approaches of cooperation.
- A government that is organized in a very robust way, but lacks flexibility and and 'working methods' that stimulate an inclusive, integrated and reflective approach.

To encounter these shocks and stresses the Rotterdam Integrated Action Plan will focus on strengthening the socio-economic situation of inhabitants (labour), supporting enhancement of the physical environment and experimenting with a governance approach that helps to move on these tracks. By this the resilience of the inhabitants in the districts will be increased. The actions in this Integrated Action Plan are therefore aimed at:

- Engagement and empowerment of inhabitants of the districts in social and economical activities that strengthen the social cohesion of the neighbourhoods.
- Bringing forth opportunities for jobless people in these districts to get a job in the districts, that is in the neighbourhoods they live in.
- Preparing and implementing (physical) projects that contribute to the liveability and sustainability of these districts.

- Experimenting with and scaling-up a new governance approach for the relationship and collaboration of city government organisation, citizens, entrepreneurs and private organisations aimed at contributing to public goals.

The main objective of the Rotterdam action plan is preparing pathways to resilient city districts, socially, physically as well as in the way government, citizens and private sector work together (governance).

The Opportunity Map Manufacturing is an instrument that is supposed to be a catalyst for the mentioned new governance approach. Besides that it is a way of focusing on actions that can raise the resilience of people and the living environment in these city districts. In the urban lab this instrument is experimented with. It can be seen as an approach that is different from the way the relationship and collaboration of municipal government and citizens and private organisations is practised until now.

### Approach to reach the goals of the integrated action plan

The basis of the approach that is used to reach the goals of the integrated action plan is a 'networking strategy'. It is focused on the 'energy' present with the citizens and entrepreneurs in the districts and on the 'cohesiveness potential' of social networks. The characteristics of this strategy are 'bottom-up', 'action-focused', 'simple' and 'integrated'.

Ongoing activities and needs in the city districts (bottom-up) are identified and *marked as an opportunity* to build resilience. Every opportunity is the basis for building a small network of people that are connected to this opportunity. Together with these people and the core team (= urban local group) of the Opportunity Map Manufacturing Feijenoord (OMMF) actions are defined (action-focused) to bring the opportunity to the collectively, aimed results. In this way a list of opportunities is identified and elaborated on by the 'opportunity-owners' with the OMMF-team. In fact all the opportunities represent a small network, building up to a growing network in the city districts. The opportunities are also linked, if reasonable, resulting in linked networks. Thus the opportunities are approached in an integrated way to build the resilience of the city districts.

This approach is slightly different from the method of Transition Management that is applied in the other urban labs:

- Vision/objectives → the Opportunity Map Manufacturing was a bottom-up idea of two entrepreneurs and the vision and goals of the OMM were discussed extensively with key stakeholders in the districts. It was embraced by some civil servants from the municipality, they joined the entrepreneurs and

together they formed a core team (ULG) with other key stakeholders to experiment with it and bring the idea to maturity. The vision and goals were finally elaborated and described in this Integrated Action Plan.

- Pathways/actions/results → actions come forth from the discussions about identified opportunities in the OMM-core team. This ‘urban local group’ (ULG) decides what next steps are needed to bring the opportunity to results. What the results have to be, is also discussed in this group and ofcourse are focused on the overall objectives for OMM.
- Experiments → in fact all of the identified opportunities are experiments in itself. Decisions, taken in the ULG, about actions to explore and elaborate opportunities are executed in the periode in between meetings of the ULG. The proceedings and barriers are discussed and new decisions taken.

The steps of Transition Management are present, but developed in a different sequence. In this approach the different steps are elaborated in a more ‘organic’ and ‘parallel’ way. The main reason for this was the presence of the bottom-up initiative of the Opportunity Map Manufacturing that is used to build resilience on a city district scale.

Opportunity mapping can be seen as an approach to build new and strenghten existing networks in the city districts starting from the content (the opportunities) and the local people. In the next paragraph this is explained in more detail.

### **Development and approach of the Opportunity Map Manufacturing**

The Opportunity Map Manufacturing essentially consists of a list of opportunities that have been identified in the districts of Feijenoord and Afrikaanderwijk. These are based on an inventarisatie of opportunities concerning businesses, organizations and initiatives directly related to ‘manufacturing work’. Concrete opportunities and potential opportunities are distinguished. Concrete opportunities have an ‘owner’ that has been contacted and has given insight in the conditions that are needed to speed up the opportunity. In other words: the chance that the opportunity will result in concrete benefits for him/her and (inhabitants of) the district is realistic. A potential opportunity is interesting enough to explore as it contributes to the goal: strenghtning resilience. For example: development of a small-scale, local water treatment plant translates from potential to concrete opportunity when for instance the Waterboard wants to be the owner of the (pilot) project.

In some cases the people behind opportunities are invited to settle in the district of Feijenoord or Afrikaanderwijk because it has added value for the (manufacturing practice in) district and they contribute to the goals of the Opportunity Map Manufacturing. The OMM also mentions organizations that are dedicated to matching

work and jobless people. Especially for recently established businesses in the district this matching asks for special attention.

The physical structure of the districts Feijenoord and Afrikaanderwijk is also presented in the Opportunity Map Manufacturing. A supporting infrastructure is important for businesses and entrepreneurs as well as for inhabitants. The accompanying map of the districts presents the green structures, the old port basins and primary road structure and the places where shops and businesses are concentrated. Besides the existing north-south connections the east-west infrastructure connects Feijenoord with the Afrikaanderwijk. It is the basis for plotting the opportunities (see Appendix).



It is experienced that the 'bottom-up' approach of the Opportunity Map Manufacturing is a quality that gives new energy and ideas. In stead of projecting projects on the districts, the focus is the initiatives and opportunities that come up from the districts itself. The interest of the 'opportunity owner' stands in front, opportunity as well as opportunity owner are facilitated with the ultimate goal to link jobless people from the district to work present in the district. This service is also a quality of the approach. A third quality is the 'hands-on' mentality present with the initiators as well as the stakeholders in and outside the districts.

An important step was the start of this approach by some frontrunners, an even bigger step is to incorporate the approach in the policy of the municipality and other stakeholders. This begins with an open mind towards, acknowledgement of and facilitating the energy and vitality that is present in the districts. It has to be a conscious policy decision to scale up this approach and give it a full-fledged position in municipal policy for working on district levels. The approach of the Opportunity Map in this way also gives a challenge for institutional resilience in Rotterdam.

### The urban lab: Feijenoord and Afrikaanderwijk districts

The so-called 'Kop van Feijenoord' and the Afrikaanderwijk have a history of manufacturing and related business and activities. In earlier times there was a lot of products were manufactured and traded, what can be noticed in the physical structure of the districts. This history of manufacturing is also known to the present-day, mostly originally non-dutch, inhabitants of these districts. In their families, one generation back at the maximum, they are well-known with craftsmanship and manufacturing. This historical relation of the districts and her inhabitants with manufacturing, the often low-educated and socio-economic vulnerable inhabitants and the revaluation of manufacturing to the city, was reason to map the possibilities of the manufacturing industry as instrument for district development and building resilience. The Opportunity Map Manufacturing is the result.



