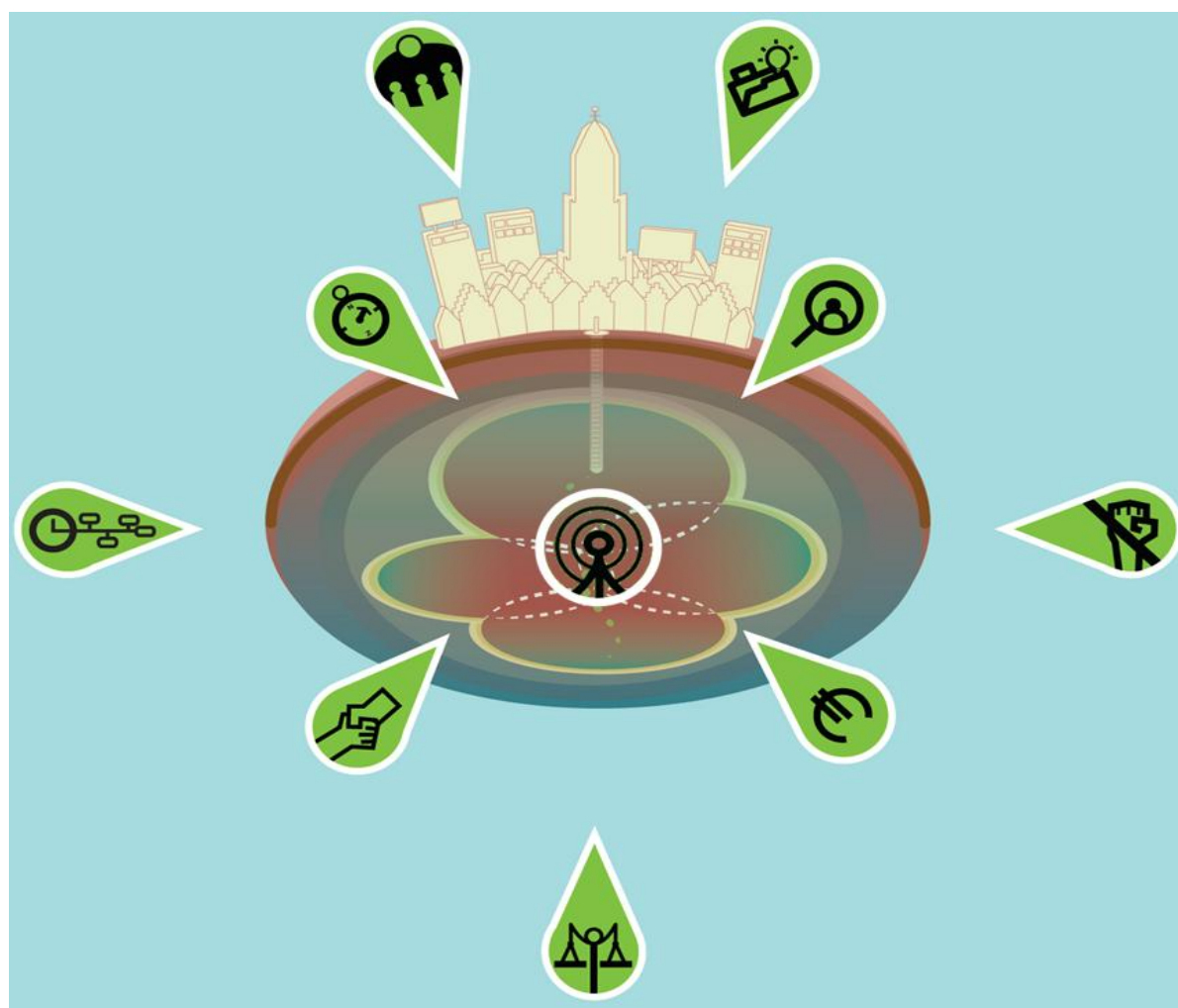


Success Factors for an Integrated Approach

Sustainable urban development including contaminated soils:
how to successfully build bridges between different ambitions



Summary

Sustainable urban development and soil quality: they are connected!

A poor soil quality can form a risk and a limiting factor for desired urban developments. A badly designed urban development can form a long term risk for sustainable use of the subsoil, the environment and the health of its inhabitants. But the other way around urban (re)developments are important triggers and a chance to restore soil quality (and overall local sustainability levels for that matter). Also a good sustainable urban design concept can draw new customers and increase value and profit. So, soil quality, sustainability and urban development are connected. Can a win-win situation be reached? An integrated approach which allows for more synergies through early connecting and overlapping different disciplines in urban planning is thought to be the most effective approach. But it is complex matter and actors involved will need guidance to achieve an integrated approach and good collaboration.

CityChlor is an interreg IWB-NWE project between partners from Flanders, Germany, France and the Netherlands. Partners work on solutions for chlorinated solvents in urban areas. One of the solutions is the so-called “integrated approach”: an early cooperation and alignment between all actors involved in urban spatial planning and development.

The bottleneck

The major bottleneck for collaboration is formed by the different ‘languages’ used by different disciplines (like environmental engineers, spatial planners/designers/architects, project developers) involved in urban spatial planning and development. These professionals appear to be living in different worlds and working on different goals and ambitions. And then there are also stakeholders like politicians, inhabitants, owners, users with their own agenda. Perhaps they can be united under the umbrella of sustainability. But perhaps there are more mutual goals and interests to be discovered. What tools and methods can be deployed during the development process to build the bridge between different actors and their goals!? What are the success factors for the integrated approach?

What this guide offers

This guide aims to find a solution for the above mentioned communication gap between different stakeholders. A gap that will lead to individual, suboptimal solutions. There is no fixed path towards a successful integrated approach for urban developments: each case has its own players and context and will demand a different strategy. However, there are several common success factors that you can try and apply to reinforce your project. From recent and ongoing projects, there is already a lot of knowledge and experience with these issues. Not necessarily with soil- or groundwater pollution as a starting point. This guide will hand you a “overview” of relevant success factors. Once you find a (key) success factor is missing or weak in your project, more (links towards) detailed information, relevant knowledge, documents and examples can be found in the factsheets for the individual success factors. We hope that this will trigger and inspire you in your own quest.

The preconditions for a successful integrated and sustainable approach as presented in this guide are based on several sources. Literature was reviewed, case studies were performed and input was gathered from an international [multidisciplinary workshop](#) in Stuttgart in May 2012, organised by CityChlor.

10 (key) success factors for an integrated approach

This led to 10 different success factors. The most essential one is communication as it is an important part of all other (key) success factors. Therefore it is the only success factor without it's own factsheet: it is incorporated in all other factsheets. By clicking on one of the (key) success factors, you will be guided directly towards the relevant factsheet. Clicking on the link in this line will lead you directly to the chapter with [more background information about the success factors](#) first.

Main success factor:



[Communication](#)

Key success factors:



[Identifying and involving Actors](#)



[Building a Business Case](#)



[Seeking Common Goals](#)



[Using Decisions and Agreements](#)

Other success factors:



[Process Management](#)



[Managing Knowledge & Technical Innovations](#)



[Making Use of a longer Timeframe](#)



[Arranging Administrator Involvement and Organization Form](#)



[Dealing with Rules](#)

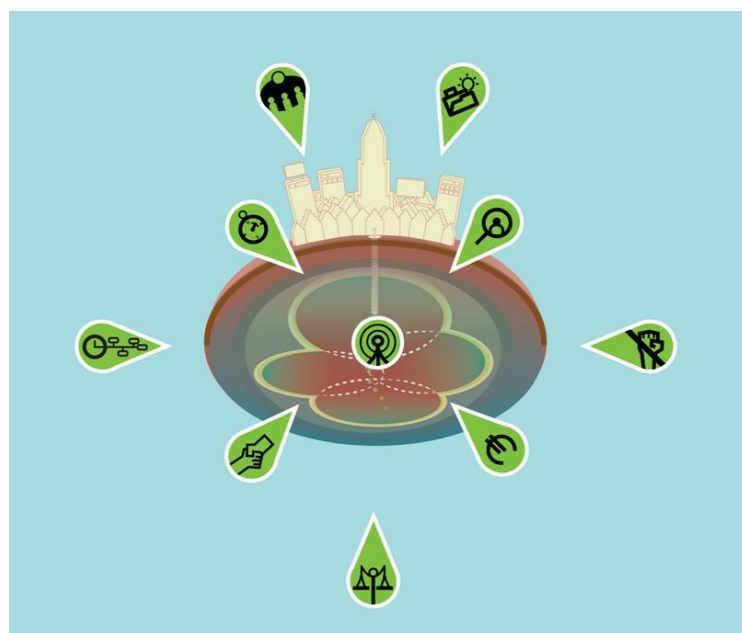


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1 Introduction

1.1 CityChlor and the “integrated approach” as a solution

Space is scarce in Europe. Even in the subsurface it is getting busier. Large-scale soil and groundwater contamination with chlorinated solvents are often an obstruction for urban developments. The traditional way of dealing with polluted soil and groundwater does not work in all cases and is not economically and sustainable feasible. In urban environments multiple contaminations with chlorinated solvents are often mixed with each other and spread underneath buildings. This not only leads to technical problems for remediation, but also to liability and financial discussions and hence has an impact on society. An integrated approach and area-oriented approach is needed to tackle the problems. The CityChlor project has demonstrated that remediation and sustainable development can evolve on a parallel timescale.

The integrated approach. What's different?

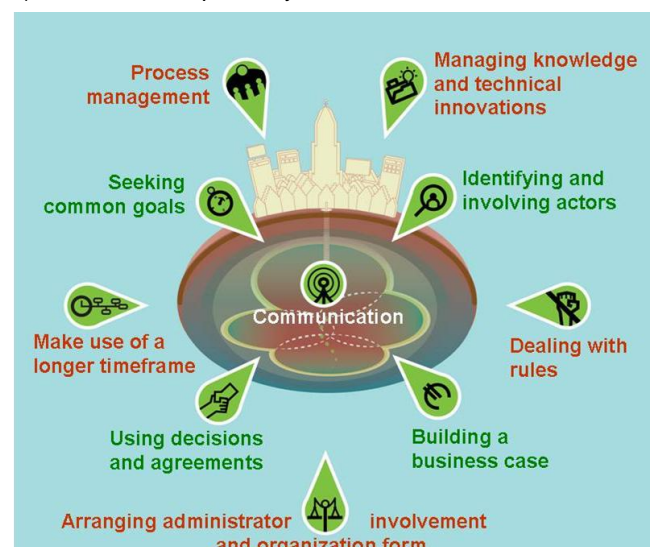
An integrated approach combines all aspects that are relevant to tackle the problems that pollution in urban environment causes. Depending on area, site and context different aspects together or parallel to each other can be used. Not only technical solutions are included, but also socio-economical aspects as urban development, communication, financial and legal aspects, time, space, environment and actors (active & passive) have to be handled. To realise our new, sustainable part of the city we have to understand each others interests and motives. In this way we will discover new motives, new values, new combinations and solutions. And this will lead to new cooperation and business cases that can bring back the dynamics and restore quality of living in your city!

Sustainable solutions as a common goal

Whether you are a spatial planner, an architect, a project developer, an investor or a civilian, we all want to create and live in an affordable, healthy and pleasurable city. In other words: a safe surrounding that respects People (liveability), Profit (economics) and Planet (environment). And these are precisely the main ingredients needed for a sustainable solution we all want; it's all a matter of communicating and balancing these Triple P's with each other in order to reach the highest degree of attractiveness, safety at affordable costs. This guide will show you how it's done.

Building blocks for an integrated approach

CityChlor provides building blocks for an integrated approach. Off course there is no fixed path towards 'the' best solution. Every case has its own actors and context and will demand a different strategy. The project identified 10 success factors that are essential for the integrated approach that will lead to sustainable city development. These success factors can be used as a guideline and





overview to increase the chances for a successful integrated approach. Each individual success factor leads the user through all the elements necessary for that specific success factor. The success factor also provides links to useful tools for the user.

1.2 CityChlor and technical information

The [managing of knowledge and technical innovations](#) are one of the success factors to achieve a sustainable city development. A development project has to cope with loads of information coming from different disciplines in different (technical) languages and with different uncertainties. With chlorinated solvents in particular, the knowledge about the pollution will always have a certain uncertainty that can have an impact on the course and the costs of the remediation. An efficient 'managing of knowledge' will try to decrease this degree of uncertainty.

CityChlor therefore also worked on the technical aspects of characterization and remediation. The conventional techniques that are applied for investigation and remediation have their limitations dealing with chlorinated solvents. Promising innovative techniques exist, but do not easily find their way to current application. This barrier is often caused by lack of knowledge on different levels. Experts and contractors do not always have the means to invest in experiments with new techniques, authorities are reluctant to accept techniques of which the results may be uncertain and clients aren't eager to pay for experimental techniques.

Dissemination of knowledge can break this deadlock. CityChlor therefore collected experiences from field application of innovative techniques and implemented itself a number of techniques in pilot projects. The technical books give a brief overview of the main findings and results. For the detailed outcomes, the reader is referred to the specific reports.

CityChlor - "new solutions for complex pollutions" http://www.citychlor.eu/
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1.3 More background Information

Contents of this document

This document contains the following information:

- An introduction (this chapter) to the reasons why this document was written
- Background information on the role of [sustainability](#) and on the [integrated approach](#)
- An overview of the [preconditions for a successful integrated approach](#) with links to the factsheets
- [Factsheets on the different success factors](#) including links to examples and background information in either reports or on webpages
- Case descriptions ([Utrecht The Netherlands](#), [Gent Sint Pieters Flanders](#), [Stuttgart Germany](#) and [Lyon France](#)) which are accessible from the relevant factsheets

Soil quality and urban development

Pressures on soils resulting from urbanization have degraded the quality of soils. Pressures in the form of pollution from buildings and industrial activities, as well as infrastructural developments of pipes and cables have occurred in many densely populated urban areas. At present the rate of urbanization worldwide is increasing dramatically, with around 50% of the world's population living in cities (MDG, 2007). By 2030 an estimated 5 billion people will live in urban areas. If we do nothing this will threaten urban environments and future livability of cities worldwide.



Figure 1.1 Redevelopment of Utrecht city center and railway station (CityChlor photograph)

A poor soil quality can form a limiting factor for further urban developments. But the other way around urban development is an important trigger and chance to improve soil quality (and improve overall local sustainability levels for that matter). How can we escape this deadlock?

An integrated approach which allows for more synergies through overlapping different disciplines in urban planning is thought to be the most effective approach to prevent pressures on soils, and where possible create opportunities to enhance the quality of soils in urban areas. Why not start this collaboration today?

The bottleneck

The major bottleneck for collaboration is formed by the different 'languages' used by different disciplines (environmental engineers, spatial planners/designers, project developers) involved in urban spatial planning and development. These disciplines appear to be living in different worlds and working on different goals and ambitions. This guide aims to find a solution for this gap between different stakeholders. What tools and methods can be deployed to build the bridge!?

This guide

Combining and balancing "push" factors (that what has to be done by law) and "pull" factors (that what one voluntarily wants because it gains value or profit) in the right manner, with the right tools at the right moment by the right actors is the game that has to be played in order to achieve a successful and durable integrated approach. This guide will lead and advise you in how to play this with a high probability of success. Using the tools and lessons learned from actual cases and experiences in the field of urban development will definitely increase the odds!



Figure 1.2 “Playing” with push and pull factors to increase dynamics...

The integrated approach

In densely populated urban areas such as most historic European cities the awareness of the need for another, more integrated approach in urban development is very present. Practice has proven that current fragmented trends in urban planning and development have not fully promoted sustainability which requires the balancing of three vital pillars; [people, planet and profit](#). Essentially the most vital aspects for balancing the pillars require coordination and communication with a variety of actors. With respect to soil management many projects now have similar aims: how to increase awareness, how to demonstrate or even calculate the value of subsoil use, how to address key success factors for an integrated approach?

From recent and ongoing projects, there is already a lot of knowledge and experience with these issues. Not necessarily with groundwater pollution as a starting point. This guide discloses this knowledge. More [information on the integrated approach](#) can be found in chapter 3.