The lay-out of the district of Feijenoord is from origin a 'manufacturing district' with industrial buildings and places and harbours. It is well accessible for cargo transport and at the moment a lot of manufacturing businesses are present, big ones like Unilever, Hunter Douglas, but also small ones like Dirks Fietsenwerkplaats and Talentfabriek010. Besides these kind of businesses, service organisations and shops are present.



The Afrikaanderwijk is on the contrary not utilized for manufacturing. From history this district was a residential area where the harbour workers lived. This nature of the district gives it also today a position to 'deliver' workers for new activities in the districts around the Afrikaanderwijk. The development of completely new neighbourhoods nearby, like de 'Kop van Zuid', Katendrecht en Parkstad (to be developed) give opportunities for service deliveries.

## The local action group and stakeholders

The initiative for developing the Opportunity Map Manufacturing came from two entrepreneurs from Feijenoord. The municipal projectmanager for Feijenoord and Afrikaanderwijk and the Rotterdam resilience team embraced the idea to bring further the idea and a core team of several stakeholders was composed for this purpose. This core team acts as the urban local group (ULG). The critical stakeholders in this group are:

- The initiating entrepreneurs (Stijlgroep/RAAM)
- The (private) housing corporations Vestia and Woonstad
- The municipal Urban Development department represented by a member of the municipal local action team, the projectmanager for Feijenoord and a member of the municipal resilience team.



This urban local group has close links with the District Committee in which citizens of the district are representing the inhabitants and also with the municipal District Organization in which all municipal departments are represented. The entrepreneurs and the housing corporations have a strong network of inhabitants, entrepreneurs and organizations in the districts.

The urban local group determines which arising opportunities are being incorporated in the Opportunity Map Manufacturing and commits itself to support the opportunity and the opportunity owner. The entrepreneurs have a key role in identifying the opportunities in the districts, they put these 'on the table' of the ULG for discussion and determining action.

Some activities that reflect the co-creating work of the ULG is presented here:

- On 1 February 2016 a starting meeting was organized with representatives from several organizations to present and discuss the concept of resilience and the intended approach of 'opportunity mapping' to raise the resilience of the districts. About 17 people were present (meeting report in Appendix).



- In 2016 the entrepreneurs discussed with the youth group 'Helderheid' the use of a building owned by the company Hunter Douglas that has a plant in the district. Hunter Douglas is amenable to invest in the renovation of the building. The youth group develops several activities, like driving a restaurant, that can raise the social cohesion in the district. The entrepreneurs from the ULG stimulated this opportunity by facilitating discussion between the youth group and Hunter Douglas. The progress was discussed several times in the ULG.
- In the Feijenoord district a former power utilities building is present. The entrepreneurs identified this as a building that could be used as a shop and a makerspace for the manufacturing of leather motorcycles accessories (saddles, bags, handles, etc.). When there was stagnation in availability of the utilities building the ULG succeeded in providing another location for the manufacturing shop. By using the network of ULG-members a 'maker business' is saved for the district.
- The establishment of a sort of 'labour organization' in the district is seen by the ULG as a key action to match local labour with local jobless inhabitants. For that reason the entrepreneurs had meetings with business companies (Unilever, Hunter Douglas), services organization (RD Multi service) and housing corporation (Vestia) to explore possibilities and barriers. Members of the ULG also talked with representatives from the municipal department for Labour & Income that is also an important partner to realize the goal. The progress was discussed in the ULG several times.
- In the Afrikaanderwijk a local cooperation (AWC) is present that aims to introduce circularity in the large Afrikaander market and organize work for jobless inhabitants at the same time. The ULG started to support this activity and advised to broaden the scope and making stronger connections with key stakeholders within the municipality. The aims of AWC align perfectly with the aims of the OMM and the Integrated Action Plan. As a result several stakeholders (AWC, municipal district organization, several municipal departments, Right to Challenge, Rotterdam Circulair en Resilient Rotterdam) were linked with this initiative and connected to each other, a good example of co-creation aimed at strengthening the resilience of the district. Now one of the ULG-members is part of a new steering committee and one is part of the executive committee for this Afrikaander





marker project.

- On 26<sup>th</sup> of October 2017 an event was organized to present the approach of the ULG and the relationship and support to the Afrikaander Cooperation. A representative of the cooperation presented the project of the Afrikaander market and the participants walked through the district and visited a local entrepreneur: a bicycle shop. It became clear that entrepreneurs have an important role in connecting inhabitants to other organizations and government departments.



## 4. The vision of Urban Resilience (vision and objectives)

Urban resilience was already on the agenda of Rotterdam before we started with the URBACT Resilient Europe project. In the process of development of the Rotterdam Resilience Strategy (2014-2016) a vision, goals and actions on a city level were developed in close cooperation with many stakeholders in the city. In the Integrated Action Plan this vision is translated and made specific for our urban lab Feijenoord and Afrikaanderwijk with our local group.

### Urban resilience for Rotterdam

The Rotterdam resilience strategy takes the definition for urban resilience of the 100 Resilient Cities network as starting point:

*“Urban resilience is the capacity of individuals, communities, institutions, businesses and systems within a city to survive, adapt and grow no matter what kind of chronic stresses and acute shocks they experience.”*

For Rotterdam seven resilience goals are defined to initiate a transition towards a resilient city. These goals are focused on developments that are expected to have a big impact on the city of Rotterdam and are based on a vision of a resilient Rotterdam. This **vision of urban resilience for Rotterdam** can be summarized as:

*“In a resilient Rotterdam strong citizens respect each other and are continuously developing themselves. Our energy infrastructure provides for an efficient and sustainable energy supply in port and city. Adaptation to climate change has penetrated into the mainstream of city operations and water has structural added value for the city. Rotterdam has embraced the opportunities of digitization without making us dependant and we have ensured a best practice level of cyber resilience. Above and underground infrastructure have a very high availability and are being used and maintained in such a way that it supports the growth and development of the city. A high degree of self organization and strong networks are present in the city, have room to expound themselves and can be supported by a flexible local government if needed. Resilience thinking and acting is anchored into the genes of all ‘city makers’.”<sup>1</sup>*

---

<sup>1</sup> Rotterdam Resilience Strategy, May 2016

It is clear that the objectives of URBACT Resilient Europe, ‘resilient people, resilient places and resilient institutions’ are reflected in the overall vision for a resilient Rotterdam. The vision for a resilient Rotterdam is being elaborated on several scales: regional, city, district and even on an object scale (f.i. a building). In the urban lab of Feijenoord and Afrikaanderwijk resilience is elaborated on a district scale. For this scale the vision for a resilient Rotterdam can be specified into a (general) vision for a ‘resilient district’.

-  1. Rotterdam: a balanced society
-  2. A world port city built on clean and reliable energy
-  3. Rotterdam Cyber Port City
-  4. Climate resilient Rotterdam to the next level
-  5. Infrastructure ready for the 21st century
-  6. Rotterdam Networkcity: truly our city
-  7. Anchoring resilience in the city

### Vision for urban resilience on a district scale

Resilience on a district level is focused on people, the physical environment (places) and governance (interaction of people and institutions), but what does this mean? In general for part of a city like a district and specifically for the districts of Feijenoord and Afrikaanderwijk?