Justification

The preconditions for a successful integrated approach as presented in this guide are based on several sources. Literature was reviewed, you will find links to these documents in the factsheets belonging to this guide. Furthermore, case studies were done and input was gathered from an international multidisciplinary workshop in Stuttgart in May 2012. A more detailed description of the workshop and its results may be found in the thesis of [Steven van Beek](#): Urban Areas in Transition: Identifying fundamental features of urban integration through an analysis of sustainable soil management in the European Union (2012)

2 Building bridges with sustainability

This chapter addresses the sustainability aspect in the integrated approach in more detail than the [introduction](#). Sustainability is “hot” nowadays: customers and inhabitants often demand it. But what is it and how can sustainability form a chance in urban (re)development? It will be explained also why sustainability and the recognition of “Triple P” can be important bridge building tools for an integrated approach.

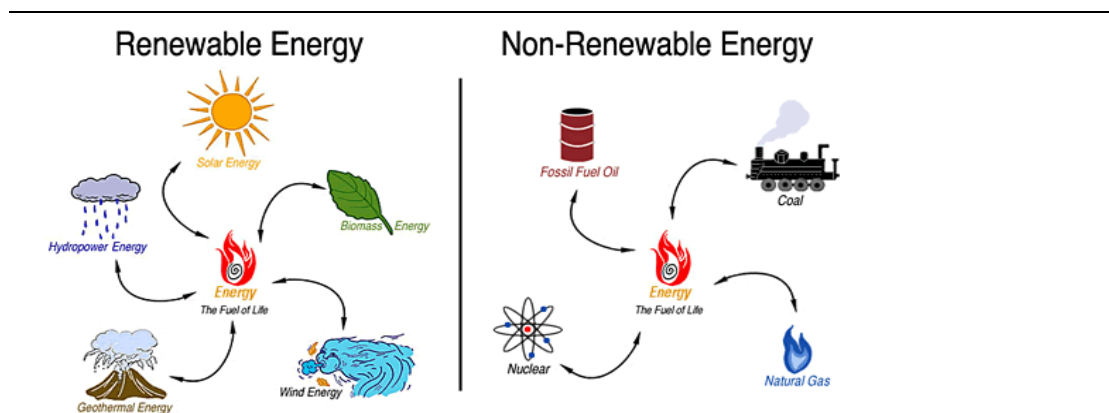
2.1 Sustainable development – definitions and principles

“Sustainable development is development that meets the needs of present generations without compromising the ability of future generations to meet their needs and aspirations.” This is an older (1987) definition by the World Commission on Environment and Development, [WCED](#). At that point in time perhaps rather abstract for most of us, but in present times we actually feel and see the need to change!

With resources like oil, gas, minerals, clean water, air, fertile soil and even space becoming more scarcer over time and limiting to a healthy development of societies, sustainable development is getting increased attention and is becoming a very important political, financial and social force. Inhabitants and consumers are expecting or even demanding “green” products, working methods and developments. Also in urban (re)development the introduction of sustainable solutions is an important task and a chance! Sustainable houses, offices and areas are more wanted, so they sell faster and render higher yields with lower impact on the environment.

Some principles and guidelines of sustainable development are (Bentivegna et al., (2002):

- Renewable resources must not be consumed faster than the rate at which they are renewed
- Non-renewable resources must not be consumed at a rate faster than that which they can be substituted for by a renewable resource
- Waste substances must not be discharged to the environment faster than it can assimilate them without impairment of ecosystem function.

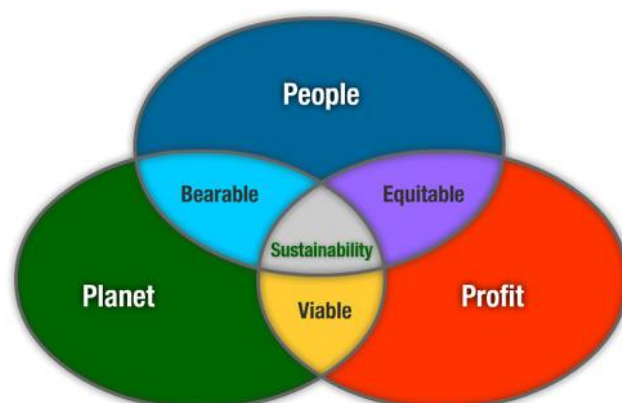


Source: http://www.green-the-world.net/images/conventional_renewable_energy_sources.gif

Figure 2.1 Renewable energy Source: http://www.green-the-world.net/images/conventional_renewable_energy_sources.gif

2.2 People, Planet, Profit to measure sustainability

With the wide spread recognition of the need for sustainable development came the need to measure sustainability. The framework of [People, Planet, Profit](#) (PPP), also known as the triple bottom line, was developed in the mid-1990s to measure sustainability. The PPP framework is made up of social ("People"), economic ("Profit") and environmental ("Planet") factors. PPP is used in this document as it is a commonly used method to assess sustainability in the corporate world which closely reflects inner urban areas where public and private sectors work.



The 3 Key areas of Sustainable development - The Triple Bottom Line.

Figure 2.3 Renewable energy Source: http://www.greeninnovation.com.au/aboutGreenInnovation_sustainability.html

2.3 Building bridges with People, Profit, Planet

The PPP framework is important because it recognizes interrelationships between the three areas of society, economy and the environment. [An integrated approach](#) requires the acknowledgement of linkages between those 3 different sectors. In this document the PPP framework shows that public and private actors in current practice all increase their emphasis on different P's. This is the major bottleneck for collaboration: the different 'languages' used by different disciplines (environmental engineers, spatial planners/designers, project developers) involved in urban spatial planning and development. These disciplines appear to be living in different worlds and working on different goals and ambitions.

A (somewhat exaggerated) example of these differences between three types of actors is given in table 2.1. The environmental specialist or "engineer" has his focus on Planet (1st P) aspects, thinks in centralized rules and "target values" for one aspect (soil contamination or air pollution or water quality or noise or ...). The spatial designer is often more involved with creating a pleasant environment for people to enjoy (2nd P: People). He is more focused on visual presentations and used to working in a process in which a plan gradually evolves and decisions and choices are taken decentralized by a group of actors that give input. The real estate developer is focused on maximizing the financial result (3rd P: Profit). He will try to calculate all parts of a project as precise as possible and divide it in controllable smaller parts.

These different focuses, ways of thinking and working usually result in fragmented processes and bad or even non-communication in the overall scheme of urban (re)development. This leads to less balanced (=less sustainable) outcomes of projects. The conclusion must be: work on ways to improve interaction!

	Environmental/subsoil expert	Spatial designer/planner	Real estate developer
SUSTAINABILITY=	(PLANET-aspects!) +	(PEOPLE-aspects!) +	(PROFIT-aspects!)
Way of thinking:	Defensive, conservative: protect or improve quality	Offensive, over-asking	Precise, controllable
Way of working:	Mono disciplinary, sectoral, exclude uncertainty	Multi disciplinary	Inter disciplinary
Quality focus:	Maximization of one specific aspect	Optimization total plan	positive exploitation
Main involvement:	Content	Process	Calculation
Decision level:	Centralized	Decentralized	Project
Method to achieve goal:	Formulating hard numbers for assessment	Design, fit in, weighing different aspects	(soil)exploitation calculation
Use of space:	Divided functions, zoning	Intensive use of space, multi-functional	Intensive use of space, Divided functions
“Typical Type”:	Engineer, investigator (beta-type)	Artist, consultant (gamma-type)	Accountant (euro-type)

Table 2.1 (adapted from Henk Puylaert, H2Ruimte) depicts the 3 different types of people and their interests and objectives.

In urban (re)development where soils have been polluted due to a diversity of pressures resulting from urbanization, an integrated approach which takes on board the conceptual PPP framework is a useful starting block to overcome stagnated development. As all actors nowadays are (either voluntarily or pushed by rules) interested in sustainability, this can become a mutual goal and be an important drive to overcome differences and barriers between different stakeholders. It opens up dialogue about actor interests which is crucial for integration which requires early coordination and coherence of interests. This guide aims to close the gap between different stakeholders. What tools and methods can be deployed to build the bridge!?

Source:

- Bentivegna, V., Steve Curwell, Mark Deakin, Patrizia Lombardi, Gordon Mitchell & Peter Nijkamp (2002). 'A vision and methodology for integrated sustainable urban development: BEQUEST'. *Building Research & Information*, 30(2), p.p.83-94.

"Building bridges" -using People, Profit and Planet aspects- was experienced in the CityChlor workshop on the Integrated Approach. An account of this workshop can be found on the website of [CityChlor](http://CityChlor.nl).



Scouts discovering new terrains together with their bridge building tools.... Can we do the same?

3 Integrated approach

This chapter addresses the integrated approach in more detail. What is an integrated approach and why is it seen as the solution for stagnating urban (re)developments? Why is an integrated approach seen as an important chance for resolving stagnation of soil remediation and what advantages does it offer?

3.1 The integrated approach: what is it and why want it?

CityChlor uses this definition for the integrated approach:

*An approach that **combines all aspects** that are relevant to tackle the problems that contaminations (i.e. Volatile Organic Compounds) in urban environment causes.*

- **Combines:** depending on area, site, context you can use different aspects together or parallel to each other;
- **All aspects:** socio-economical aspects (like urban development, communication, financial and legal aspects), techniques, time, space, environment, actors (active & passive) and contexts.

Stagnation of urban development causes stagnation of soil remediation and vice versa

Recent years have witnessed stagnated urban (re)developments. Explained in a traditional, economic way, the last few years stagnation has occurred due to the worldwide economic and real estate crisis. Profit margins have decreased, financiers are more careful when considering investing in developments. Obstacles in a (re)development such as a soil contamination may decrease the profit margins further, especially when soil remediation is regarded in a traditional, sectoral (mono disciplinary) way. The stagnation of the real estate developments indirectly causes stagnation in the soil remediation operation as well. But this stagnation also provides new chances: actors are now forced to cooperate and be creative in order to achieve a positive business case. This grants an opportunity for public actors (the government) to introduce more sustainability within the development.

Stagnation occurs as (seemingly) opposite interests and goals of different actors involved in urban (re)developments lead to friction, competition, extra time and money consuming processes and suboptimal (non or less sustainable) solutions and spatial quality. The diversity of interests and goals and the fragmented development process leads to impasses on urban (re)developments. Specifically in the case of soil and groundwater contamination management, problems can become exacerbated as these are not adequately dealt with. Contaminated groundwater volumes can increase and migrate uncontrollably over time and/or unacceptable human health risks could occur.

The solution: integration of goals and early coordination between stakeholders

This point of view on how stagnation has come about also implies a possible solution, which is the concept of sustainable development and the idea of integration, which requires coherence and coordination between actors and takes other values as opposed to financial gain and costs into account. Goals and objectives for the (re)development area should be defined in an integrated way and a broader context. However, rules, regulations and policies are ordinarily sectoral in nature.

Pioneers for a new approach needed

It seems like the bad economical tides give a boost to (the awareness of a need for) a different approach. The integrated approach is especially appealing due to the development of a business case supporting such an approach which stipulates that costs and resources can be shared. Also the drive to achieve higher levels of sustainability, the shift from outward directed city expansion towards urban (re)development and the new perspectives that developments like Ecosystem Services and Corporate Social Responsibility offer, represent important “pull factors” for other approaches and new collaborations.

We must conclude however that mono-disciplinary legislation can’t always keep pace with new approaches in urban development and often seems to form a limiting factor. *Seems*, because in many cases there is still some space for own interpretation or broader evaluation of interests that can “overrule” mono-disciplinary legislation. On the one hand it is necessary to have broad minded pioneers who dare to discuss these current rules and existing dogmas. Integral considerations are (or seem to be!) not always possible due to sectoral rules and regulations. But on the other hand the development of functional, clear and strict legislation that draws the bottom line with regards to the environmental aspects of an integrated approach presents an opportunity and can be seen as a welcome “push factor” that will enable remediation activities and more sustainable soil management. The above mentioned is also known as “environmental policy integration”.

Environmental policy integration

Environmental policy integration is defined as *“an early coordination between sector [i.e. transport, agriculture, building sector, ...] and environmental objectives, in order to find synergies between the two or to set priorities for the environment, where necessary”* (Hey, 2002, p.127 in [Persson 2004, p.23](#)). It is based on the concept of integration which aims to stimulate dialogue between various parties and where necessary involve more parties, in order to generate dialogue and find synergies to build upon where possible. Also, environmental policy integration attempts to reduce overlap between existing policies with the overall aim of creating common goals, creating common identities, ensuring feasibility and ensuring future benefits throughout the urban (re)development process.

Advantages

The strength of policy integration in general is the fact that it enables more sustainable solutions to be implemented. The increased dialogue between actors and the increased number of actors involved through integration offers advantages. These are:

- the dilution of risks due to the sharing of responsibilities,
- the increased availability of resources due to more actors being involved,
- and an increase in the rational democratic decision-making process due to more interaction between actors.

These advantages can also be seen as (part of) a solution for stagnated remediation. Stagnation occurs when individual actors design their own approaches in a fragmented manner. Such individualism does not always suffice for current environmental norms with regards to soil. A broader perspective is necessary to generate new creative solutions that comply with current environmental standards. And sometimes current environmental standards will have to be reconsidered. Integration offers new opportunities to generate those



new solutions and in the overall scheme of urban development, will lead to higher sustainability and more attractive places to live.

3.2 Further reading

More information about and a definition of the integrated approach is given in different presentations of the transnational workshop as shown on the website of [CityChlor](#). More background information about an area-orientated soil remediation in urban development can be found in the [article](#) published by Dutch CityChlor participants and in the publications [Future value now!](#), [Upside down](#) (an English report with Dutch examples) and [Past the Subsoil](#) (Dutch report with an English summary). There is also a video available regarding the [Integrated approach for urban development](#). The German viewpoint was addressed in the German CityChlor workshop. More information can be found on the website of [CityChlor](#). More information on the French CityChlor [workshop](#) and the French viewpoint as well as the Flemish [workshop](#) and viewpoint can be found on this website as well.

4 Preconditions for a successful integrated approach

This chapter shows an overview of the success factors or preconditions for a successful integrated approach. A subdivision is made between key success factors and further success factors. From this overview you can navigate directly to the factsheets that give more information about the different (key) success factors.