Referring to the overall definition of urban resilience in the Rotterdam resilience strategy, resilience is a capacity to ‘survive, adapt and grow’ independent of what kind of shocks and stresses occur.

The stresses identified that will have most impact on Rotterdam are directly related to societal transitions: a rapidly changing economy (‘next economy’), climate change, digitization of society and change of social relationships. These transitions add to and influence a challenge that Rotterdam is already confronted with for decennia: the low social status, capacities and development of a large part of the inhabitants. And besides these Rotterdam is also aware that there are still unknown stresses that impact the city.

Shocks that can occur are often related to the mentioned stresses, for example: bankruptcy of businesses that employ inhabitants of the city, a flooding or excessive rainfall, a cyber attack that paralyses shops, hospitals or even power supply and social unrest caused by political developments (e.g. uprising in Turkey). These shocks and stresses can also have impact on a district scale and have to be addressed in a vision and actions to work towards resilient districts.

The concept of resilience is also reflected in its qualities: integrative, robust, flexible, redundant, reflectiveness, resourcefulness, inclusive. How can these become qualities of the people, the places and the institutions in the districts?

An additional question is how the districts can contribute to the goals of the resilience strategy of Rotterdam? A resilient Rotterdam also builds up from resilient districts.

The vision for a resilient district (in general) is therefore presented in these statements:

1. In a resilient district inhabitants are active in connected local networks, contribute to activities in their neighbourhoods and are open-minded, respectful and helpful to each other and specifically to less self-reliable people. Social networks are strong, *inclusive* and show *flexibility* and *reflectiveness*. All human resources available in the district are used to strengthen the social structure.

2. In a resilient district the interwoven fabric of infrastructure, public space and buildings are up to date, have high quality (*robust*), have a high availability for inhabitants (*flexible, redundant*) and are prepared for the future. Specifically a plan for future energy supply based on renewable energy sources is present, cyber threat can be faced as well as the effects of climate change for the district are clear and can be encountered without large impact. Strategies are in place to work on this in which inhabitants contribute directly.

3. In a resilient district ideas and initiatives from inhabitants and entrepreneurs in the district are leading in the social and physical development of the district. The municipal government invites inhabitants actively to develop plans and activities and gives support and brings in knowledge and experience. Plans are produced collaboratively. The government also links plans and initiatives to city-wide policies and activities to enhance the resilience of both the district as the city as a whole. The way citizens and government collaborate guarantee learning from the past (*reflectiveness*), an *integrative* approach and



Fig. : Seven qualities of resilience

using all *resources* locally available.

### **Vision for a resilient Feijenoord and Afrikaanderwijk**

In the Resilient Europe project Rotterdam starts to make the vision for resilient districts concrete in the urban lab of Feijenoord and Afrikaanderwijk. This action plan describes the vision, objectives and projected actions to be taken, to work towards a resilient Feijenoord and Afrikaanderwijk. This is a comprehensive task and this action plan starts with actions that come forth from the concept of the Opportunity Map Manufacturing, but our ambition is to scale up the approach of opportunity mapping as a means of resilient governance on a district level.

### **From definition of resilience to a vision**

Resilience is about capacities of people, organizations and systems to encounter shocks and stresses. Resilience is an *inherent quality* of people, organizations and systems to survive, to adapt and to grow. Therefore a vision should talk about this inherent quality and be translated into objectives and a path to grow to that quality. On a district scale a vision therefore talks about the results when the resilience qualities are present on a local scale in ‘people, organizations and systems’.

In this way the vision for the districts of Feijenoord and Afrikaanderwijk is developed and is presented by the following statements:

#### **Resilience vision for Feijenoord and Afrikaanderwijk**

*Feijenoord and Afrikaanderwijk are ‘incubator districts’ of maker industry and local services based on circularity. These businesses and activities provide work for inhabitants of the district and profits are mainly re-invested in the district. Economic and social activities unfolding in the districts support the local economy and the social cohesion and enhance the quality of the built environment. Activities in Feijenoord and Afrikaanderwijk contribute to the city-wide energy transition and climate adaptation. All investments in the district have multiple benefits for the district and its inhabitants.*

*In Feijenoord and Afrikaanderwijk strong social networks are present and inhabitants have opportunities to contribute to the local economy and social quality of their neighbourhoods. To find a job inside the districts is not difficult. Social networks are interconnected and less self-reliable people are in sight and can be supported by these networks. The networks in the districts are also connected to city-wide networks.*

*In Feijenoord and Afrikaanderwijk the government is cooperative and supportive and (only) one of the actors in the district that contributes to the social and living quality of the districts. Initiatives of inhabitants and local entrepreneurs are connected explicitly to plans and projects initiated by the government. The government invites inhabitants and entrepreneurs to present solutions to tackle difficult issues or joins initiatives from within the district to do so. The government strives to achieve that investments from outside explicitly supports the local economy and the living quality of the districts.*

### **Objectives for a resilient Feijenoord and Afrikaanderwijk**

The Rotterdam resilience strategy aims to realize change. Non-resilient practices, approaches, infrastructure, organizations etc. have to become resilient for shocks and stresses of different kind. Resilient city districts are a basis for that. The vision statements for the districts of Feijenoord and Afrikaanderwijk reflect this aim for change.

From the vision statements and from the experiments already taken place in Feijenoord and Afrikaanderwijk the following objectives for a change towards resilient districts are formulated.

#### Objective 1 (people)

People living in the districts, especially those without a job, can find work in the 'maker industry' and local service businesses in the districts rather easily. Therefore in Feijenoord and Afrikaanderwijk we aim for:

- Increase of local employment of inhabitants
- Improvement of social networks of employed local inhabitants
- Increase willingness of maker industry and service businesses entrepreneurs to employ local inhabitants.
- Operationalizing a 'Labour Matching Organization' that matches local work with local people.

**Contribution to urban resilience:** the result of this will be that employed inhabitants become more resilient because they are part of a larger network (*inclusive*), grow their skills (*reflective*), get a more robust income and built the local economy (*robust*).

#### Objective 2 (people, places)

The businesses and organizations present in the districts re-invest profits for a substantial part (directly or indirectly) in the districts to improve the social, physical or economical status of the districts. Therefore in Feijenoord and Afrikaanderwijk we aim for:

- Increase of local businesses and organizations that re-invest profits in the district
- Increase of co-financing social or physical projects initiated by private or public organizations
- Elaborate, scale-up and promote the Afrikaander Market pilot as an example for increasing resilience on a district scale

**Contribution to urban resilience:** increasing local investment and collaborative ways of financing projects/activities in the districts enhances cohesion (inclusive) and integration of activities. Collaboration in investment creates robustness in projects and in this way makes activities more resilient.

#### Objective 3 (people, places)

Activities and initiatives developed in the districts by inhabitants, entrepreneurs as well as the government contribute in a structural way to the strengthening of resilience of inhabitants, of local social networks and of living quality and environment in the districts. Therefore in Feijenoord and Afrikaanderwijk we aim for:

- Increase of cooperation and alignment of activities between inhabitants, entrepreneurs, local organizations and government
- Incorporation of our resilience vision and objectives in the vision and plans of district organizations. (embedding 'resilience thinking')
- Reviewing plans and activities developed for the districts through a resilience lens and envision recommendations.

**Contribution to urban resilience:** operationalizing resilience starts with understanding the concept. Consistent support to look to activities through a resilience lens, changes the mindset and on the longer term can result in acting in a resilient way. Linking activities and projects and increase cooperation supports *inclusivity* and *integratedness*.

#### Objective 4 (people, places)

Activities and initiatives developed in the districts by inhabitants, entrepreneurs as well as the government are linked and contribute, if possible, to a circular economy, energy transition and adaptation to climate change. Therefore in Feijenoord and Afrikaanderwijk we aim for:

- Increase of projects and activities in the districts that support a circular economy, energy transition and adaptation to climate change
- Reviewing plans and activities in the districts on their (potential) contribution to circular economy, energy transition and adaptation to climate change
- Identifying local initiatives focusing on circular/new economy, energy and climate adaptation and link them to each other and government plans

**Contribution to urban resilience:** large transitions like the energy transitions, climate change and a new economy can also have a large impact on a district scale, especially if inhabitants have low incomes or are jobless. Linking projects focused on these transitions directly to enhancement of social quality and quality of the environment creates resilience of people and places (*integrated, inclusive, redundancy, flexibility*)

Objective 5 (people, institutions):

The approach of identifying local (bottom-up) opportunities, activate and support them and link these to (top-down) governmental policies and projects becomes a common practice and a means for co-creation to enhance social and living quality in Feijenoord and Afrikaanderwijk. Therefore, starting in Feijenoord and Afrikaanderwijk, we aim for:

- Integrate the approach of ‘opportunity mapping’ in the working practice of the municipality to link community needs and initiatives with government goals and plans (up-scaling to city level).
- Communicate about the results of the OMM Feijenoord on different organizational levels of the municipality and at community meetings
- Evaluate the proceedings and results of the approach every year

**Contribution to urban resilience:** a resilient city district needs a resilient governance. A key quality of resilient governance is an *inclusive and integrated* way of working in a way that people and institutions learn from each other and incorporate the knowledge/experience in their own work (*reflective*). Mainstreaming this approach is tough work and takes time. The result will be people and institutions that can act in a flexible, inclusive and integrated way and thus are resilient for known and unknown shocks and stresses that have impact on the district.



## 5. Pathways to Urban Resilience

To realize the vision and reach the objectives for urban resilience in the districts of Feijenoord and Afrikaanderwijk, as described in chapter 4, several pathways are presented here. These pathways describe the (combinations of) actions and activities that are needed to proceed on the way to realize the vision.

The pathways also present the changes in approach that are needed to come to more resilient city districts. The method of opportunity mapping is an instrument to move in the direction of the vision and should be scaled up in order to be effective.

*Pathway 1: from investing benefits gained in the districts outside the districts as a standard to investing benefits primarily in the districts (recirculate the money in the districts) as well as involvement of local workers in local business and district service organizations.*

The current practice is that businesses and organizations that need personnel, recruit these without concern about where these workers live. In the outsourcing of work businesses are obliged to do their best to recruit also people that are jobless for a long time, but these people also can live elsewhere in the city. Their 'commitment' to the district they work in, will be different than someone who lives in it.

Secondly, profits gained by businesses are often invested elsewhere and not in the city-district itself. The vision of the ULG is to change this for the benefit of local, jobless inhabitants and the economy of the districts themselves. The aim is to encounter the shocks and stresses listed in chapter 3 and to contribute to solutions in a decisive way, for instance lowering the high unemployment rates. The objectives 1 and 2 in chapter 4 reflect this aim. If local inhabitants find a job within the district and local businesses and organizations invest their profits (partly) in the district, social and economical resilience will grow, also because local social and economical networks will be strengthened.

To actively proceed on this path towards the vision, the following activities are foreseen or already worked on.

Action	Timeframe	Actors
1. Building relationships with local businesses, entrepreneurs and organizations	Short term (2018-2019)	Raam/Stijlgroep

2. Regularly actualize the Opportunity Map Manufacturing with results of relationship building (mapping businesses, services and 'workforce')	Every half year	Raam/Stijlgroep
3. Explore and take the actions needed to realize the identified 'opportunities' (initiatives/activities) in the districts.	Medium/long term (2018-2025)	Core-team 'Kansenkaart' (ULG), municipality clusters W&I, SO, SB
4. Design and organize the establishment of a 'local labour organization' that is the intermediate between inhabitants and 'work'	Short term (2018-2019)	Raam/Stijlgroep, Municipality clusters W&I, SO
5. Explore in general and district-specific opportunities and barriers of recirculating money on a local (district) scale.	Short term (2018)	Municipality cluster SO, Raam/Stijlgroep, Rebel Group (t.b.d)
6. Start, execute and evaluate pilot projects aimed at recirculating money.	Medium term (2018-2020)	Core-team 'Kansenkaart' (ULG)
7. Support upscaling of experiment Afrikaandermarkt: increase cost effectiveness, innovation in activities, creating new jobs and communication.	Short term (2018-2019)	Coordinating team pilot Afrikaandermarkt, Municipality clusters SB, SO

*Pathway 2: from separated activities and initiatives of inhabitants, entrepreneurs and government (sectoral, individual) to linked and supporting collaborative actions for the benefit of the social, economical and physical quality and resilience of the districts and its inhabitants.*

In the current situation activities and initiatives (called 'opportunities') are often not linked to each other and are not explicitly aimed at contributing to resilience of people, places and institutions in the districts. Local initiatives are often embraced by the municipality, but can grow and contribute to the resilience of the district in a more robust way if the owners of initiatives and activities are supported directly, depending on their needs. Flexibility in 'following the rules', open-mindedness and willingness of civil servants to really 'make things happen' have to be part of this. Strengthening the network of the opportunity-owner, broadening the scope and linking the activity to other, will strengthen resilience of the opportunity itself but also contributes to the resilience of the district. Identifying links to the city-wide resilience goals will also be supportive in embracing the initiative by other stakeholders. The opportunity mapping approach is exactly dedicated to this. The aims 3, 4 and 5 formulated in chapter 4 are focused on further development, embedding and implementing this way of working in the districts of Feijenoord and Afrikaanderwijk.