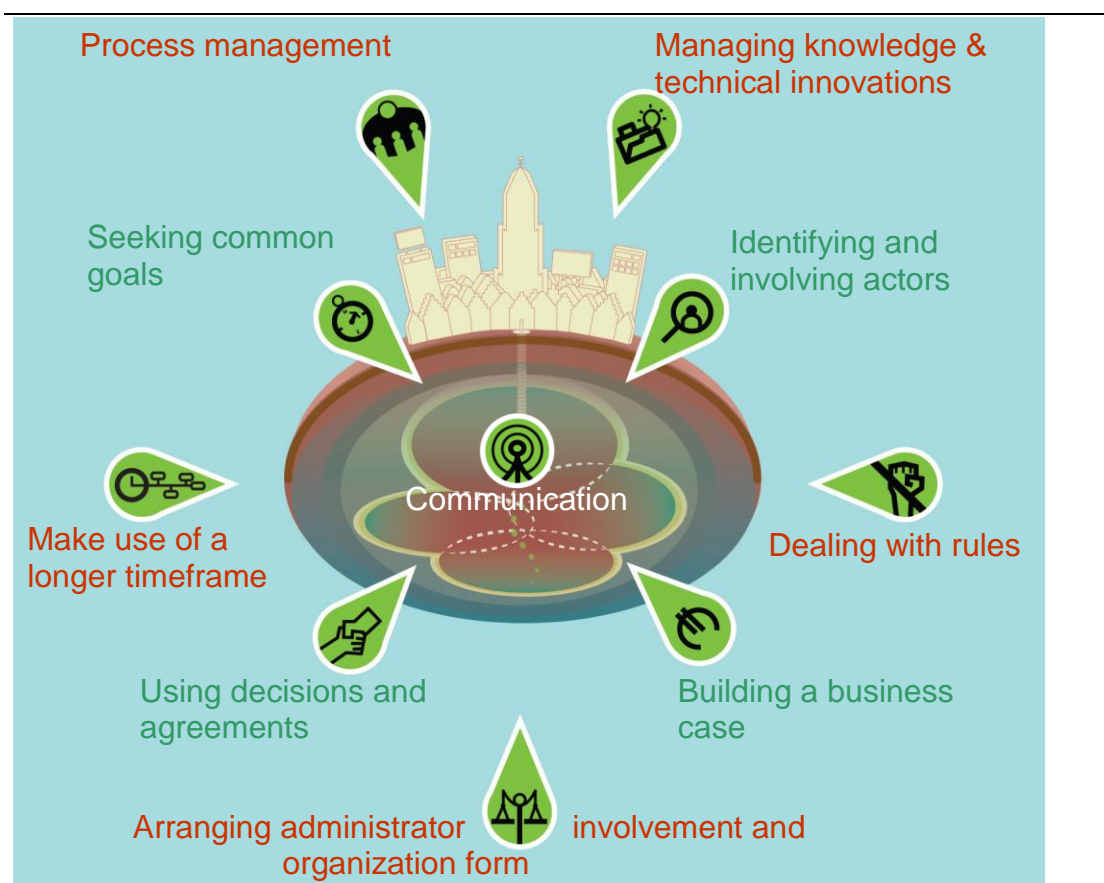


Figure 4.1 Overview of key success factors (green text) and other success factors (red text)

4.1 Derivation of success factors

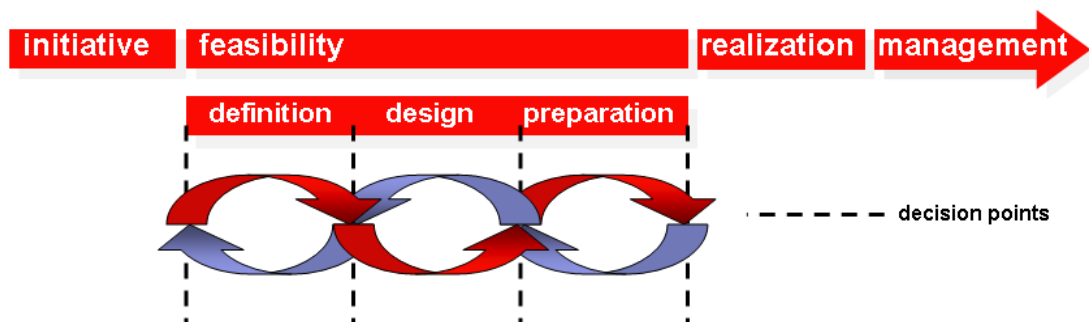
On June 12th 2012 a CityChlor workshop was held in Stuttgart, Germany on the central theme of the “[Integrated approach](#)”. This workshop was attended by experts from the different CityChlor partner countries and from different fields of expertise related to urban development and urban planning (such as spatial planners and urban or real estate developers). With this broad selection of experts relevant factors and bottlenecks of an integrated approach to urban (re)development of contaminated sites were explored from

the three pillars of sustainability: “People”, “Planet” and “Profit”. The discussions were held in parallel groups, each resulting in a variety of input that was collected.

The results of this workshop were analyzed. Part of this analysis was grouping the results in main themes that were found in Dutch literature on the subject of the integrated approach. Especially literature based on observations from the work field (as opposed to theoretical literature studies) has been used. This process led to 9 themes in which all relevant topics mentioned in the workshop could be placed and/or related to. In this way the literature that was used is incorporated in this manual via links. “Communication” was added later as the 10th and central success factor as it forms the backbone of all other success factors.

4.2 Success factors and project phases

Most of the success factors are preconditions for a successful integrated approach and are useful in all development phases (see figure below) of urban development projects. Ideally, these preconditions are met directly at the start of the first (initiation) phase of a development.



Different project phases. Figure adapted from “Sustainable regional development: do the decathlon!”

If this is not the case, adjustment of the development is still possible by incorporating the success factor in later phases. However, adjustments in later phases of development can introduce (perhaps even unacceptable) extra costs, extra loss of time and extra frictions between stakeholders. The success factors presented below can be used as an overview; the factsheets give you more detailed information on how to manage and improve these factors.

Relevant international links:

- Dutch: how to connect development phases [principle 3 ‘Link dreams and reality’](#) from the Dutch report [Sustainable regional development: do the decathlon!](#)
- French: a [webtool](#) that guides different actors through the different phases of a development:
- German: Evaluation of contaminated sites in conflict with town planning (Wertermittlung von kontaminierten Flächen im Spannungsfeld der Bauleitplanung)
- Flanders: The association of spatial planners had a special edition of their magazine dedicated to the [redevelopment on remediated sites](#) (in Dutch).

4.3 Communication as a key success factor

In an integrated approach communication with and between the different actors is more important than ever. It's all about being able to make the right connection by exchanging the right message and information on the right moment and at the right level to the right stakeholders. So, without good communication the integrated approach will not work. Or, to turn it around, with good communication you can make your urban (re)development even more successful.

Development projects with contamination will take more than a few years to complete; such projects may run for over 30 years. Good communication is essential in order to operate cost-effectively and sustainably. For example, soil remediation companies have made short films that municipalities can place on their website to explain what those 'weird machines' are doing. Also more and more the neighbourhood is already involved in the planning phase for the redevelopment of an area. And developers can use a phased plan which shows who must be involved in the project at each stage. However, one thing is apparent from all of the CityChlor projects: ensure that your communication is clear throughout the entire project. That will prevent unnecessarily long delays, rising costs, dissatisfied stakeholders and negative public opinions.


Communication tools




The CityChlor project provided [tools to communicate](#) with all stakeholders. Beside demonstration movies, two practical tools are created for CityChlor: a overview on how to communicate to whom in which phase and the C-Factor strategy which guides you through the communication process. These tools were created with the input of communication managers from different cities and regions and with earlier guides like ComRisk from France. A sociological study on risk perception at a CityChlor pilot site and comparisons of the approaches in the 4 participating countries, along with other background information can be found on our website.

Since communication is linked to (a precondition for) all other success factors, it is not separately presented in an own factsheet, but incorporated as an item in all factsheets.

4.4 Key success factors



The main preconditions can be summarized (in no particular order) as the following key success factors. Clicking on them will take you directly towards the appropriate factsheet with more information.




-  [Identifying and involving actors](#): identify all parties concerned (actors) identifying their interests and goals
 - A stakeholder analyses can be used as a tool, or a network analyses
 - Consider the (end)users of the area
 - Consider the granters of permits and enforcers
 - Identify all relevant administrators
 - Consider all development phases

- Consider the financiers (there is a tool for this)
- Involve all relevant parties concerned from the start during the entire development cycle
-  [Building a business case](#)
 - Identify both monetary and social values regarding all development phases (e.g. including realization and management/maintenance)
 - Enlarge the area for the business case
-  [Seeking common goals](#)
 - Broaden your horizon: consider all relevant activities and interests in the area and consider enlarging the area if this allows for additional resources (go from local to regional and from sectoral to integral)
 - Negotiate from interests, not from positions
 - Seek alliance with existing initiatives
 - Do justice to all different parties
-  [Use decisions and agreements](#) which evolve/expand during the development phases and are documented for the future (there are tools for this)

4.5 Further success factors

Further success factors are (in no particular order) mentioned below. Clicking on them will take you directly towards the specific fact sheet.

-  [Process Management](#)
 - -Manage the process with care. There are several tools for this, a good process manager is a must
-  [Managing Knowledge & Technical innovations](#)
 - Obtain all relevant information regarding the area concerned
 - Evaluate latest innovations: can they possibly contribute to your tasks
 - Keep all relevant knowledge together to avoid fragmentation: e.g. store it in a databank
 - Ensure good access to this databank/make the information available in an easy way to all parties concerned
 - Make the information available in a recognizable and usable way (for relevant users), e.g. by presenting it in maps
 - Take your time to obtain all necessary information from different fields of expertise and to get acquainted with it. Invest time in it from the start

-  [Making use of a longer Timeframe](#)
 - Take the necessary time for certain process elements (e.g. study groups, getting acquainted with the necessary information)
 - Regard all development phases and its (financial) aspects (e.g. process costs, value, costs etc) from the start
 - Take current and future use of the area into account
-  [Arranging Administrator involvement and Organization Form](#)
 - Involve and inform relevant administrators (these are the ultimate decision makers) in all phases of the development planning process
 - Ensure that one administrator acts as the first -and preferably only- representative for each administration
 - Ensure that each relevant organization has a clearly recognizable representative as well: the “subsoil coordinator”
 - There are several organization forms possible, there are several tools available
-  [Dealing with Rules](#) (Legislation and policy)
 - Compliance with legislation, policy and procedures can be facilitated by procedure management
 - Conflicting procedures can be tackled by ensuring that granters of permits and enforcers are on the same wavelength and participate in the process from the start
 - Ensure administrative embedding of agreements/plans

5 Identifying and Involving Actors

(key success factor)

This factsheet concerns the actors in the process of an integrated approach to urban (re)development. It discusses the success factors with respect to these actors.

Holding CTRL and clicking on the figure below will take you back to the overview of all (key) success factors.

5.1 The role of this factor in the integrated approach

If contamination is an obstacle in reaching your goals in an urban (re)development, you have probably found this problem can't be solved in a sectoral way. You need partners, with interest in the area concerned. Partners that want to reach their own goals in the area and may bring their own finances. Joining your stakes with these partners is one of the requirements for an integral solution. This factsheet will help you in identifying the other actors in an urban (re)development that you may partner with in an integrated approach.

Here you can find information on which parties (actors) should or could be involved to ensure a successful

integrated approach to urban (re)development. Also you can find tools which can be used to select these parties and/or tools that help you to involve these parties if necessary.

If you are already taking part in an urban redevelopment process or are requested to take part in it, you can find an explanation why your involvement may be crucial. Also, you can find suggestions for other actors which can be relevant to involve in the process. Finally you may suggest involving these other actors to the [process manager](#) for an urban (re)development.



5.2 In which development phase is this factsheet relevant?

Ideally, the relevant parties with respect to the [process](#) of an integrated approach to urban (re)development and with stakes in the area are involved from the beginning of the process. Survey [all phases of the development](#) to select the relevant parties, and involve them from the start.

However, if you are part of such a process (or are managing it) and find that not all relevant parties are involved yet, you can include these actors in the process at any stage in the (re)development.

5.3 Success factors related to actors

The success factors related to the actors in an integrated approach to urban (re)development can be summarized as follows:

- Identify all actors that are relevant to the development and to the area concerned at every urban redevelopment stage
- Involve these actors from the start of the development

5.3.1 Identifying the relevant parties

In identifying the relevant parties in the (re)development:

- The CityChlor project provided [communication tools](#) to be able to identify relevant stakeholders and give them the right message
- Consider the entire development area. If necessary (for instance for the [business case](#)), broaden your horizon and enlarge the area. This may lead to new actors, with their own [goals](#) and [finances](#). Involving these actors is necessary to formulate and obtain common goals and to come to sound finances and business cases
- Consider not only the current actors in the area, but look ahead to the final stage of development, the management stage, and identify all parties concerned from the start to this final phase. This means also involving the end-users
- Consider all relevant activities and interests in the area (there is a [tool](#) for this), this means considering actors from:
 - Government (actors from administration and actors on the political level)
 - Private sector
 - Social organizations
 - Citizens
- With respect to government:
 - Consider also the granters of permits and enforcers
 - Identify and involve all relevant [administrators](#). They are the decision makers in the political arena and will also have to account for the decisions that are made
- Consider the financiers (there is a [tool](#) for this)

A new way of identifying relevant parties may come from:

- Identifying the bearers of value in the area concerned and not (only) the bearers of costs
- Involving the current and future users of the area, since
 - they can be viewed as the mental owners of the area and therefore have a stake in the (re)development
 - will enjoy the benefits
 - but may also wish to participate and therefore bear some of the [costs](#) (maybe not literally, but figuratively)

Involve external relations to broaden the interests, chances and [knowledge](#)

After taking all these steps to identify the actors in the (re)development process, you should end up with enough interested stakeholders, a [process manager](#) and a client for the redevelopment.

Links:

- See 'Tips for coordination and cooperation soil, water and space within the organization' on page 2 of the Dutch factsheets ['Improve coordination and cooperation soil, water and space'](#)
- See principles 1 ['Fuse interests'](#) and 2 ['Create identity'](#) of the Dutch report ['Sustainable regional development: do the decathlon!'](#)
- See ['Preconditions' and 'Pitfalls'](#) as described in the attachment of the Dutch report ['Ecosystem services in the practice of sustainable soil and land development, the Triple-O approach'](#)
- There are several methods to analyse the interests and power of the parties involved (*krachtenveld analyse*). On the Dutch website of [ruimtexmilieu](#), this analyses is further explained. Another explanation can be found on the website of the [Dutch Government](#)
- See ['Policy Integration for Sustainability' \(p.10\)](#) for principles of policy integration

5.3.2 Involving the relevant parties

Identifying the actors is not enough, relevant parties to the process of urban (re)development should get involved. Success factor with this respect are:

- Negotiating from [interests](#), not from positions
- Building a bridge between the actors from the different three areas of society, economy and the environment ([PPP](#)). Speaking a universal language can help in building the bridge. Traditionally (and exaggerating a bit), people representing *'economy'* think in financial figures, environmentalists think in target values and spatial planners think in maps. Recent experiences have shown, that map tools combining geographical information, figures and values can help build this bridge. The [viewer](#) that was built by order of the "Dutch Implementation program Soil covenant" is another example of this. It gives a geographical presentation of several aspects which can indicate whether an integrated approach to groundwater contaminations may be logical and successful.



Figure 5.1 Viewer integrated approach The Netherlands. Source: Dutch Implementation program Soil covenant

Involving the relevant parties is an important part of the [process](#). In the factsheet concerning [administration and organization](#) you can find suggestions for parties which may take the initiative in the process and therefore can appoint the process manager.

In involving the relevant actors from the start, several [organisation forms](#) are possible. Which organization form is chosen is a strategic decision.

During the CityChlor conference on financing the subsoil (September 12th 2012) aspects such as [knowledge of the subsoil](#) and [private public cooperation](#) were discussed. You may find an account of this conference and input from the speakers on the website of [CityChlor](#).

[Public participation](#) leads to better projects, better appraisals, better decision making and greater support. For every project, the question is when and to what extent residents should be involved. [The Utrecht Standard for Participation](#) gives you an answer to this question: this is how we do it in Utrecht. The Utrecht Standard for Participation was established in April 2010 by Utrecht's municipal council.

Abstracts of different literature on the topics of risk perception, risk communication and public participation, psychosocial responses and environmental distress can be found in the literature review on the website of [CityChlor](#).

5.4 Communication

Communication is an important key to successfully involving the relevant actors. It involves building bridges by using the right communicative tools as discussed in the previous paragraph. The next paragraph provides links to several tools that can be used to improve communication with the actors.

5.5 Tools

There are several tools available for identifying and involving the actors relevant to the urban (re)development, such as:

- CityChlor [Communication Checklist](#) can help you identifying the actors and the relevant messages in your project.
- Also many other practical [socio economical research documents](#) are available on the CityChlor website; some are mentioned specifically in this list
- Methodologies for [network analysis](#), methodologies for working together and methodologies for Public Private Cooperation are shown on [NederLandBovenWater](#) (Dutch)
- In chapter 3 '[Is there a suitable organisational form?](#)', of the report '[Organisation and Financing of Area-Oriented Approach](#)' an overview is given of questions that can be asked with respect to an

analyses of the surroundings and stakeholders as well as an overview of the parties that can take charge in an integrated approach to groundwater contamination with the underlying motivation of these parties

- In chapter 5 '[Is the financing of the plan covered](#)' of the report '[Organisation and Financing of Area-Oriented Approach](#)' an overview is given of possible financiers for an integrated approach to groundwater contamination
- In the Mutual Gains Approach the first step is to get the right people around the table. A short elaboration of the Mutual Gains Approach and a link to the method can be found principle 1 '[Fuse interests](#)' of the Dutch report '[Sustainable regional development: do the decathlon!](#)'
- The C-factor is a method in which policy is formulated in contact with the surroundings: with the relevant parties in the area concerned. The method contains several versions of actor analyses. More information about the C-factor can be found on the web-site of the [Dutch Government](#) and the [CityChlor website](#). The C-method was adapted for the municipality of Utrecht, the report [The Utrecht Standard for Participation](#) is available on the website
- On the website of CityChlor [A selection of research articles and books](#) is available
- A good core message can build the bridge between the actors from the private sphere and the policy makers and is drafted from the perception of the stakeholders. More information can be found on the web-site of the [Dutch Government](#)
- In communicating with citizens, several methods can be adopted, based on the style of the citizens. More information can be found on the website of the [Dutch Government](#)
- Stakeholder engagement recommendations can be found on the website of [REVIT](#)
- "Guide aménageurs" - a French webtool that guides different actors through the different phases of a development: <http://www.developpement-durable.gouv.fr/amenagement-et-sites-pollues/preface.html>
- COMRISK – A French guide that helps analyse the site-specific context, define accordingly objectives and a strategy for the public involvement in the assessment and the management of contaminated sites, and choose and adapt involvement tools: <http://www.comrisk.fr/>
- On the [REFINA website](#) several German tools for involvement of actors are available.
- A guideline on how to communicate with the public in an area with environmental pollution is available on the [Flemish website of medical-environmental-advisors](#)
- On the OVAM website a Flemish [guideline for communication](#) is available

5.6 Rules and principles

The '[polluter pays](#)' principle forms the basis for involving the [parties](#) which are responsible for the groundwater contaminations present in the (re)development area. Sometimes this principle can't be upheld completely due to the absence of (traceable) polluters. This necessitates looking for other ways to finance the soil remediation in the integrated approach. In The Netherlands [the profit principle](#) is used for this. Who profits from the integrated approach to groundwater remediation? The [parties](#) confronted with the remediation costs (assuming individual remediation is more costly than the area oriented approach) as well as the parties with interests in the groundwater in the area who are confronted with costs due to the presence of the

groundwater contamination. These parties can be involved in the integrated approach. The profit principle is upheld in this approach by literally [paying](#) for participation in the area oriented approach.