Action	Timeframe	Actors
1. Embed the approach of opportunity mapping in the 'area-focused' and 'district-guided' approach of the municipality.	Medium term (2018-2020)	Municipality clusters SO, SB, DV
2. Explore organizational aspects of up-scaling of the Opportunity Map Manufacturing approach	Short term (2018-2019)	Municipality cluster SO, Raam/Stijlgroep
3. Support of implementation of a resilient Peperklip renovation contributing to social resilience of inhabitants	Short term (2018-2019)	Municipality clusters SO, MO, Raam/Stijlgroep, Housing Corporation Vestia
4. Get to an agreement with initiators/projectmanagers of the project Feijenoord Stadium to invite local businesses in the tendering of work	Short term (2018-2019)	Raam/Stijlgroep
5. Support development of a businesscase and an implementation agreement about a pilot project for a local wastewater treatment plant	Short term (2018-2019)	Raam/Stijlgroep, Municipality cluster SO, SB
6. Application of the Rotterdam resilience scan tool for (private and public) plans and activities developed in the districts	Medium term (2018-2020)	Rotterdam resilience team, project/activity owners
7. Communicate in a structured way about the results of embedding resilience in activities spread out in the districts	Medium term (2018-2020)	Rotterdam resilience team, project/activity owners, municipal district organization

*Pathway 3: from a primarily defining and regulating government to a balanced practice of governmental action that also invites and joins local action and initiatives in city districts and links it to city policies or even moulds city policy to it.*

This third pathway lists actions that are specifically aimed at learning from the 'opportunity mapping' approach applied in Feijenoord/Afrikaanderwijk and up-scaling it in these districts and in the city as a whole. In practice the municipal organization in a lot of cases can't deal effectively and supportively with initiatives from citizens and entrepreneurs that doesn't completely fit with government policy and practice. There are successful approaches in Rotterdam (like CityLab-010 of Right to Challenge) in which citizens and government work together to realize bottom-up ideas, but this is not common practice in day-to-day work. These approaches keep an experimental status for years. The aim is to embed the learnings from the Urban Lab of Feijenoord/Afrikaanderwijk in the municipal organization. This asks for a 'change of culture' and therefore takes time. Monitoring, evaluation and communication of the

actions in the Urban Lab are the starting point for this aim. The actions mentioned beneath reflect this.

The overall aim is to realize ‘resilient governance’, a governance of the municipal organization that actively supports the resilience of the people and of the physical environment of Rotterdam.

Action	Timeframe	Actors
1. Facilitate platforms that bring together initiatives and activities in the city districts and promote integrated action (‘enhance integrative capability’)	Medium/long term (2018-2025)	Municipality cluster SO, Core-team ‘Kansenkaart’ (ULG)
2. Stimulate to create structural ‘room for experiments’ in policy development and execution AND evaluate and learn	Medium term (2018-2020)	Municipality cluster SO, DV
3. Explore what is needed to move from experiments to structural practice concerning involvement of non-governmental stakeholders in city policy development and policy execution (‘enhance inclusivity’)	Medium term (2018-2020)	Municipality cluster SO, DV
4. Map and discuss experiences of past initiatives and activities as a basis for learning for future initiatives (‘create reflectiveness’)	Short term (2018-2019)	Municipality cluster SO, Core-team ‘Kansenkaart’ (ULG), Erasmus University (t.b.d.)

These actions will contribute to the objectives listed in chapter 4 and in this way the integrated action plan contributes to meet the challenges for Rotterdam: resilient people, resilient places and resilient institutions.

#### *Contribution of the experiments to the pathways*

In chapter 7 our experiments are described in detail. These experiments can also be referred to as pilot projects that started as local initiatives, were embraced and stimulated by the initiators of the Opportunity Map Manufacturing. Finally they were, and still are, facilitated by the ULG. These experiments relate to the described pathways as follows.

#### Experiment: Afrikaander Market

The main objective is to involve people from the neighbourhoods in the work that is done in the Afrikaanderwijk district and in this way create new jobs. Secondly the goal is to keep the money that is generated in the district (the market) partly in the

district itself so it comes to the benefit of the Afrikaanderwijk. Finally the separation and re-use of waste contributes to a circular (local) economy.

The experiment is an example of an activity that contributes directly to pathway 1. At this moment 2 new jobs are created for people living in the district and financed by the benefits of waste collection and re-use.

The activities of both the Afrikaanderwijk Cooperation and the municipal cluster of Public Works (waste collection) are linked and they strive both for the common goals of creating jobs and re-use waste. In this way it is an example of working along pathway 2. The fact that an initiative of the Afrikaanderwijk Cooperation was embraced by the municipality and seen as an example of a collaborative approach is seen as a contribution to pathway 3.

#### Experiment: local wastewater treatment plant

The main objective is implementation of a local sewage treatment plant and operate and maintain it in cooperation with the district inhabitants.

Benefits for the resilience of the district are creating local jobs, direct benefit of local money (sewer tax) to the district, a focus on environmental quality and circularity in the district and multifunctional use of (part of) the facility. Creating awareness by the public of water and circularity is also an important motive. For the municipality it adds to their long-term goal of separation of wastewater and rainwater discharge.

In this way this experiment contributes to all three pathways. When the experiment succeeds local jobs will be created, money from the district is directly invested in the district and several city goals converge.

#### Experiment: the Peperklip

The main objective of this pilot project is renovation of a building in a way that it contributes to several other goals for the district of Feijenoord: a climate adaptive district and enhancing social cohesion and creating 'ownership' of the building and the neighbourhood. It is a unique opportunity to experiment with using regular, necessary physical interventions as a catalyst for building resilience and social resilience of inhabitants.

It relates primarily to pathway 2 and 3 in the way that the housing corporation is invited to combine building renovation with investing in ecology and climate adaptation measures to enhance the physical quality. The municipality adds 'green quality' to it by investing in the public space in the direct surroundings. Finally, with the aim to involve tenants in the maintenance it combines several goals of both housing corporation as well as municipality.

## **6. Monitoring and assessing the progress towards urban resilience**

In the following table results and output indicators are formulated for the specific objectives listed in chapter 4.

The results indicators reflects the change we want to achieve by the specific objective. It is expressed by a specific variable that will be monitored to measure the change of the situation. The output indicator indicates the output of actions mentioned in the Integrated Action Plan.

The timeframe for all the outputs to be reached is the longer term (2025) because the actions to be undertaken, listed in chapter 5, take time to implement and to be executed. Some actions though, will lead to results in an earlier stage. They will contribute to the aimed overall results of this Integrated Action Plan.

Also, because the approach is experimental, in-between evaluations could lead to adjusting the approach and thus the timeframe.

<b>Overall objective</b>	<b>Specific objective</b>	<b>Result indicator</b>	<b>Output indicator</b>
<u>Objective 1 (people):</u> People living in the districts, especially those without a job, can find work in the 'maker industry' and local service businesses in the districts rather easily.	1. Increase of local employment of inhabitants	Number of local, formerly jobless, inhabitants that have found work in the 'maker industry' or local service businesses in the districts	15 new jobs created and matched with local inhabitants
	2. Improvement of social networks of employed local inhabitants	Percentage of employed local inhabitants that says to have an increased social network	50% of employed local inhabitants that says to have an increased social network
	3. Maker industry entrepreneurs and service businesses organizations are willing to employ local inhabitants.	Percentage of maker industry entrepreneurs and service businesses organizations that have employed local inhabitants	30% of maker industry entrepreneurs and service businesses organizations have employed local inhabitants
	4. Operationalizing a 'Labour Matching Organization' that matches local work with local people.	Existence of and formally approved and financed organization with employees that is responsible for the matching of (local) people and work.	A formal agreement between stakeholders about the foundation of a local Labour Matching Organization
<u>Objective 2 (people, places):</u> The businesses and organizations present in the districts re-invest profits for a substantial part (directly or indirectly) in the districts to improve the social, physical or economical status of the districts.	1. Increase of local businesses and organizations that re-invest profits in the district	Percentage of local businesses and organizations that re-invest profits in the districts.	30% of local businesses and organizations re-invest profits in the districts
	2. Increase of co-financing social or physical projects initiated by private or public organizations	Average number of co-financing partners in social or physical projects in the districts	The social and physical projects initiated by private or public organizations in the district have on average 3 co-financing partners
	3. Elaborate, scale-up and promote the Afrikaander Market pilot as an example for increasing resilience on a district scale	The Afrikaander Market pilot is transformed in a structural way of working.	1. A decision on directors-level between stakeholders that the pilot project is made structural 2. 5 structural jobs for local inhabitants are created