5.7 Examples

In the documents you find when using the links in the previous paragraphs, further details and/or tools regarding the actors in the integrated approach to urban (re)development. Below you find specific links to some examples:

- See chapter 5 '[Is the financing of the plan covered](#)' of the report '[Organisation and Financing of Area-Oriented Approach](#)' for examples of possible financiers and financial constructions for the area-oriented approach
- See chapter '[Agree: a joint contribution to added value in the area](#)' of the Dutch report '[Ecosystem services in the practice of sustainable soil and land development, the Triple-O approach](#)' for examples of projects involving multiple actors
- See examples in principle 1 '[Fuse interests](#)' of the Dutch report '[Sustainable regional development: do the decathlon!](#)'
- On the Dutch website of [NederLandBovenWater](#) you can find an example of a project where the mutual gains approach was used for the development of [Aviolanda](#) in Woensdrecht, The Netherlands. This website shows several other Dutch examples of an integrates approach as well
- On the website of [Proside](#) you can find information about this EU project that supports sustainable city development on brownfield sites with structural damage to the environment. New planning process and improved coordination and communication between management, investors, owners and citizens are used to enable private capital.
- On the website of [Urban Integration](#) you can find information on this project which aims at sustainable inner urban development and brownfield revitalization. Including ecological and social aspects and public participation are important aspects
- The case description of [Utrecht](#) shows an example of how taking sufficient time allowed for a stakeholder analysis to be carried out, and important agenda points and objectives for inner city redevelopment to be made
- In the case description of [Gent Sint-Pieters](#) an example is shown of how involving more parties through a stake-holder analyses has led to including more objectives
- The case description of [Lyon Confluence](#) shows an example of how taking sufficient time allows for a thorough stakeholder analysis to be carried out, and important agenda points and objectives for inner city redevelopment to be made and synchronized with the scientific data collected
- This case description (of [Lyon Confluence](#)) also shows the implications of the public-based partnership in the form of limiting the broader horizon of the project such that all contaminants in the soil are fully dealt with on the entire peninsula.
- Examples of French web sites with respect tot communication intended for the neighboring of major French urban redevelopment projects: [Union Pole at Tourcoing \(Lille district, North of France\)](#) and [Lyon Confluence at Lyon](#)



- On the CityChlor website more information is given on [Example project 3: Communication in soil remediation](#) about the communication process with several parties concerning a soil contamination in the city centre of Gent

6 Building a Business Case (key success factor)

This factsheet concerns the role of costs and benefits in the process of an integrated approach to urban (re)development and discusses the success factors with that respect. Although financial costs and benefits are very important, also non-financial benefits and good risk management can be important for a successful integrated approach.

Holding CTRL and clicking on the figure below will take you back to the overview of all (key) success factors.

6.1 The role of this factor in the integrated approach

Financial costs associated with the soil remediation can form an obstacle for urban development. In an integrated approach new arrangements can be made that (partly) take away liability (and financial risks) for present contaminations and their 'owners'. Also other (perhaps non-financial) values of the soil may be taken into account. Furthermore, in an integrated approach other parties may be involved, so that the business case can be made. This factsheet will give you specific information on these aspects.

Here you can find tools to help you or other [actors](#) successfully balance the costs and benefits and build a sustainable business case. If you are taking part in a development process and your interests lie in the financial aspects of the development, it can be obvious that you will find insights and tools in this factsheet that may be useful. However, if you are working in spatial design/planning or in the environmental/subsoil area, you can find insights and tools that may enable you to get your stakes on the development agenda. This also applies to stakeholders present in the area, like the end users.



6.2 In which development phase is this factsheet relevant?

Ideally, the finances of the (re)development are on the agenda from the start. Sufficient financing capacity is a precondition to a successful (re)development. But in an integrated approach also other values than just financial gain are taken into account. E.g. carbon dioxide reduction or improving local safety issues can be of value for other stakeholders. In order to achieve this, the stakeholders with respect to these other values should be involved from the start. Therefore finances or costs and benefits should be on the agenda from the start as well.

If you find yourself in the process of an urban (re)development where finances are not (yet) on the agenda, you can find insights in this factsheet how to correct this situation and perhaps find inspiration for new sustainability based business cases.

6.3 Success factors related to costs and benefits

The success factors related to costs and benefits fall into the following categories, that are discussed in the following sub paragraphs:

- Regard costs and benefits from all phases and aspects of the development from the beginning including process costs
- Regard not only monetary benefits, but also the (increase) of social value (there are several tools for this)
- Ensure healthy finances

6.3.1 Finances on the agenda from the start

Finances should be on the agenda from the start, since the success of the project depends on sound finances. The business case, based on sustainability, is a relatively new form for financing integrated approaches. The basis of these 'new' business cases is sustainability and it spans a long period. Investments are not only recovered during the development, but also during the management/exploitation phase. The business case is ideally initially set up in the definition phase (the first sub phase of the initiation phase) of the development and is further elaborated in the following phases.

Links:

- See '[Redeem the future value now](#)' of the Dutch report [Sustainable regional development: do the decathlon!](#) for more explanation about the way in which costs, benefits and risk scan be translated to the present situation.
- Business cases and the phases of the planning proces are elaborated upon in chapter 5 '[Is the financing of the plan covered](#)' of the report '[Organisation and Financing of Area-Oriented Approach](#)'

6.3.2 Broad value concepts

The business case, as discussed in the previous paragraph, leads to identifying broader value concepts. Not all costs and benefits can be expressed in a financial sense. In a business case, the focus lies on (bearers of) value in stead of costs. Value can be material (for instance lowering of cost, increasing value of the site) or immaterial (for instance sustainable remediation result, lowering stagnation of (re)development). One way to explicit the value of the natural capital is through capitalising ecosystem services (The Economics of Ecosystems and Biodiversity: TEEB). There are examples where the value of real estate increased 10% because of the incorporation of trees and green areas within the development plan. In other words: the extra green and pleasant environment can be financed from the extra revenues. A win – win situation!

Another way is to explicit the value of the use of the area, of the perception of the area and the future value. The users of the area are important [actors](#) in this, as is the identity of the area. Sustainability labels, such as the internationally known BREEAM sustainability certification system, can add extra value to buildings or entire areas. Integration of soil remediation exploitation with the building exploitation and the real estate exploitation in one area exploitation is another way to address broad value concepts. In this concept or new earnings model, enlarging the area is one of the factors in trying to increase the financial feasibility of the project. A good example of this can be found in Economic perspectives of brownfield development by Johannes Dörle, Universität Stuttgart.

Links:

- Economic perspectives of brownfield development by Johannes Dörle, Universität Stuttgart.
- Making use of natural values in the Dutch report '[Ecosystem services in the practice of sustainable soil and land development, the Triple-O approach](#)'
- Creating identity and the value of an area: '[Create identity](#)' and more information about sustainability labels are being discussed in '[Link dreams and reality](#)' of the Dutch report '[Sustainable regional development: do the decathlon!](#)'
- See '[Redeem the future value now](#)' of the Dutch report '[Sustainable regional development: do the decathlon!](#)' on how to translate future costs, profits and risks to present
- See the Dutch article [New business models in area development: attractive perspective or necessity ...?](#) for more information on new businesscases for area development
- The Dutch brochure of Agentschap NL '[Future Value Now! 7 financial and organizational instruments for financing sustainable development](#)' gives more information on tools like "MKBA Effectenarena" and "Duurzame Prestatie Locatie (DPL) Kosten en baten"
- See chapter 5 '[Is the financing of the plan covered](#)' of the report '[Organisation and Financing of Area-Oriented Approach](#)' for further elaboration on creation of value, material and immaterial value and business cases

6.3.3 Healthy finances

Healthy finances are a precondition for every (development) project. In an integrated approach, the amount of parties and [stakeholders](#) involved may be higher. Therefore the finances may be more complex. Sufficient financing capacity is a precondition to a successful (re)development. In the former paragraphs other values in the area as opposed to financial value are discussed. Taking other values into account, this precondition may be interpreted as ensuring sufficient potential for improvement in the area. This can require broadening the horizon or enlarging the area that is considered in the business case.

Healthy finances implicate that you take [process](#) costs, such as costs with respect to building [knowledge](#) bases and interactions between the [actors](#) (for instance in study groups) into account in the budget.

An integrated approach will often require joint financing (both public and private parties, possibly different public parties and/or different private parties). Joint financing requires an arrangement that does justice to all the different [parties involved](#).

Links:

- See the Dutch report [Ecosystem services in the practice of sustainable soil and land development, the Triple-O approach](#) for an explanation on the connection between ecology and economy (discovering natural values)
- See chapter 3 '[Organization Aspects: what works well and what is an obstacle](#)' of the Dutch factsheets '[Improving coordination and cooperation soil, water and space](#)'
- '[Redeem the future value now](#)' principle 4 of the Dutch report '[Sustainable regional development: do the decathlon!](#)' shows the importance of the integration of different financial exploitations

How do we build an economical model in order to be able to finance an area oriented development in the future? With what legislation do we have to deal when trying to arrange an area oriented approach? These two themes were the main topics of the [www.CityChlor.eu](#) conference in Utrecht "[Social economical aspects of sustainable city development](#)".

6.4 Communication

Making use of broad value concepts and using a business model requires good communication with the actors involved. Several of the tools presented in the following paragraph focus on communication.

On the website of [Proside](#) you can find information about this EU project that supports sustainable city development on brownfield sites with structural damage to the environment. New planning process and improved coordination and communication between management, investors, owners and citizens are used to enable private capital.

6.5 Tools

There are several tools available for broad value concepts, such as:

- The 'Workbench spatial quality' (as discussed on [page 21](#) of the Dutch report '[Sustainable regional development: do the decathlon!](#)') contains several tools to discuss, handle and keep alive the identity and quality of the area concerned. Core instrument is [the quality profile](#) with common goals for the development of spatial quality
- MKBA (*Maatschappelijk kosten baten analyse*) is a tool for estimating indirect effects in projects. MKBA and the tool MKBA-arena are discussed in principle 4 '[Redeem the future value now](#)' of the Dutch report "[Sustainable regional development: do the decathlon!](#)'
- The Dutch website [NederLandBovenWater](#) offers links to more information on MKBA as well as methods for spatial quality
- Chapter 5 '[Is the financing of the plan covered](#)' of the report '[Organisation and Financing of Area-Oriented Approach](#)' gives examples of material and immaterial values
- In the Dutch brochure of Agentschap NL '[Future Value Now! 7 financial and organizational instruments for financing sustainable development](#)' instruments like MKBA and DPL are explained

There are several tools available for balancing, calculating and managing finances in general, such as:

- Instruments for mapping costs and benefits such as TEEB (The economics of Ecosystems and Biodiversity), DPL (Sustainability profile for a location) and Triple-O approach to ecosystems services as summed up in the Dutch factsheets [‘Improving coordination and cooperation soil, water and space’](#)
- The website [NederLandBovenWater](#) offers links to methodologies with respect tot finances and interchangeable development space
- Chapter 5 [‘Is the financing of the plan covered’](#) of the report [‘Organisation and Financing of Area-Oriented Approach’](#) gives an overview of possible financers of the integrated approach to groundwater contaminations
- The [‘Layer approach’](#) was developed by order of the Dutch ministry of Infrastructure and Environment and divides the soil in three layers (occupational, network and subsoil layers) with unique identities and specific aspects about which knowledge should or could be obtained
- More information about financing can be found on the website of the [national Industriebrachen-Plattform Schweiz](#)
- See also the French: “Guide aménageurs” - a webtool that guides different actors through the different phases of a development via [the website of the French government](#)

The German federal government offers a database of [funding instruments](#). Other relevant German documents with respect tot public funding of contaminated sites management and revitalisation of brownfields in Germany are:

- [Guidelines of the Ministry of Environment and Transport on the promotion of measures for the detection and treatment of areas suspected of contaminated surfaces and historical contaminations](#)
- [Program "Areas gain through internal development" of the Ministry of Transport and Infrastructure Baden-Württemberg](#)
- [Guidelines on the granting of subsidies to foster the reuse of brownfield sites \(brownfields and contaminated sites funding guidelines\)](#)
- [Remediation of contaminated sites in North Rhine-Westphalia. Department of Environment and Conservation, Agriculture and Consumer Protection of North Rhine-Westphalia](#)

Finally, there are several tools available which were developed by order of CityChlor:

- The [cost calculation model for the Area Oriented Approach](#) for groundwater contaminants, a calculation model for management and execution of an integrated approach, a new for the Dutch ReNaBo model. It also shows the hidden costs of (organizing) an area based approach
- The [Dutch Financial Benefits Model for the Area Oriented Approach](#), a system for calculating financial benefits of reducing costs on measures needed in a single case approach
- The report [Alternative financing for Area oriented approach](#) regarding remediation by using spatial planning legislation (Dutch report with an English summary)
- The [Analysis for remediation costs of VOC polluted sites in Flanders](#): an analysis of real costs in relation with budget prognoses from different sites in Flanders (Dutch report with an English summary)

6.6 Rules and principles

The '[polluters pay](#)' principle forms the basis for involving the [parties](#) which are responsible for the groundwater contaminations present in the (re)development area. In areas where several groundwater contaminations are present with several responsible parties, coming to agreements on how to approach the situation can become complicated. This is one of the reasons that in the Dutch area oriented approach to groundwater remediation the choice was made that one party should be responsible for the management of the area concerned. The 'polluters pay' principle is upheld in this approach by literally paying for participation in the area oriented approach. An arrangement can be made where the responsibilities and financial risks for the contaminated groundwater are being transferred from a private party towards the local authorities. The polluter pays a fixed price, probably lower than in a single approach, and is liberated from the uncertainties and financial risks. However, in most cases the private party will stay responsible for the unsaturated (source) zone.

When the [precautionary principle](#) is approached by managing the technical risks posed by unidentified sources of soil contamination in the area, clear reference values should be formulated and a monitoring scheme should be designed. Part of this is formulating a scenario in case of failure and ordering the measures in this scenario to be taken if necessary. Taking the costs of these measures in case of failure into account is required as well.

6.7 Examples

In the documents you find when using the links in the previous paragraphs, further details regarding the success factors with respect to costs and benefits. Below you find specific links to some examples:

- Examples on creating identity: '[Create identity](#)' of the Dutch report '[Sustainable regional development: do the decathlon](#)'
- Chapter 5 '[Is the financing of the plan covered](#)' of the report '[Organisation and Financing of Area-Oriented Approach](#)' gives examples of possible financial arrangements for the integrated approach to groundwater contaminations
- Examples of projects where different values are taken into account can be found in the Dutch report '[Ecosystem services in the practice of sustainable soil and land development, the Triple-O approach](#)'
- The Dutch website [ruimtexmilieu](#) shows various examples in which subsoil qualities are used
- On the website of [Proside](#) you can find information about this EU project that supports sustainable city development on brownfield sites with structural damage to the environment. New planning process and improved coordination and communication between management, investors, owners and citizens are used to enable private capital.
- Financing and marketing recommendations can be found on the website of [REVIT](#)
- Information about making use of industrial heritage and natural assets can be found on the website of [REVIT](#)

- In the case description of [Utrecht](#) an example is given of how the integrated approach has led to the acceptance of the costs related to soil contamination in the project whereas these costs were the reason for the stagnation of the project for many years
- This case description ([Utrecht](#)) also shows how the partnership contributed positively to the sharing of knowledge which led to the acknowledgement of costs and benefits related to remediating the soils in the inner city area
- The case description of [Gent Sint-Pieters](#) gives an example of how focusing on regional and national goals and by considering the development cycle in its entirety, the scope of the project was increased. This ultimately affected the cost and benefit calculations of the partners to remediate soils in the inner city area prior and during construction.
- The case description of [Lyon Confluence](#) shows that the partnership has helped to shift the development focus from the consideration of just a single development phase, to the consideration of the entire development process from 'initiative' to 'management' in the long run. Perhaps most important to ensure this consideration however is the funding by the EU CONCERTO for which a long-term outlook is required.
- This case description ([Lyon Confluence](#)) also shows how the risk calculations of soil pollution for example were made over a larger area and over a greater time frame, which allowed for the goals and interests of the partners to be adjusted. In turn this affected the cost and benefit calculations of the partners for the developments planned on the peninsula
- The Flemish association of spatial planners had a [thematic booklet on redevelopment projects with lots of examples](#)

7 Seeking Common Goals (key success factor)

This factsheet explains the role of common goals and objectives in an integrated approach to urban (re)development and discusses the success factors when trying to identify and establish common goals.

Holding CTRL and clicking on the figure below will take you back to the overview of all (key) success factors.

7.1 The role of this factor in the integrated approach

An integral solution requires integration of different (sectoral) goals to one or several common goals. This factsheet will help you in identifying these common goals.

Here you can find information on what objectives and common goals are necessary to ensure a successful integrated approach to urban (re)development. Also you can find tools which can be used to identify and select common goals and objectives that help you to create sustainable urban development if necessary. If you are already taking part in an urban redevelopment process or are requested to take part in it, you can find an explanation on why establishing clear objectives may be crucial and what other objectives than your own may be relevant in urban (re)development. Also, you can find suggestions for ways to develop sustainable objectives.



7.2 In which development phase is this factsheet relevant?

Ideally the relevant objectives with respect to an integrated approach to urban (re)development are formulated at the beginning of the process.

However, if you are part of such a redevelopment process (or are managing it) and find that not all relevant social, economic and/or environmental concerns have been addressed yet in previously-made objectives, you may still be able to influence these in any stage of the (re)development process.

7.3 Success factors related to objectives

An objective in its broader sense can be defined as a goal. The establishment of clear goals in urban (re)development is necessary in order to create pressure or a drive towards reaching a specific ambition. While objectives can be easily made, the realization may require too much ambition. However, rather than

discussing the relevance of developing reachable objectives, the [process](#) of creating objectives is important and is seen as a key success factor in an integrated approach. This is because the process of establishing objectives is assumed to generate achievable objectives. This process implies:

- A survey of all phases of the development as well as present and future use of the area concerned to select the relevant [parties \(actors\)](#), and involve all of them from the start
- An understanding of the interconnectedness of objectives between selected parties
- Formulating common goals which do justice to the parties involved
- Seeking alliance with other existing initiatives if possible, but only when this does not limit the process to previously set goals

Several success factors can be identified with respect to this process of formulating common goals:

- Negotiating from interests, not from positions
- Prevent conflicts of interests, try joining interests
- Translating the potential of the subsoil to spatial interests and taking these into account
- Enlarge the area and incorporate other goals (broaden your view). If the initial area that is considered for the (re)development does not yield enough reachable goals or does not yield enough value for the [business case](#), enlarge the area. This can lead to new parties with other interest that can be involved and new financial possibilities. Part of this may also be involving the users of the area and other parties that are traditionally not part of the (re)development process from the start and joining their interests in the objectives for the area. This can help in addressing other spatial qualities as well and render extra values.

Links:

- Several of the abovementioned success factor are derived from the Dutch factsheets '[Improving coordination and cooperation soil, water and space](#)'
- The Dutch publication '[Ecosystem services in the practice of sustainable soil and land development, the Triple-O approach](#)' is another source for some of the success factors described above
- Principle 1 '[Fuse interests](#)' of the Dutch report '[Sustainable regional development: do the decathlon!](#)' concerns the different interests of actors in the (re)development area.
- Chapter 7 '[Have the existing interests and acquired rights been weighed?](#)' of the report '[Organisation and Financing of Area-Oriented Approach](#)' gives an overview of potential stakeholders in an integrated approach as well as the interests they may have in the area

7.4 Communication

Creating common goals requires good communication between the different stakeholders. Communicating about the interests of the different stakeholders is essential in taking all interests into account. Additional tools on joining these interests are presented in the following paragraph.

7.5 Tools

There are several tools available for identifying the objectives in the integrated approach to urban (re)development, such as:

- On the Dutch website www.ruimtexmilieu.nl you can find a [matrix of spatial qualities](#) which can be used to define the objectives for the (re)development with respect to spatial quality. On the Dutch website of [workpartners](#) more information is given for each of these spatial qualities
- The Dutch ['Workbench spatial quality'](#) contains several tools to discuss, handle and keep alive the identity and quality of the area concerned. Core instrument is the quality profile with common goals for the development of spatial quality
- The Dutch 'Checklist core values for sustainable spatial quality' is a tool for drawing up a document which contains the ambitions for the area concerned and contains a checklist which can be used for formulating the common goals. More information about this checklist can be found in the Dutch ['Guide to sustainable spatial development'](#)
- The Mutual Gains Approach (MGA) is a tool which can be used to find a common solution based on interests instead of positions. MGA is elaborated upon in the Dutch publication ['Sustainable regional development: do the decathlon!'](#). This report also shows a case in Woensdrecht where the MGA was used
- Another tool for joining parties and their interests is [Charette](#). This tool is also elaborated upon in the Dutch publication ['Sustainable regional development: do the decathlon!'](#). A [userguide](#) to Charette can be found on the website of the Koning Boudewijn foundation (Belgium, Dutch)
- MKBA-arena is a tool which can be used to join interests. A description of this tool is given in principle 4 ['Redeem the future value now'](#) of the Dutch report ['Sustainable regional development: do the decathlon!'](#)
- See also the French: "Guide aménageurs" - a webtool that guides different actors through the different phases of a development via [the website of the French government](#)

7.6 Rules and principles

In spatial planning several social and environmental aspects are regarded in the consideration of how to (re)develop an area. In coming to common goals in an integrated approach, it is also desired to make an integral consideration. However, due to the [sectoral scope](#) of rules and regulations a consideration of the approach to soil contamination can only be made within the framework of the relevant rules and regulations and other aspects may not be taken into account. This seeming obstacle may be avoided by making the integral consideration within the framework of spatial rules and regulations which do allow for an integral consideration. The results of this integral consideration should be formalized by the relevant administration in a spatial [agreement](#) or order in order to obtain a legal status. In the consideration of the remediation approach this spatial agreement or order can then be referred to.

This scenario can also be applied to the integral consideration of the soil aspects in an area where the preconditions for the Dutch area oriented approach to groundwater contaminations are not met. For instance, it may be desirable from a spatial consideration of an area to implement Aquifer Thermal Energy Storage and to allow the spreading of the single large groundwater contamination this causes instead of requiring costly measures to avoid this spreading. Such a consideration may be made in the spatial legal framework and then referred to in the sectoral consideration of the soil remediation. This consideration cannot be made singularly in the sectoral framework of the consideration of the soil remediation.

The [‘stand still’ principle](#) can be seen as a principle that stands in the way of an integrated approach to groundwater remediation. In the area oriented approach, that has become part of the Dutch Soil protection Act med 2012, an area may be defined in which further spreading of groundwater contaminations within a certain area is acceptable under certain conditions. Due to the acceptance of spreading within the area the quality of this groundwater may deteriorate, which at first glance may not be in accordance with the ‘stand still’ principle. However, from [an integral policy consideration](#) the case may be made that this integrated approach to groundwater remediation leads to a ‘stand still’ at the area level. This should be considered in formulating the objectives for the area concerned.

The European Water Framework Directive states the groundwater should reach or maintain [a ‘good chemical condition’](#). This is further elaborated upon in the European Water Framework Directive which requires the European countries to draw up testing levels. In an area based approach to groundwater remediation as is now incorporated in the Dutch Soil protection act, the up-scaling of the area concerned may be limited by this principle. This should be considered in formulating the objectives for the area concerned.

7.7 Examples

In the documents you find when using the links in the previous paragraphs, further details and/or tools regarding objectives in the integrated approach to urban (re)development. You can find examples as well.

Below you find specific links to some examples:

- An example of a case in Woensdrecht where the Mutual Gains Approach (MGA) was used is shown in the Dutch report [‘Sustainable regional development: do the decathlon!’](#)
- Examples of the use of Charette can be found on the website for [Rijnenburg](#) (Utrecht, The Netherlands) and the website of the Dutch province of Drenthe (project [‘Grounds for change’](#))
- The Dutch publication [‘Ecosystem services in the practice of sustainable soil and land development, the Triple-O approach’](#) contains three case descriptions in which common goals were derived
- In the case description of [Gent Sint-Pieters](#) an example is given how involving more parties through a stake-holder analysis has led to including more objectives
- The case description of [Hospital Stuttgart-West](#) shows how being aware of common goals led to a successful redevelopment of a Brownfield location

- The case description of [Lyon Confluence](#) shows an example of how taking sufficient time allows for a thorough stakeholder analysis to be carried out, and important agenda points and objectives for inner city redevelopment to be made and synchronized with the scientific data collected
- This case description ([Lyon Confluence](#)) also shows that partnering with each other contributed to creating an understanding of different interests for redeveloping the inner city area shifting the focus of redevelopment away from sector-bound goals towards regional and even national goals.
- On the [REFINA website](#) several German examples are given of setting goals in urban redevelopment.
- On the website of the municipality of Stuttgart a [German example of goals and strategies](#) is shown.

8 Using Decisions and Agreements (key success factor)

This factsheet concerns the decisions or agreements which are made during the process of an integrated approach to urban (re)development. It discusses the success factors with respect to these agreements and to the decision-making process.

Holding CTRL and clicking on the figure below will take you back to the overview of all (key) success factors.

8.1 The role of this factor in the integrated approach

If you are hindered by contaminations in reaching your goals in an urban (re)development, you have probably found this problem can't be solved in a sectoral way with the current rules and regulations. An integral solution may require decisions and agreements to be made at an administrative level. This factsheet will help you in identifying the different types of decisions and agreements that you may benefit from.

Here you can find information on the importance of a sound decision-making process and on how to come to agreements. You will also find useful tools which can be used to facilitate the decision-making process that help you to create a sustainable urban development.



If you are already taking part in an urban redevelopment process or are requested to take part in it, you can find an explanation on suitable integrated decision-making processes. Also, you can find suggestions for ways to incorporate environmental elements (i.e. groundwater pollution) within the decision-making process.

8.2 In which development phase is this factsheet relevant?

Decisions and agreements are made in every phase of the development. However, each phase has specific agreements and agreements can evolve or expand during the development. This will be elaborated on in the following paragraphs.

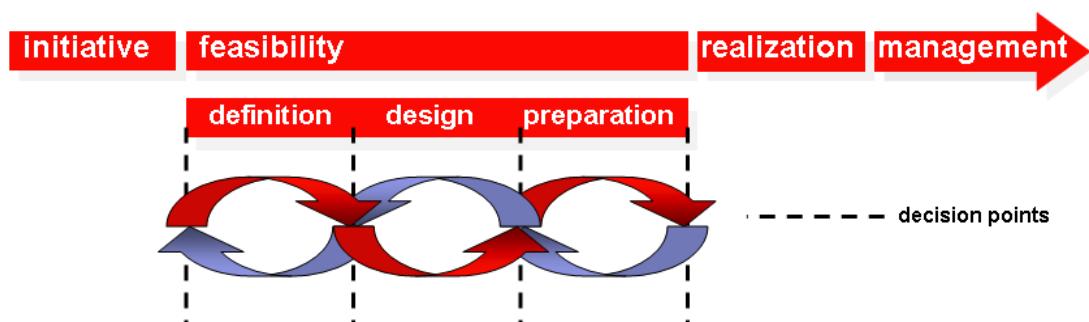
8.3 Success factors related to decisions and agreements

In the decision-making the urban pressures on the environment should be taken into account. Making decisions based on sound theoretical scientific (ecological, environmental, technical) [knowledge](#), as well as practical knowledge about local circumstances is vital to ensure a successful integrated approach to urban (re)development.

An integrated approach to urban (re)development requires the involvement of various [parties](#) and agreeing to [common goals](#) and collaboration. In this process many decisions and agreements will be made. Often with good intentions, but non-official: not documented and not with the formal support and approval of superiors. Due to the long timescale of the redevelopment and possible turnover of the representatives of the parties involved it is advisable to document these decisions and agreements. If possible, formalize decisions and agreements with a formal order from the appropriate authorities. An official intention of collaboration early in the process will assure active involvement and commitment of all representatives during the development process.

An integrated approach usually requires the involvement of [administrators](#), and a need for specific administrative agreements may arise due to the risks involved with respect to [finances](#), cooperation, changing [rules and regulations](#) etcetera. At three specific moments in the development, administrative agreements can be necessary:

01. when finalizing the initiative phase: the starting declaration
02. when finalizing the vision or definition phase (sub phase of the feasibility phase): the intention agreement
03. when finalizing the preparation phase (sub phase of the feasibility phase): the partnership agreement



[Public participation](#) in general leads to better projects, better appraisals, better decision making and greater support. For every project, the question is when and to what extent residents should be involved. [The Utrecht Standard for Participation](#) can give you an answer to this question.

The Utrecht Standard for Participation was established in April 2010 by Utrecht's municipal council.

8.4 Communication

The most obvious communications are the agreements that are drawn up during the process. But coming to agreements requires effective communication. See factsheets 'actors' and 'common goals and objectives'.

8.5 Tools

There are several tools available with respect to decisions and agreements relevant to the urban (re)development, such as:

- The use of Environmental Impact Assessment (EIA) for making environmentally integrated decisions is elaborated upon in the publication [‘Sustainable Urban Planning’](#)
- The report [‘Organisation and Financing of Area-Oriented Approach’](#) gives a menu for administrative arrangements in chapter 4 [‘Administrative commitment in writing?’](#). This chapter also shows an example of the index of an administrative partnership agreement, the covenant for the integrated approach for ‘Het Gooi’ (The Netherlands)
- See also the French: “Guide aménageurs” - a webtool that guides different actors through the different phases of a development via [the website of the French government](#)
- On the website of [REFINA](#) several German tools for contaminated sites management, economical evaluation, decision support, and process management can be found.

8.6 Rules and principles

In spatial planning several social and environmental aspects are regarded in the consideration of how to (re)develop an area. In coming to [common goals](#) in an integrated approach, it is also desired to make an integral consideration. However, due to the [sectoral scope](#) of rules and regulations a consideration of the approach to soil contamination may only be made within the framework of the relevant rules and regulations and other aspects may not be taken into account. This seeming obstacle can be avoided by making the integral consideration within the framework of spatial rules and regulations which do allow for an integral consideration. The results of this integral consideration should be formalized in a spatial agreement or order in order to obtain a legal status. In the consideration of the remediation approach this spatial agreement or order can then be referred to.

This scenario can also be applied to the integral consideration of the soil aspects in an area where the preconditions for the Dutch area oriented approach to groundwater contaminations are not met. For instance, it may be desirable from a spatial consideration of an area to implement heat cold storage and to allow the spreading of the single large groundwater contamination this causes in stead of requiring costly measures to avoid this spreading. Such a consideration may be made in the spatial legal framework and then referred to in the sectoral consideration of the soil remediation. This consideration cannot be made singularly in the sectoral framework of the consideration of the soil remediation.