<p><u>Objective 3 (people, places):</u> Activities and initiatives developed in the districts by inhabitants, entrepreneurs as well as the government contribute in a structural way to the strengthening of resilience of inhabitants, of local social networks and of living quality and environment in the districts.</p>	<p>1. Increase of cooperation and alignment of activities between inhabitants, entrepreneurs, local organizations and government</p>	<p>Average number of involved or connected local stakeholders in each initiative, project or activity in the districts</p>	<p>Each initiative, project or activity in the districts has 5 involved or connected local stakeholders on average</p>
	<p>2. Incorporation of our resilience vision and objectives in the vision and plans of district organizations. (embedding 'resilience thinking')</p>	<p>Percentage of district organizations that have incorporated the resilience vision in their vision and plans</p>	<p>15% of district organizations have incorporated the resilience vision in their vision and plans</p>
	<p>3. Reviewing plans and activities developed for the districts through a resilience lens and envision recommendations.</p>	<p>Percentage of plans and activities that have applied the 'resilience-scan' developed in Rotterdam</p>	<p>For 30% of plans and activities in the district the 'resilience-scan' has been applied and recommendations listed</p>
<p><u>Objective 4 (people, places):</u> activities and initiatives developed in the districts by inhabitants, entrepreneurs as well as the government are linked and contribute to, if possible, a circular economy, energy transition and adaptation to climate change.</p>	<p>1. Increase of projects and activities in the districts that support a circular economy, energy transition and adaptation to climate change</p>	<p>Percentage of projects and activities in the districts that have an explicit aim to contribute to the objectives of the Rotterdam resilience strategy</p>	<p>50% of projects and activities in the districts have an explicit aim to contribute to the objectives of the Rotterdam resilience strategy</p>
	<p>2. Reviewing plans and activities in the districts on their (potential) contribution to circular economy, energy transition and adaptation to climate change</p>	<p>Percentage of plans and activities in the districts that is reviewed on their potential contribution</p>	<p>90% of plans and activities in the districts is reviewed</p>



	3. Identifying local initiatives focusing on circular/new economy, energy and climate adaptation and link them to each other and government plans	Number of newly identified local initiatives that is linked	10 local initiatives are identified and linked
<u>Objective 5 (people, institutions):</u> The approach of identifying local (bottom-up) opportunities, activate and support them and link these to (top-down) governmental policies and projects becomes a common practice and a means for co-creation to enhance social and living quality in Feijenoord and Afrikaanderwijk.	1. Integrate the approach of 'opportunity mapping' in the working practice of the municipality to link community needs and initiatives with government goals and plans (up-scaling to city level).	The 'wijkraad' (citizens, entrepreneurs) and the 'area-support organization' have embraced the approach and practice it.	A formal agreement between wijkraad, area-support organization and municipal clusters to practice the approach
	2. Communicate about the results of the OMM Feijenoord on different organizational levels of the municipality and at community meetings	Percentage of public and private stakeholders that unroll activities in the districts that knows the approach of the OMM	50% of public and private stakeholders knows about the approach
	3. Evaluate the proceedings and results of the approach every year	Development of a yearly proceedings report	A yearly proceedings report

### *Monitoring the experiments with the results framework*

Our aim is that the experiments in our urban lab mentioned in chapter 5 and 7 contribute to the objectives of this Integrated Action Plan and start to strengthen urban resilience in Feijenoord and Afrikaanderwijk.

These experiments (pilot projects) are just part of the whole scope of actions. These single actions therefore will contribute to the total result. The results framework consists of a lot of result indicators on 'district level', so not every result indicator is applicable directly on the results of the experiment.

For every experiment we will specify how it contributes to the objectives and if applicable will specify the result. To do this we will identify (in between) results of the experiment by interviewing the project owners and relevant stakeholders and discuss this with the ULG. Together we will specify, quantitatively or qualitatively, the result and the contribution to urban resilience in the districts.

An example of a result already achieved in the experiment of the Afrikaander market is that two jobs were created for local people. During the up-scaling of the experiment we expect more jobs to be created.

## 7. Experimenting for urban resilience

### Experiments: opportunities to strengthen resilience on a local scale

In this paragraph three experiments are presented that have been initiated in the urban lab districts in the last two years. They contribute in several ways to the resilience of the districts and to the city as a whole. These actions are presented in the Opportunity Map Manufacturing as opportunities that create several benefits and are being elaborated to bring these benefits to scale and contribute to resilience.

For every experiment below a description is being given as well how it contributes to the vision, pathways and actions described in this Integrated Action Plan. Finally some overall lessons, that relate to all three experiments are given and reflected upon.

### Afrikaander Market: multi benefits of waste separation and re-use

#### *What is happening?*

The Afrikaander market is a large open air marketplace held twice a week. The market produces a lot of waste materials that are collected by the municipal waste collection department. A local group of citizens, organized in the Afrikaander Cooperation, started an initiative to re-use part of the market waste for several purposes. The collection of plastic, paper and cardboard is done by formerly jobless, local people and they are paid for the work. This is possible because there are avoided costs of waste dump by the waste collection department. In this way now two fulltime jobs are created. Waste is separated so it can be used for other purposes, for instance art/crafts projects. But also remaining fruit from the market is collected and worked into jam. Other remaining food is collected for the Food Bank and added to food packages for low-income people. Now it is being explored in the pilot whether a positive business case can be made to continue and expand the project.



#### *What are the objectives?*

The main objective of this initiative is to involve people from the neighbourhoods in the work that is done in the Afrikaanderwijk district and in this way create new jobs. Secondly the goal is to keep the money that is generated in the district (the market) partly in the district itself so it comes to the benefit of the Afrikaanderwijk. Finally the separation and re-use of waste contributes to a circular (local) economy.



#### *Who are involved?*

The initiator is the Afrikaander Cooperation, a small cooperation of people from the neighbourhoods in the district. They engage local inhabitants and entrepreneurs. They collaborate with the municipal waste collection department, the surveillance department and the local representation of the municipality, the district action team. They also have a network in the district and are connected to inhabitants and local entrepreneurs. The ULG embraced and supports the experiment because it is a driver for strengthening resilience meeting the vision for urban resilience of the districts.