In Flanders the government stimulates and facilitates the development of brownfields by contracting brownfield covenants with project developers and investors. These covenants give the project developers and investors a number of legal-administrative and financial benefits. Calls are periodically launched to search for interested developers. Experience shows that the negotiations with the different administrations that precede the conclusion of a covenant are often considered as the major advantage. In these negotiations under the coordination of a negotiator appointed by the Flemish government, all authorities are included that can be involved in the realisation of the project (city, province, Flemish and federal administrations, public transport...). At present 40 covenants have been signed.

8.7 Examples

In the documents you find when using the links in the previous paragraphs, further details regarding the success factors with respect to decisions and agreements. Below you find specific links to some examples:

- More information on [Flemish brownfield covenants](#) (in Dutch)
- The report '[Organisation and Financing of Area-Oriented Approach](#)' shows an example of the index of an administrative partnership agreement, the covenant for the integrated approach for 't Gooi (The Netherlands) in chapter 4 '[Administrative commitment in writing?](#)'
- In the same [chapter](#) examples of other agreements are given for the cities of Zwolle (*structuurvisie*), Apeldoorn (*waterplan*) and Enschede (*gemeentelijk rioleringsplan GRP+*)
- On the Dutch website [NederLandBovenWater](#) you will find several examples of an intention agreement and a partnership agreement
- In principle 2 '[Create identity](#)' of the Dutch report '[Sustainable regional development: do the decathlon!](#)' an example is shown of an integrated approach where a masterplan was drawn up
- In the case description of [Utrecht](#) an example is given of how a high level of political commitment for soil management indirectly affects the process of achieving an integrated approach because it legitimizes administrative agreements for urban redevelopment
- In the case description of [Gent Sint-Pieters](#) the advantages of the administrative agreements that were made in this projects are described
- In the case description of [Lyon Confluence](#) an example is given how a high level of political commitment can be said to indirectly affect the process of achieving an integrated approach with soil management because it legitimizes administrative agreements for urban redevelopment
- In the French city of Massy, an "Environmental Note" must be realized by the project owner while he asks for authorizations for soil occupation (e.g. building permits). This "[Environmental Note](#)" is aimed to sum-up the project owner's commitments and to link environmental constraints to accepted technical solutions.
- On the [European COBRAMAN website](#) examples of Brownfield SWOT analysis (strengths, weaknesses, opportunities and threats) is available.

9 Process management

This factsheet concerns the process of an integrated approach to urban (re)development. It discusses the success factors with respect to this process and the process management.

Holding CTRL and clicking on the figure below will take you back to the overview of all (key) success factors.

9.1 The role of this factor in the integrated approach

The integrated approach is more complex than the traditional approach to urban (re)development, since more/other parties are involved, other costs and benefits are taken into account and objectives are joined to common goals for the area concerned. Therefore, you may want to educate yourself with respect to this process. This factsheet will give you specific information on the process management and links to other relevant aspects.

Here you can find tools to help you successfully manage the process. If you are taking part in a process you can find suggestions how to ensure the process is managed successfully.

If you are taking part in a process and find there is no process manager, you can find suggestions why a process manager is necessary. In the factsheet concerning [administration involvement and organization form](#) you can find suggestions for parties which can take the initiative in the process and therefore may appoint the process manager.



9.2 In which development phase is this factsheet relevant?

Ideally, the process of an integrated approach to urban (re)development is managed with care from the start. However, if you are part of such a process and find that the process halts, you can find tools in this factsheet to improve the process at any point.

Finally, some tools are presented specifically useful in the designing phase.

9.3 Success factors related to the process

The success factors related to the process of an integrated approach to urban (re)development can be summarized as follows:

- Manage the process with care
- Ensure a good process manager to do this
- Use one of the available tools

- Look forward to the following steps in the process/phases in the (re)development

9.3.1 Process management

Part of the process is involving the relevant actors, preferably from the start. Building a [network](#) or a community of practice with inspiring activities and using good examples can help. Several success factors can be identified with respect to the process of formulating common goals, see the factsheet about [objectives and common goals](#).

A stakeholder analyses can help you gain insight in interested parties and influencers and select the relevant actors. If possible seek alliance with existing initiatives. Always involve [administrators](#) in all phases of the process.

There are several [methodologies](#) to help you working together as well as specific methodologies for Public Private Cooperation. Regularly showing results during the process can have a positive effect on the project organization.

Process management has its costs. Good process management ensures these costs are taken into account from the beginning.

Links:

- See 'Tips for coordination and cooperation soil, water and space within the organization' on page 2 of the Dutch factsheets ['Improving coordination and cooperation soil, water and space'](#)
- See chapter 3 ['Is there a suitable organisational form?'](#), chapter 4 ['Administrative commitment in writing?'](#) and chapter 5 ['Is the financing of the plan covered'](#) of the report ['Organisation and Financing of Area-Oriented Approach'](#)
- Zie de methods on the Dutch website [NederLandBovenWater](#).

9.3.2 Process manager

A good process manager is a precondition for a successful process. This process manager should have enough experience with processes, negotiations, long term efforts to join parties and be able to inspire other people.

The process manager as well as the actors should be willing to learn from mistakes and redirect the process to a more successful route if necessary.

Dutch links:

- See ['Pitfalls'](#) as described in the attachment of the Dutch report ['Ecosystem services in the practice of sustainable soil and land development, the Triple-O approach'](#)

9.4 Communication

In a successful process the actors are working together to achieve common goals. This requires good communication. Especially for the process manager. Risk management can be used as a communication tool, as well as other tools shown in the following paragraph.

On the website of [Proside](#) you can find information about this EU project that supports sustainable city development on brownfield sites with structural damage to the environment. New planning process and improved coordination and communication between management, investors, owners and citizens are used to enable private capital.

9.5 Tools

There are several tools available that can help in realizing an integrated approach to the process, such as:

- The MRE approach for sustainable development in which the environmental world and economic worlds are linked in an iterative process
- The EnvironmentalMaximalisationMethod, especially for the design phase, in which environmental themes are involved explicitly and in a structured way in an early stage of the design phase
- Sustainable Design, an instrument combining the presentation of sustainability aspects of a Site and a Map table
- Sustainability Labels such as BREEAM
- Tools for joining [interests](#) and [parties](#), such as the Mutual Gains Approach (MGA) and Charette
- Risk management can be used as a tool in the overall process as well as specifically for cost management
- See the first 5 tools of principle 3 '[Link dreams and reality](#)' of the Dutch report '[Sustainable regional development: do the decathlon!](#)'
- An elaboration on risk management is given in chapter 5 '[Is the financing of the plan covered](#)' of the report '[Organisation and Financing of Area-Oriented Approach](#)'
- On the European website for [RESCUE](#) (Regeneration of European Sites in Cities and urban Environments) a guidance for sustainable brownfield regeneration according to the urban project partners can be found including best practices and tools (VTC - Virtual Training Centre and SAT - Sustainability Assessment Tool)
- On the European website for [TIMBRE](#) (Tailored Improvement for Brownfield Regeneration in Europe) – the European FP7 project (under development) aims to support end-users in overcoming existing barriers by developing and providing customized problem- and target-oriented packages of technologies, approaches and management tools for a mega site's reuse planning and remediation
- See also the French: "Guide aménageurs" - a webtool that guides different actors through the different phases of a development via [the website of the French government](#)
- The French [REFRINDD project](#) (in development) aims at working toward an integrated approach for sustainable redevelopment of complex areas and mega-sites (the website gives an elaboration of sustainable indicators for a multi criteria analysis and decision tool - environment, economy and social)

- On the [REFINA website](#) German tools for decision support, process management are available.
- On the website of the [European COBRAMAN project](#) a blueprint for a Brownfield management plan is available.
- The [Training handbook for Brownfield managers](#) on the European website of COBRAMAN offers several tools with respect to process management

9.6 Examples

In the documents you find when using the links in the previous paragraphs, further details regarding the success factors with respect to the process. Below you find specific links to some examples:

- Hoboken-principles, see principle 3 “[Koppel droom en realiteit](#)” of the report ‘[Duurzame gebiedsontwikkeling: doe de tienkamp!](#)’
- On the Dutch website of [NederLandBovenWater](#) you can find an example of a project where the mutual gains approach was used for the development of [Aviolanda](#) in Woensdrecht, The Netherlands. This website shows several other Dutch examples of an integrated approach as well
- On the website of [Proside](#) you can find information about this EU project that supports sustainable city development on brownfield sites with structural damage to the environment. New planning process and improved coordination and communication between management, investors, owners and citizens are used to enable private capital
- In the case description of [Gent Sint-Pieters](#) an example is given of how the public partnership has legitimized the project and also contributed to the interest in soil management
- The case description of the [Hospital Stuttgart-West](#) shows how important communication is for the success of the redevelopment process
- See also the [French industrial brownfields folder](#): consequent environmental issue for Lille Metropole Information mission from Municipality collectivities of Lille Metropole containing 53 recommendations to manage industrial brownfields
- See the [French website of Ademe](#) for the publication “Concilier sites pollués et renouvellement urbain Editions ADEME (22 E, ref G21675)”
- See the [French account](#) for Brownfield redevelopment with building operation at Lyon (Reconquête d’une friche urbaine pour la construction de logements à Lyon - 69)
- See the French CityChlor report based on different professional and personal backgrounds actors’ testimonies different through these links:
http://www.citychlor.eu/sites/default/files/CityChlor_French_State_of_the_art_report_ENG.pdf and
http://www.citychlor.eu/sites/default/files/CityChlor_French_State_of_the_art_appendix_ENG.pdf
- See the following links for the German project “Im Raiser” – Example for a successful project managed by a brownfield manager: http://database.cobraman-ce.eu/abstracts/abstract_BR_36.pdf ;
http://www.akbw.de/fileadmin/download/Freie_Dokumente/Publikationen/ArchfuehrerS.pdf
- On the website of the university of Cologne a Flemish report is available on the [evaluation of 10 years of optimizing the decision making process for large investments](#). It is a study made for the Flemish parliament by the University of Antwerp and the socio-economic board of Flanders

- [Recommendations for Accelerating and improving the policy process for infrastructure investment in the policy area Mobility and Public Works](#) and [publications with respect to acceleration of socially important investment projects](#) are available on the website of the Flemish Parliament
- Flemish [publications on Spatial Planning](#) are available on the website of the Flemish government
- The Flemish report [Routeplanner for project driven processes](#) regarding a process approach for large investment projects is available on the website of the Flemish parliament
- [Faster decision making on complex projects comparative views – Quicksan](#), a comparison with UK, Germany, France on how they manage complex decision making processes is available from the website of the Flemish parliament

10 Managing Knowledge & Technical innovations

Holding CTRL and clicking on the figure below will take you back to the overview of all (key) success factors.

10.1 The role of this factor in the integrated approach

The managing of knowledge and technical innovations is one of the success factors to achieve a sustainable city development. A development project has to cope with loads of information coming from different disciplines in different (technical) languages and with different uncertainties. And to successfully integrate soil aspects into a (re)development process, enough knowledge about (the values of) the subsoil as well as the behaviour of the soil-groundwater system and the costs of soil remediation should be available. Furthermore, this information should be presented in a usable way to parties not used to taking soil into account. You need to build a bridge with the spatial planners and economic parties.



Here you can find suggestions how to accomplish this and some examples and tools to ensure the necessary knowledge is obtained, stored and made accessible in the complex process of urban development with multiple aspects.

10.2 CityChlor and technical knowledge and innovations

With chlorinated solvents in particular, the knowledge about the pollution will always have a certain uncertainty that can have an impact on the course and the costs of the remediation. An efficient 'managing of knowledge' will try to decrease this degree of uncertainty.

CityChlor therefore also worked on the technical aspects of characterization and remediation. The conventional techniques that are applied for investigation and remediation have their limitations dealing with chlorinated solvents. Promising innovative techniques exist, but do not easily find their way to current application. This barrier is often caused by lack of knowledge on different levels. Experts and contractors do not always have the means to invest in experiments with new techniques, authorities are reluctant to accept techniques of which the results may be uncertain and clients aren't eager to pay for experimental techniques.

Dissemination of knowledge can break this deadlock and can contribute to sustainable and affordable solutions, also for complex integrated projects. CityChlor therefore collected experiences from field application of innovative techniques and implemented itself a number of techniques in pilot projects. The technical books from WP 2: Groundwater, soil, soil gas and indoor air characterization and WP3: Remediation options suitable for inner city re-development, give a brief overview of the main findings and results. For the detailed outcomes, the reader is referred to the specific reports. Specific technical knowledge from CityChlor is grouped and accessible via links in [chapter 19](#).

For professionals involved with contaminated groundwater it can be a source of information and inspiration.

10.3 In which development phase is this factsheet relevant?

Ideally, the relevant knowledge with respect to the development area concerned is obtained and made available to all parties concerned from the start of the [process](#) of the (re)development. The further the process develops, the more knowledge is gained, the more important good access to and management of information gets. Investing in a good conceptual site model, a base for sharing data, information and reports can earn itself back in later stages. Also introducing a continuous “plan – do – check – act” (PDCA) cycle in your projects for monitoring and steering “on the job” are essential for a high quality, sustainable end result.

10.4 Success factors related to knowledge

The success factors related to knowledge in an integrated approach to urban (re)development can be summarized as follows:

- Ensure good information management:
 - Obtaining all relevant knowledge of the area concerned
 - Invest in a central information system (storing data, information, maps, reports, etcetera)
 - Making the knowledge available to all parties concerned
- Make the information available in a practical, usable way
- Take your [time](#) to get acquainted with all necessary information
- Use one of the available tools

10.4.1 Information management

Obtain all relevant information of the area concerned. Not only the information with respect to financial costs and benefits, but all aspects of the integrated approach: spatial, environmental, etcetera. Not only factual information, but also examples of other developments from internal or external relations.

During the development phases the amount of information that is gathered will grow. Fragmentation of knowledge and information is a risk that can be reduced by storing this in one, central databank. This also allows for keeping the information up to date, especially when all parties concerned use this one databank and don't use different versions of the same report.

Links:

- See for success factors regarding “knowledge” the Dutch publication [‘Improving coordination and cooperation soil, water and space’](#)
- See ‘Pitfalls’ in the report [‘Ecosystem services in the practice of sustainable soil and land development, the Triple-O approach’](#)

10.4.2 Usable presentation

Sharing the knowledge obtained in a useable way is essential to ensuring all relevant knowledge is indeed used in the development and can also help building the bridge between the different [actors](#). Bare facts and numbers can inspire the real-estate developers (profit) and environmental/subsoil experts (planet), but spatial designers/planners (people) respond better to maps and designs.

Links

- See the Dutch factsheets [‘Improving coordination and cooperation soil, water and space’](#)

During the CityChlor conference on financing the subsoil (September 12th 2012) aspects such as knowledge of the subsoil and private public cooperation were discussed. You can find an account of this conference and input from the speakers on the website of [CityChlor](#).

10.5 Communication

Communication with respect to knowledge and the way information is presented and transferred should well take into account the type of actors, their education level and how they will want to use it. Quantity and quality of the knowledge input should match their specific level and needs. Overkill, wrong or too little information will slow down the process of (re)development.