#### *How does it contribute to resilience?*

The initiative of the Afrikaander Cooperation is aimed at involving inhabitants of the district in work in the district that is beneficial for the neighbourhoods and is aimed at contributing to circular handling of waste and on keeping money flows in the district. With the first objective the initiative contributes to more *inclusivity*: residents are directly involved in daily work processes in the district. Former jobless people feel involved in the 'running' of the market and the district.

Working together on waste disposal and re-use also enhances *resourcefulness*: ideas and approaches are shared, the experiences can elevate the thinking and practicing of the 'circular economy'. Engagement, new collaborative working practices and linking ambitions of different groups raise the 'people resilience' (social resilience) of the residents and with that of the city district. Finally it also calls for other working practices and engagement of the municipality with the local community. The 'institutional resilience' is being tested and the initiative initiates working on a different type of relationship between civil service departments and citizens.

#### *Relation to vision, pathways and actions*

This experiment (that will continue and be up-scaled) aims at creating stronger local networks, engagement of inhabitants with the activities going on in their neighbourhood and a contribution to a circular economy. In this way it moves towards the resilience vision for the Afrikaanderwijk. It is one of the steps in creating awareness about and implementation in practice of re-investment of profits (avoided waste-dump costs) in the district for local labour (pathway 1). By linking waste-collection and re-use with employment of local people and craftsmanship in the district activities work together to enhance social as well as economic resilience in the district (pathway 2). Finally it asks for a very different, open approach of the government to make things possible and change their way of working (pathway 3).

### Local wastewater treatment plant: watermanagement on a local scale

#### *What is happening?*

In the Netherlands treatment of sewage water is centrally organized. In Rotterdam three large communal treatment plants are present. The waterboards are responsible for operation and maintenance. Treatment of sewage water and drinking water production in the Netherlands are of high quality with secure supply, cost effective treatment and (starting to) focus on regaining materials (circularity). Despite the state of the art practice there is ambition to explore new concepts of decentralized treatment. Decentralization can reduce dependency for large city area's on one treatment plant and with that increase resilience. Secondly it can increase awareness about water by the public. Finally decentralization could result in work for local people. The idea for exploring the feasibility of such a decentralized treatment facility in the district Feijenoord is therefore embraced and part of the Opportunity Map Manufacturing. This project is (also) part of the city-wide programme 'Collaboration Wastewater Chain Rotterdam' (RoSa).



#### *What are the objectives?*

The main objective for the medium term is implementation of a local sewage treatment plant and operate and maintain it in cooperation with the district inhabitants.

Benefits for the resilience of the district are creating local jobs, direct benefit of local money (sewer tax) to the district, a focus on environmental quality and circularity in the district and multifunctional use of (part of) the facility. Creating awareness by the public of water and circularity is also an important motive. For the municipality it adds to their long-term goal of separation of wastewater and rainwater discharge.

#### *Who are involved?*

Two waterboards are asked and interested in the development of a local, small-scale biological water treatment facility. They are the 'opportunity owners'. The ULG has put the initiative on the Opportunity Map Manufacturing and supports the process actively. The interest of some large companies in the Feijenoord district, like Unilever, and the development of 'Feijenoord-city' with an ambition of 100% circularity, can add to the feasibility. Also a local Primary School 'De Nieuwe Haven' has become a partner. They see learning opportunities for their pupils. Besides these stakeholders the municipality is involved. The added value of this opportunity is also that different 'worlds', business, government, sports, inhabitants and education are connected in one ambition.

#### *How does it contribute to resilience?*

The engagement of a wide circle of stakeholders adds to understanding of normally 'hidden' processes of watermanagement and industry (Unilever). A cooperatively operated communal system will increase contacts between inhabitants and workers in the district and adds to a connected community ('resilient people'). The presence itself from the treatment facility and the physical (water) and financial circularity adds to the robustness of the district to cope with shocks and stress on a local scale.

#### *Relation to vision, pathways and actions*

This experiment, that is now in a feasibility phase, adds to the vision of urban resilience in the way that it connects people (inhabitants, water professionals, government, entrepreneurs), anchors labour and money in the district and strengthens physical resilience of the district by creating a redundant 'resource' of waste water disposal. In this way it is related to pathways 1 and 2. The experiment also asks an open mind from government and decision to work in a different way, embracing the input and collaboration of citizens and entrepreneurs (pathway 3).

### **The Peperklip: an apartment building with a challenge**

#### *What is happening?*

Mentioning “De Peperklip” evokes mixed feelings amongst people in Rotterdam. The iconic building was built in the 1980s and is in size comparable to a small neighbourhood. It houses about 1300 lower income tenants of more than 125 different nationalities and ethnic backgrounds. Through the years, there has been considerable investment in improving the social issues in and around building, but unfortunately this turns out to be insufficient to bring about real change.



Starting in 2017, the building is about to undergo a major physical renovation, which is a unique opportunity to use this physical intervention to jointly tackle the social and physical problems. Especially the 11.500 m<sup>2</sup> flat roof and the semi-public courtyard provide space for “placemaking” in combination with energy production, storage and re-use of water, public spaces and gardens. By pairing up with community development initiatives and a participatory trajectory this provides the opportunity to improve involvement, social cohesion and ownership amongst the residents. Furthermore, there will specific focus on creating sustainable social impact by linking the physical interventions to municipal job and education programs.

The renovation of De Peperklip is seen as a study and experimentation project to learn how we can use physical interventions to contribute to both a climate and social resilient city.

#### *What are the objectives?*

The main objective of this pilot project is renovation of a building in a way that it contributes to several other goals for the district of Feijenoord: a climate adaptive district and enhancing social cohesion and creating ‘ownership’ of the building and the neighbourhood.

It is a unique opportunity to experiment with using regular, necessary physical interventions as a catalyst for building resilience.

#### *Who are involved?*

The approach in De Peperklip brings together different stakeholders to join forces to create added value for the environment and the inhabitants of the building. Besides the housing corporation Vestia, inhabitants of De Peperklip and representatives of different municipal departments are involved. This cooperation and engagement makes both the organisation and the inhabitants of the building more capable to deal with the risks and opportunities that the future brings.



#### *How does it contribute to resilience?*

By combining different monetary flows, the planned investments can be optimally used to create both economic and social return. As an example, the current investments in the building and public space will be used to give inhabitants an active role in the development and maintenance of their own building. This empowers vulnerable inhabitants to work and contribute to society within their own, familiar neighbourhood (*inclusive*). As an effect, it is assumed that the inhabitants develop a sense of ownership, become more self-sufficient and together create a stronger and more connected community ('resilient people'). This effect can even be strengthened by developing a multifunctional physical infrastructure on the roof and in the semi-public courtyard ('resilient places'). In this way, a future proof space is created that contribute both to climate adaptation and quality of life (*robust*). Such spaces stimulate people to go outside, check up on neighbours and empower them to actively contribute to their environment.

#### *Relation to vision, pathways and actions*

As such, the integrated development in De Peperklip provides room to experiment with different ways to build a local resilient system. Both the physical environment and the people living there develop the ability to deal with hazards and to grab opportunities for growth and (personal) development contributing to the vision for Feijenoord district. The pilot project thus enhances resilience qualities like inclusivity, an integrated approach and benefitting from local (human) resources. Locally gained money (rents) are re-invested in the district for the benefit of inhabitants (pathway 1) and several resilience goals, and actions to meet these, are linked like social resilience and climate resilience (pathway 2).