10.6 Tools

There are several tools available for identifying the topics on which to gather data, such as:

- The [‘Layer approach’](#) was developed by order of the Dutch ministry of Infrastructure and Environment and divides the soil in three layers (occupational, network and subsoil layers) with unique identities and specific aspects about which knowledge should or could be obtained
- The ‘Workbench spatial quality’ contains several tools to discuss, handle and keep alive the identity and quality of the area concerned. Core instrument is the quality profile with common goals for the development of spatial quality
- The ‘Checklist core values sustainable approach’ is a tool for drawing up a document which contains the ambitions for the area concerned and contains a checklist which can also be used for formulating the common goals. More information about this checklist can be found in the Dutch [‘Guide to sustainable spatial development’](#)

Since maps are a useful tool to entice spatial planners, GIS (Geographical Information System)-based programs can play an important role in data management:

- Building a bridge between the actors from the different three areas of society, economy and the environment ([PPP](#)). Speaking a universal language can help in building the bridge. Traditionally (and exaggerating a bit), people representing economy think in figures, environmentalists think in target values and spatial planners think in maps. Experience shows that map tools combining figures and values can help build this bridge. The [viewer](#) that was built by order of the Dutch Implementation program Soil covenant with a geographical presentation of several aspects which may indicate whether an integrated approach to groundwater contaminations can be successful is another example of this

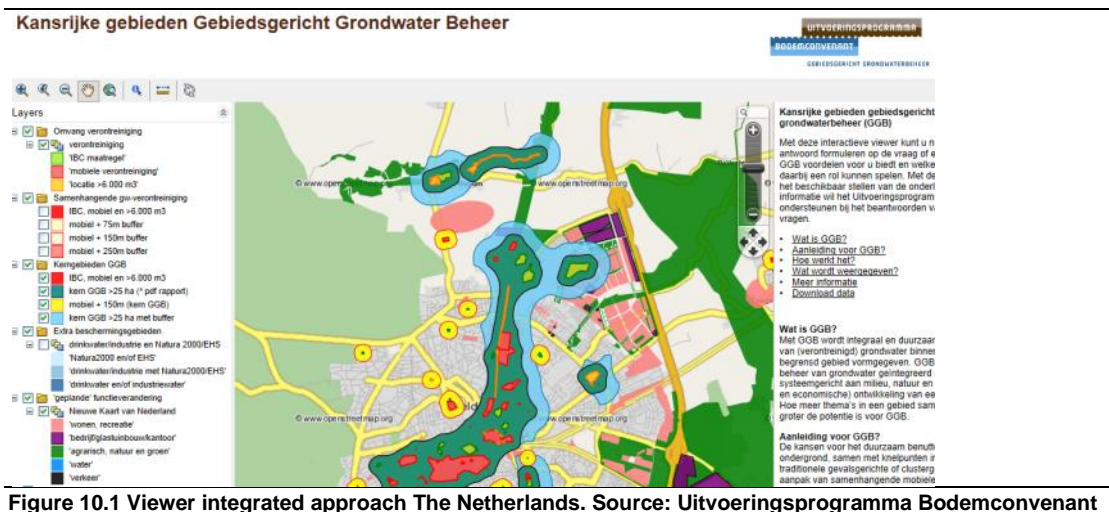


Figure 10.1 Viewer integrated approach The Netherlands. Source: Uitvoeringsprogramma Bodemconvenant

Further links:

- See for more information on the use of above mentioned tools '[Create identity](#)' of the Dutch report '[Sustainable regional development: do the decathlon](#)'
- See also the French: "Guide aménageurs" - a webtool that guides different actors through the different phases of a development via [the website of the French government](#)
- See the French website [BASIAS](#) for an inventory of Former Industrial sites and Service Activities
- See the French website [BASOL](#) for an inventory of polluted sites and soils (or potentially polluted) requiring actions from public authorities)
- The French website of [Ademe](#) offers the "Guide "traitabilité des sols pollués" - Treatability of polluted sites: methodological guide for techniques selection and performance assessment. The methodology guidelines are intended for the pre-selection of techniques by the decision maker, in view of discarding any clearly inappropriate techniques based on the knowledge of simple site, pollutant and soil-related parameters and to identify those parameters likely to limit the feasibility and performance of the techniques
- On the German REFINA website [literature about the management of redevelopment projects](#) is available as well as a [literature database](#) with examples and tools of redevelopment projects

10.7 Rules and principles

The [precautionary principle](#) recognizes the importance of sufficient knowledge of the area as well as addresses the fact that you may never know everything about the actual environmental situation of the area concerned. This means identifying the risks and [management of these risks](#) are important success factors when working on an integrated approach. In case of (partly) unidentified soil contaminations this means formulating reference values, building a conceptual model and designing a monitoring scheme. Part of this is formulating a scenario in case of failure and [ordering](#) the measures in this scenario to be taken if necessary. This is common practice in The Netherlands for long term remediation approaches, for remediation approaches with a duration of more than 3 years a scenario in case of failure accompanied by reference moments is required by the Dutch Soil protection act. Taking the [costs](#) of these measures in case of failure into account is required as well.

10.8 Examples

In the documents you find when using the links in the previous paragraphs, further details regarding the success factors with respect to knowledge. Below you find specific links to some examples:

- Examples of projects involving an analysis on present subsoil qualities: Dutch website [ruimtexmilieu](#): Krimpenerwaard and Hart van de Heuvelrug. Both with different maps
- The [viewer](#) that was built by order of the Dutch Implementation program Soil covenant with a geographical presentation of several aspects which can indicate whether an integrated approach to groundwater contaminations can be successful is an example of a map tool that combines figures and values.
- On the homepage of [REVIT](#) you can find the experiences and results of this project which is aimed at revitalization of Brownfield sites presented in an innovative way. This preservation is necessary in order to preserve or improve the quality of urban living conditions, may enhance coherent urban development, stimulate the local economy and prevents the growing consumption of land.
- Knowledge with respect to environmental technical issues can be found on the website of [REVIT](#) as well
- An example of a knowledge bank can be found on the website of the [national Industriebrachen-Plattform Schweiz](#)
- In the case description of [Utrecht](#) an example is given of why sharing the knowledge with the parties concerned in the project is crucial and what happens in case of the failure to share specific knowledge
- In the case description of the [Gent Sint-Pieters](#) and [Lyon Confluence](#) project an example is shown of how taking sufficient time allowed for sufficient data to be collected about the state of soils in the inner city area as well as the project area
- The case description of [Lyon Confluence](#) shows that overall the use of knowledge has been limited without the inclusion of the private sphere as a signatory party to the redevelopment
- See also a French example of a [report](#) with urban historical inventory (inventaire historique urbain - IHU) as exhaustive inventory of potential contaminated areas at Graulhet city
- On the German website of [REFINA](#) several examples of exemplary projects are available



- Examples of Baden-Württemberg are available through this link: <http://www2.mvi.baden-wuerttemberg.de/servlet/is/68946/>
- Several European examples are available in the [Brownfield database](#) of the COBRAMAN project

11 Making use of a longer Timeframe

This factsheet concerns the importance of time in the process of an integrated approach to urban (re)development. It discusses the success factors with respect to time.

Holding CTRL and clicking on the figure below will take you back to the overview of all (key) success factors.

11.1 The role of this factor in the integrated approach

The integrated approach is more complex than the traditional approach to urban (re)development, since more/other parties are involved, other costs and benefits are taken into account and objectives are joined to common goals for the area concerned. Therefore, this process will take more time. Also other reasons can exist to look at a longer timeframe for a solution for contaminated groundwater (i.e. making use of slow natural attenuation processes). This factsheet deals with several aspects related to the longer timescale.

Whether you are the process manager for an urban (re)development or you are taking part in (parts of) this [process](#), in this factsheet you can find the basis why making good use of available time is of the essence.



11.2 In which development phase is this factsheet relevant?

Ideally, the process of an integrated approach to urban (re)development is managed with care from the start. However, if you are part of such a process and find that the process halts, you can find tools in this factsheet to improve the process at any point.

11.3 Success factors related to time

Time is of the essence. This notion leads to the following success factors with respect to an integrated approach to urban (re)development:

- Regard all development phases and its unique aspects (financial etcetera) from the start. Each of the phases should be connected to the previous phase and the following phase. This is one of the

basic [preconditions](#) for a successful integrated approach. You will find that this notion returns in each of the factsheets

- Look towards the future:
 - Take not only the current use and users into account, but also the future use and [users](#) of the area
 - Make a long-term (financial) planning
- Realize that an urban (re)development process takes time. In a successful process enough time is granted for all the phases. For instance:
 - Ensure enough time for building [knowledge](#), you may want to involve study groups and build specific expertise. Take your time to learn the history and backgrounds of the area and/or the project as well as the current status and goals for the future
 - Ensure enough time for sharing the [knowledge](#) you have amassed. It takes time to get others on the same level and really understand (new and or complex) concepts: [repeat](#) the conceptual model of the situation and the visions on how to tackle it.
- Due to the long timescale of the development phases, you can consider:
 - Aligning soil remediation efforts and the development planning in a smart way: i.e. by developing cleaner areas first, part of these profits can be used for the cleaning and development of the more contaminated areas in later phases
 - Documenting agreements in general, also because the [actors](#) may change during the [process](#)
 - Document agreements at the end of each planning phase and include the formal decisions (permits, orders and decisions)
- Realise, that in the present economic climate certain (financial) decisions are taken in different development phases. For instance, acquiring land before the [business case](#) is made is becoming less common. Certain municipalities are giving out options on land to give developers time to make their business case, lowering the threshold for new developments

Links:

- Economic perspectives of brownfield development by Johannes Dörle, Universität Stuttgart.
- '[Link dreams and reality](#)', principle 3 of the Dutch report '[Sustainable regional development: do the decathlon!](#)' shows the different phases of (re)development and how to connect these phases with each other
- '[Redeem the future value now](#)', principle 4 of the Dutch report '[Sustainable regional development: do the decathlon!](#)' shows how to translate costs benefits and risk estimates to the present situation
- The importance of taking enough time for the process is being outlined in the Dutch report: '[Ecosystem services in the practice of sustainable soil and land development, the Triple-O approach](#)'
- The long-term approach is being underlined in the Dutch publication '[Analysis leading projects, practical experiences and recommendations from interviews and literature](#)'
- Business cases and the phases of the planning process and the benefits of financial planning are elaborated upon in chapter 5 '[Is the financing of the plan covered](#)' of the report '[Organisation and Financing of Area-Oriented Approach](#)'

11.4 Communication

With respect to time it is important to frequently document the results of important communication moments for future use. Also it is likely that the “story” about the (re)development will have to be repeated many times and will grow in time. The history of a location can form an important starting point for communication purposes. Progress can be documented in a film or other media. A specific communication plan can address the different mile stones and communication moments to different actors in time.

11.5 Tools

There are tools available with respect to making use of a longer timeframe such as:

- The French webtool [“Guide aménageurs”](#) - a webtool that guides different actors through the different phases of a development

11.6 Rules and principles

The timescale of a remediation can be significantly higher than the validity for a spatial plan. During the remediation period the spatial plans might change several times. Due to the risk based approach that is becoming more common in soil remediation, the sensitivity of the use of the area to the present soil contaminants may change as well. The limitations, risks and/or legal non compliances this could cause in the future should be considered and if possible, tackled from the start. A development plan with a description of (limitations with regard to) subsoil and groundwater usage, risk based monitoring and modelling can be useful tools.

When the [precautionary principle](#) is approached by managing the technical risks posed by unidentified sources of soil contamination in the area, reference values should be formulated and a monitoring scheme including timetables should be designed by order of the Dutch Soil protection act. Part of this is formulating a scenario in case of failure and ordering the measures in this scenario to be taken if necessary. Taking the costs of these measures in case of failure into account is required as well. This is especially necessary for situations where the remediation takes a long period of time (in The Netherlands up to 30 years is accepted) for instance due to making use of natural attenuation (the process of biological degradation and/or dilution of contaminants).

11.7 Examples

In the documents you find when using the links in the previous paragraphs, further details regarding the success factors with respect to time. Below you find specific links to some examples:

- In the case descriptions of [Gent Sint-Pieters](#), [Utrecht](#), and [Lyon Confluence](#) benefits of taking sufficient time for the planning of the projects are described
- The case description of [Lyon Confluence](#) also shows that the partnership has helped to shift the development focus from the consideration of just a single development phase, to the consideration of the [entire development process](#) from 'initiative' to 'management' in the long run. Perhaps most important to ensure this consideration however is the funding by the EU CONCERTO for which a long-term outlook is required.

12 Arranging Administrator

Involvement and Organization Form

This factsheet concerns the role and importance of the involvement of public government and organization in the process of an integrated approach to urban (re)development. It discusses the success factors with respect to these aspects.

Holding CTRL and clicking on the figure below will take you back to the overview of all (key) success factors.

12.1 The role of this factor in the integrated approach

The integrated approach is more complex than the traditional approach for urban (re)development, since more/other parties are involved, objectives are joined to common goals for the area concerned which takes more time. Therefore, complex decisions need to be made, possibly at an administrative level. This factsheet will give you specific information on the involvement of administrators and the organization forms for the integrated approach to urban (re)development.

Here you can find tools to help you successfully involve administrators and optimize the organization of the development. If you are taking part in a process or are one of the stakeholders present in the area (and would like to take part in the process) you can find insights on why the involvement of administrators is necessary and how to do this in a productive way.



12.2 In which development phase is this factsheet relevant?

The positive involvement of public parties is crucial to a successful integrated approach. For a successful involvement, administrators should be involved from the start of the planning [process](#). If this was not the case, it is advisable to involve them as soon as possible. The measure of involvement can vary during the planning process and further stages of the (re)development, as shown in the following paragraphs.

12.3 Success factors related to involvement of administrators and organization

The success factors related to administration/administrators and organization revolve around the aspects 'power' and 'influence'. The success factors can be summed up as follows:

- Involve and inform relevant administrators since these are the ultimate decision makers in the public domain. Involve these decision makers in all phases of the development planning process
- Ensure that one administrator acts as a spokesman for each administration, to avoid fragmentation and make optimal use of the influence of administration
- Ensure that each relevant organization has a spokesman as well: i.e. the subsoil coordinator. This ensures that the interests of subsoil aspects are best served and not forgotten in the heat of [decision making](#). Other aspects and interests will otherwise dominate and "overrule" soil matters.
- In processes with (apparently) opposite interests, it can be difficult to join parties in finding (a) [common goal\(s\)](#). To ensure a successful integrated approach the selection of a fitting organization form is advised

These success factors were derived from the publications that are mentioned in the paragraphs with tools and examples as well as from the report '[Ecosystem services in the practice of sustainable soil and land development, the Triple-O approach](#)' and the factsheets '[Improving coordination and cooperation soil, water and space](#)'.

12.4 Communication

Successful communication with administrators requires identifying the information they need and presenting it in the right form. Investing in repetition of the story behind the development, the values it represents and complex issues is a must. Furthermore, it is advisable to record communications from administrators in agreements. Especially in case of long processes due to the risk of changes in the administration.

12.5 Tools

There are several tools available with respect to administration and organization, such as:

- Principle 3 '[Link dream and reality](#)' of the Dutch report '[Sustainable regional development: do the decathlon!](#)' describes 4 different types of organization forms for area (re)development. Furthermore it helps you choose the fitting organization form in 5 questions. For each of the described organization forms an example is given
- For even more detail about the 4 different types of organization forms for area (re)development you may want to consult the methodologies on the Dutch website of [NederlandBovenWater](#). This website gives (different) examples for each of the described organization forms
- Principle 3 '[Link dream and reality](#)' of the Dutch report '[Sustainable regional development: do the decathlon!](#)' also gives an overview of parties that can (be called upon to) take the initiative in the

integrated approach and describes in which situation the specific party can be most suitable to take the initiative. For the example of Strijp S in Eindhoven (The Netherlands) this is elaborated upon

- The French webtool [“Guide aménageurs”](#) - a webtool that guides different actors through the different phases of a development
- On the [REFINA website](#) German tools for contaminated sites management, process management are available

12.6 Examples

In the documents you find when using the links in the previous paragraphs, further details regarding the success factors with respect to administration and organization. Below you find specific links to some examples:

- Principle 3 [Link dream and reality](#) of the Dutch report [‘Sustainable regional development: do the decathlon!’](#) describes 4 different types of organization forms for area (re)development. For each of the described organization forms an example is given
- The Dutch website of [NederlandBovenWater](#) gives (different) examples for each of the 4 described organization forms. Although these examples concern rural areas, the principles apply to urban development as well
- Principle 3 [‘Link dream and reality’](#) of the Dutch report [‘Sustainable regional development: do the decathlon!’](#) also shows which parties took the initiative in the integrated approach for the (re)development of Strijp S in Eindhoven (The Netherlands)
- See also the Dutch report [‘Report of administrative pilots groundwater management’](#)

13 Dealing with Rules

Holding CTRL and clicking on the figure below will take you back to the overview of all (key) success factors.

13.1 The role of this factor in the integrated approach

Rules and principles with respect to pollution and soil contamination can be seen as important factors in urban (re)development projects. Rules and principles can be the driving factors behind certain decisions. On the other hand, many (re)development projects stall due to rules and principles. Therefore they can be seen either as (positive) 'push' factors in the (re)development or as (negative) barriers. For this reason rules and principles are addressed in this manual regarding success factors in the integrated approach to urban (re)development. We will discuss some important general European rules and principles for coping with soil and groundwater contamination.