### **What do we learn from our activities for building urban resilience as ULG?**

Urban resilience has many aspects and faces. A key lesson is that building resilience starts with building and exploring networks on a district level. Inhabitants, entrepreneurs, government and other stakeholders are the basis for building urban resilience. Having a shared vision on what urban resilience is (vision) and how activities and initiatives contribute to it (pathways, actions) is needed to get results. We are only at the beginning of this! The Integrated Action Plan gives us a very good starting point to continue the journey.

Another key lesson from the process is that it takes time. From our activities in the districts of Feijenoord and Afrikaanderwijk until now, it is clear that building coalitions with local people and organizations takes time. You have to identify formal and informal networks in the districts, but also professional networks depending on the topic. Creating a shared ambition (aligned with the resilience vision) and keeping it alive is a prerequisite for a successful (pilot) project or small scale experiments. For this the 'worlds' of the government, larger private organizations, entrepreneurs and citizens have to be brought together. Sometimes the worlds of professionals, like watermanagers, is rather separated from citizens of organizations that act in another 'ecosystem'. Even within government professionals act within their own policy field, not knowing the challenges of colleagues. It takes time to understand each other. On the other hand when people begin to know the situation, challenges and capacity of other stakeholders and they share an ambition, new energy can be generated and a shared approach for a project is possible.

Therefore building urban resilience starts with building relationships, exploring and connecting networks in your city.

### **What do we also learn from the experiments?**

As may be clear now, the experiments described above are identified opportunities in our 'opportunity mapping' approach. These experiments are still running and developing. The key lessons learnt until now refer in most cases to all three mentioned experiments.

*Lesson 1: just starting to support an upcoming initiative, leads to results that benefit the stakeholders and the district*

Embracing a local initiative, starting to support it often is the beginning of expansion of a local network and strengthening of the initiative. The entrepreneurs of the OMM, supported by the ULG, have experienced that doing this gives opportunities to

strengthen the network, help the initiators to move forward and align the initiative with the vision of urban resilience for the districts. For instance, the involvement of the ULG in the initiative of the Afrikaander Cooperation for the Afrikaander market has moved forward the initiative.

*Lesson 2: the way the government is organized and acts is fundamentally different from the way local initiatives are started and want to develop; this gives friction.*

Often the world of professionals in government organizations is rather separated from citizens or organizations that act in another 'ecosystem'. Government is primarily focused on regulations and structured, effective approaches to execute their tasks and serve the citizens. Local, bottom-up initiatives are often non-structured, started by inspired people that want to move forward quickly. When these 'two worlds' meet friction is often a result. To build resilience on a district scale, the local initiators of activities and projects and their networks are crucial. Government organizations have to change their mind-set towards them, join the local action and initiatives or even invite them to contribute directly to city policy (pathway 3). Organizations that succeed in cooperating in this way are building 'resilient institutions'.

*Lesson 3: working processes within (large) organizations are often effective, but also implicit; to get the right information or right persons to collaborate with as a local initiative is not easy.*

A lesson related to lesson 2 is the fact that when collaboration with bottom-up initiatives start and information exchange is started to move forward the initiative, often it is difficult to get the right information. That what is needed isn't available explicitly because the organization didn't need it before. For example data about waste composition that are needed for calculating a business-case for the Afrikaander market experiment, are not available in the format it is needed. Sometimes it isn't clear who has to be asked for in a large organization. The flexibility of large organizations often isn't high.

*Lesson 4: starting and implementing promising initiatives without much planning can result in unsuspected effects that has to be dealt with*

Bottom-up initiatives that have started without much planning, can encounter unexpected consequences that have to be dealt with. Collecting waste for separation purpose at the Afrikaander market resulted in market traders to take waste from other places to the market and thus increasing the amount of waste to be handled. This asks for flexibility of the organizers of the initiative.

*Lesson 5: at a certain moment a started 'ground-level' initiative reaches its organizational limits and new ways to continue and to up-scale have to be explored*

Building resilience by strengthening and supporting local initiatives is a promising approach. Important is to keep focus on the vision and the objectives for the district to build urban resilience. Starting small, often upscaling of an initiative and 'mainstreaming' it, is needed to have structural effect. This can be a challenge because of limited resources of the initiators or resistance of a large organization to embed new ways of working and collaboration. To make such a step good relationships and collaboration between people and networks in the district is needed.

*Lesson 6: starting an initiative from a totally different perspective (resilience) than organizations are used to, can motivate them to explore and commit*

Waste water treatment is core business of waterboards. There has to be a driver to start a pilot project for water treatment on a local, district scale and above that combine it with several other aims that benefit the district. The existence of a cooperation project between governments about optimization of waste water transport and treatment (RoSa) was a good starting point, but the concept of building resilience made the experiment 'flow'. The objectives of the Opportunity Map Manufacturing provided more benefits for the pilot project. In this way the aim for a resilient Feijenoord district aligned very well with the aim of the waste water operators.

*Lesson 7: just starting to support an upcoming initiative opens new opportunities when linked to other initiatives/activities*

Finally, also referring to lesson 1 and 6, we learned that supporting a local initiative, idea or plan and linking it to other initiatives in the district opens up new opportunities. The large development of Feijenoord City opens up opportunities to 'serve' the project with needed products and services that are produced locally, thus creating opportunities for new labour (pathway 1). This development also will deliver waste and waste water that could be used for the local waste water plant and strengthen the business case. In this way circularity can be practiced on district scale and thus builds physical and economical resilience.

## 8. Conclusion

### Related strategies

This Integrated Action Plan directly relates to the Rotterdam Resilience Strategy. This strategy identifies the societal changes ('transitions') that are key for Rotterdam to anticipate and act upon. It also has identified activities, projects and programmes in Rotterdam that are 'leads' to strengthening the resilience of the city. The Opportunity Map Manufacturing Feijenoord/Afrikaanderwijk is one of them and this IAP operationalizes the 'resilience building work' to be done.

The Roadmap Next Economy for the Rotterdam-The Hague region sets directions to act upon and to encounter big changes in the economy and the related effects on labour and employment. Local manufacturing is seen as an opportunity for Rotterdam. The subject of this IAP is also focused on enhancing employment opportunities in local manufacturing and service business. In that way the IAP can result in an 'on the ground' example of a way to encounter a large transition as the 'next economy' on a city district scale.

### Funding schemes

Funding for the actions mentioned in this IAP could result from the following sources:

- City budgets for district development, maintenance, economics and management (departments of Public Works and Urban Development)
- City budget for resilience strategy implementation (Sustainability Programme)
- City budget for strengthening of employment rates (department of Labour & Income)
- Private budgets for process operation (f.i. Unilever for waste water treatment) or for 'societal entrepreneuring'

## Appendices

1. Opportunity Map Manufacturing Feijenoord-Afrikaanderwijk (OMMF)
2. Meeting report 1 February 2016 (starting event ULG)