We are aware of the fact that it is not very "integrated" to discuss only these rules. Many other relevant legislation exists that will have important influence on an integrated approach. However, providing all detailed juridical information (and knowledge for that matter) is beyond the scope of this guide. By discussing some rules and principles for pollution, this chapter intends to demonstrate the room for interpretation they offer and how to deal with this. This hopefully learns you that rules are not always as rigid as they seem. Your attitude (and that of other actors) towards existing rules is the most important thing to become aware of.



13.2 European rules and principles in general

The first question to address is which rules and principles to discuss. Therefore we turn to the legal framework in which the CityChlor partner countries The Netherlands, Belgium/Flanders, Germany and France operate. This framework consists of the European rules and principles, either drawn up in the European Treaty or in one of the European Directives. Each European country is obligated to incorporate the European rules and principles in its own national rules and regulations. Often the European countries have a certain freedom in how to do this. As a consequence, the rules and regulations of the European countries can vary. For this manual we have therefore turned directly to European the rules and principles, by which all European countries are bound.

Since there is no European Soil Directive as yet (we speak 2013), we have turned to the [European Treaty](#) itself and to the [European Water Framework Directive](#) and the [European Groundwater Directive](#). From this we have derived several specific rules and principles that are relevant for the integrated approach to urban

(re)development, specifically with regard to contaminated groundwater. These are presented in the following paragraph.

13.3 Specific European rules and principles

The following principles are directly related to integrated approach to urban (re)development:

- The obligation to reach a 'good chemical condition' of the groundwater
- The precautionary principle
- The 'polluter pays' principle
- The sectoral scope of rules and regulations

In the following subparagraphs these principles are briefly explained. The relevance for the integrated approach to urban (re)development is discussed as well.

The question with what legislation we have to deal with in an area oriented approach was one of the main topics of the www.CityChlor.eu conference in Utrecht ["Social economical aspects of sustainable city development"](#). It is further elaborated in the Dutch report (with English conclusions) [Area-oriented approach of groundwater contamination A study of the opportunities within the in Europe and the Netherlands acknowledged environmental juridical principles](#). For further reference also see the CityChlor reports:

- [Juridical aspects for an area oriented approach](#), which gives an overview of local legislation and general EU legislation regarding possibilities for a an area oriented approach
- [Precautionary principles](#)
- [Multifaceted causality](#)

13.3.1 A 'good chemical condition' of groundwater

The European Water Framework Directive states the groundwater should reach or maintain a 'good chemical condition'. This is further elaborated upon in the European Water Framework Directive which requires the European countries to draw up testing levels.

Regarding solitary cases of soil contamination usually does not lead to limitations in the remediation approach with respect to this principle due to the large scale of the groundwater bodies for which the 'good chemical condition' should be reached. In an integrated approach to groundwater remediation as is now incorporated in the Dutch Soil protection act, the upscaling of the area concerned can be limited by this principle. This should be considered in formulating the [objectives](#) for the area concerned.

13.3.2 The precautionary principle

The precautionary principle has several definitions. The most well know definition of the precautionary principle related to environmental questions is to be found in the so-called Brundtland Report (1987) and the

Rio Declaration (1992). Freely translated reads this definition: if there is a chance of serious or irreversible damage, then the [lack of full scientific certainty](#) shall not be used as a reason for postponing measures.

This principle could be seen as a reason not to allow an area oriented approach to groundwater remediation since the area concerned may contain undetected soil contaminations associated with groundwater plumes such as sinking layers of chlorinated contaminants. Especially these sinking layers pose a risk to the quality of the groundwater in the long run and the risk of not obtaining the target values which are set for the boundaries of the area concerned. However, the necessary measures related to the risks involved with respect to undetected contaminations need not necessarily be removed by a total remediation of the area. In the case of sinking layers this is often not even technically feasible. Another approach is management of these risks, by formulating reference values and designing a monitoring scheme. Part of this is formulating a scenario in case of failure and [ordering](#) the measures in this scenario to be taken if necessary. This is common practice in The Netherlands for long term remediation approaches, for remediation approaches with a duration of more than 3 years a scenario in case of failure accompanied by reference moments is required by the Dutch Soil protection act. Taking the [costs](#) of these measures in case of failure into account is required as well.

The same argument can be made for the remediation of single cases of soil and groundwater contaminations where the remediation takes a long period of time (in The Netherlands up to 30 years is accepted) for instance due to making use of natural attenuation. The [timescale](#) of the remediation is significantly higher than the standard period of validity for a spatial plan of 10 years. During the remediation period the spatial plans might change several times. Due to the risk based approach that is becoming more common in soil remediation, the sensitivity of the use of the area to the present soil contaminants may change as well. This is another reason for the requirement of a scenario in case of failure accompanied by reference moments by the Dutch Soil protection act.

13.3.3 The 'polluter pays' principle

This principle states that parties responsible for environmental impacts should bear the costs. The '[polluter pays](#)' principle forms the basis for involving the [parties](#) which are responsible for the groundwater contaminations present in the (re)development area. Sometimes this principle can't be upheld completely due to the absence of (traceable) polluters and/or lack of evidence.

This principle seems to be abandoned in the area oriented approach to groundwater remediation as is now incorporated in the Dutch Soil protection act since the relevant articles seem not to be linked to the article concerning recovery of remediation costs. This seemingly abandonment may be partly caused by aspects as prescription and onus of proof.

The profit principle

This necessitates looking for other ways to finance the soil remediation in the integrated approach. In The Netherlands the profit principle is used for this. Who profits from the integrated approach to groundwater remediation? The parties confronted with the remediation costs (assuming remediation is more costly than the area oriented approach) as well as the parties with interests in the groundwater in the area who are confronted with costs due to the presence of the groundwater contamination. These parties may be involved in the area oriented approach. The profit principle is upheld in this approach by literally paying for participation in the area oriented approach.

13.3.4 The sectoral scope of rules and regulations

European rules and regulations have a sectoral scope. (In The Netherlands this sectoral scope of rules and regulations is implemented in the specialty principle.)

In spatial planning several social and environmental aspects are regarded in the consideration of how to (re)develop an area. In coming to [common goals](#) in an integrated approach, it is also desired to make an integral consideration. However, due to the sectoral scope, a consideration of the approach to soil contamination may only be made within the framework of the relevant rules and regulations and other aspects may not be taken into account. This obstacle can be avoided by making the integrated consideration within the framework of spatial rules and regulations which do allow for an integrated consideration. The results of this integral consideration should be formalized in a spatial [agreement](#) or order in order to obtain a legal status. In the consideration of the remediation approach this spatial agreement or order can then be referred to.

This scenario can also be applied to the integral consideration of the soil aspects in an area where the preconditions for the Dutch integral approach to groundwater contaminations are not met. For instance, it may be desirable from a spatial consideration of an area to implement heat cold storage and to allow the spreading of the single large groundwater contamination this causes in stead of requiring costly measures to avoid this spreading. Such a consideration may be made in the spatial legal framework and then referred to in the sectoral consideration of the soil remediation. This consideration cannot be made singularly in the sectoral framework of the consideration of the soil remediation.

13.4 National rules and principles

Each country will have its own specific legislation. In the box below the importance of “the stand still” principle (not commonly used in European legislation) is given as an example for the Netherlands. Also a link towards French policy is given. In the report of Sandra Vasin of the city of Stuttgart a short summary can be found on [the area oriented approach in the countries of the CityChlor partners](#). It is beyond the scope and possibilities of this guide to show all ins and outs of every country. Also, rules can change over time. Therefore it is important to use state of the art expertise and knowledge regarding national and local rules on your project. Either to remove apparent limitations created by rules or in order to use them as push factors to get actors more willing to cooperate.

The stand still principle in the Netherlands

The 'stand still' principle can be seen in The Netherlands as a principle that stands in the way of an integrated approach to groundwater remediation. In this integrated approach, that has become part of the Dutch Soil protection Act med 2012, an area may be defined in which further spreading of groundwater contaminations is acceptable under certain conditions. One of these conditions is that no further spreading takes place outside the defined area.

Within the specified area, several groundwater contaminations are present (precondition for the integrated approach to groundwater remediation). However, part of the groundwater within this area may not be contaminated as yet. Due to the acceptance of spreading within the area the quality of this groundwater may deteriorate, which at first glance may not be in accordance with the 'stand still' principle.

However, from an integral policy consideration the case may be made that this integrated approach to groundwater remediation leads to a 'stand still' at the area level. An important precondition of this integrated approach to groundwater remediation is the remediation of the contamination source in the soil and making sure there are no unacceptable risks to the users, both within the area as well as outside of the area. This should be considered in formulating the objectives for the area concerned.

See the website of the [French government](#) for the French policy in the field of contaminated sites and soil and redevelopment of brownfields.

14 Case Study Utrecht Central Station redevelopment



Figure 14.1 Artists rendering of the redevelopment of Utrecht railway station

14.1 Introduction

The Utrecht Centre Project ([CU2030](#)) concerns the restructuring of the area around Utrecht central train station including the Hoog Catharijne shopping centre in which the station is situated. It involves the construction of 330,000 square meters of new offices, 1,750 apartments and 61,200 square meters of shops, in addition to several infrastructural developments intended to open up the centre. In total 5 partners are involved with the plan; The municipality of Utrecht, Corio, ProRail, NS and Jaarbeurs Utrecht.



Figure 14.2 Delineation of the area involved in the restructuring (Source: CU2030)

The inner city area of Utrecht has been plagued by contaminations caused by industries in the past. These industries left behind contaminations when they relocated or ceased to exist in the central area. Prior to the project CU2030 it was determined by soil experts that there was a [significant amount of contamination](#) (Gemeente Utrecht, 2006, p.11) in the form of contamination plumes in some of the planned project locations. These, by law, required remediation in order to allow risk-free living for inhabitants. If not remediated various consequences would result. Further degradation of soils through the spreading of contamination plumes for example would result in the loss of value of the land, due to the environmental disadvantages caused by the contamination. These disadvantages would come in the form of a snowball effect causing further social and economic problems.

Since the 1980s the government of Utrecht had already started making plans to redevelop the central station area, yet all attempts to start redevelopment had failed until recently. The problem of soil contamination is one of the reasons why redevelopment of the inner city area stagnated. Large parties in the area did not recognize the benefit of redeveloping in the central station area but focussed on the risks of being situated on polluted soils or being threatened by contamination plumes.

In 2002 a plan for the Utrecht inner city redevelopment was eventually initiated and agreed upon. The plan, unlike previous ones, is seen to be an integrated one which aims to improve the sustainability of the inner city. Important details of the plan ([masterplan stationsgebied Utrecht](#)) are summarized in the table.

CU2030	
Total (expected) Investment costs	3.2 billion
Start year initiation of project	2002
Start year construction	2010
Estimated completion	2030
Urban redevelopment	90 ha
Population of metropolitan Utrecht	316,448 (approx.)
Partners	Gemeente Utrecht Corio ProRail NS Jaarbeurs Utrecht

Table 14.1 Summary of masterplan stationsgebied Utrecht

14.1.1 Actor description

The plan that was initiated in 2002 includes 5 main partners:

- ProRail is a semi-private organization in the Netherlands, responsible for building and maintaining rail infrastructure. The organization includes three branches; NS Railinfrabeheer, Railned and NS Verkeersleiding.
- Corio is a private organization within the CU2030 project area. The organization specializes in property development, and owns a large retail shopping center in Utrecht.
- NS is the national railway service in the Netherlands and is a public agency. Its main responsibilities include transporting passengers and ensuring that the trains are maintained. Another task they have involves developing transport nodes.
- Jaarbeurs Utrecht is a private organization, offering space for conferences, expositions and large events. Their interest lies in ensuring that people have positive experiences in Utrecht through the provision of their services.
- The Gemeente Utrecht is the government of the municipality of Utrecht. It is a public organization whose overall task involves ensuring the wellbeing of the citizens of Utrecht as well as the wellbeing of all visitors to Utrecht.

The main partners identified comprise of a mix of public and private actors. The development of a public-private partnership according to the literature brings with it the following advantages: sharing responsibilities

& diluting risks, increased availability of resources, increased interaction, increased rational democratic decisions. A description of the historical development and project development will follow in the analysis, providing insights into the actual advantages in comparison to the perceived ones.

14.1.2 Innovations

The CU2030 project has implemented the '[Bio-washing machine](#)' to remediate soils over a large area. The Bio-washing machine is an innovative remediation technique which has been implemented in the Utrecht Central Station area. The technique which was implemented in 2010 at the start of project construction makes use of a biologically friendly chemical reaction to break down pollutants in the soil and groundwater. This technique remediates a large area of 700 ha. The main focus of this particular remediation technique is on removing volatile organic chlorides from the soil. Because the break-down process of those volatile chloride compounds using biological bacteria is slow a solution had to be found to speed up the process to ensure that exposure to polluted soils after project completion cannot occur. The solution to overcome this problem was through implementing a sustainable heat and cold storage system. The advantage of implementing a heat and cold storage system in the Utrecht station project area is that the bacteria are moved around allowing them to grow and work to break down the volatile chlorinated pollutants. Another advantage of the heat and cold storage system is that it is considered a sustainable source of renewable energy. Such a system collects heat during the summer and stores it in the ground to be used again in the winter. In the winter the system collects the cold energy storing it in the ground to cool down buildings in the summer.

A drawback of the bio-washing machine is that the system does not prevent unpolluted 'good' soils from being affected. The bio-washing machine consistently moves around water and bacteria in the entire project area, mixing them together with 'good' soils. In a way the technique dilutes volatile chlorinated compounds over a large area, thereby minimizing pollution of those compounds to acceptable levels but polluting other soils.



Figure 14.3 Working of the 'Bio-washingmachine' (Source www.utrecht.nl)

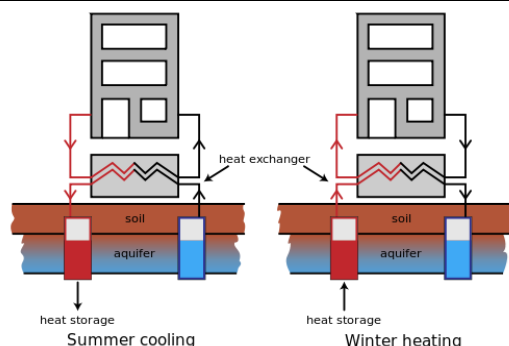


Figure 14.4 Aquifer Thermal Energy Storage (ATES) system

14.2 Analysis

The level of integration in the Utrecht project was analyzed with respect to actor features, institutional features and policy content features. Where possible, these features are described using the [success factors as defined in Chapter 4](#). The complete analyses is available in the [thesis of Steven van Beek](#), a summary is provided in the tables below.

14.2.1 Actor features

Variables	Description
<p>Actor variables:</p> <ul style="list-style-type: none"> Looking at actor type (public, private), Looking at actor configuration (partnership type) <p>Interaction variables:</p> <ul style="list-style-type: none"> Looking at the methods in place to communicate and create an identity about soil and benefits thereof 	<p>Actors:</p> <ul style="list-style-type: none"> A mix of public and private actors. Top-down initiatives completed by decentralizing tasks, i.e. giving the other parties the opportunity to collaborate intensively. <p>Interaction:</p> <ul style="list-style-type: none"> The Gemeente Utrecht is the main partner in charge to create an identity about soil and communicate the importance of them.

14.2.2 Institutional features

Variables	Description
<p>Objective variables:</p> <ul style="list-style-type: none"> Examining overall project goals Examining the goals of actors for soil management <p>Power variables:</p> <ul style="list-style-type: none"> Identification of power and interest in project through assessment of leadership and coordination mechanisms <p>Rules and Regulation variables:</p> <ul style="list-style-type: none"> Examination of dialogue (top down or bottom up) Examination of reporting about soil Examination of communication tools 	<p>Objectives:</p> <ul style="list-style-type: none"> Project goals for soil in the redevelopment project are defined nationally and refined in order to promote regional implementation. Not all the actors have direct goals for soil management, but are in favor of revitalizing the inner city area. <p>Power:</p> <ul style="list-style-type: none"> Leadership is displayed by the Gemeente Utrecht who over the years has consistently promoted redeveloping the area. <p>Rules and Regulations:</p> <ul style="list-style-type: none"> Originally a top-down dialogue displaying decentralized activities through the collaboration with other parties. Soil reports are mandatory, Communication tools for soils are still being developed, but there is a clear recognition of the interrelatedness between soil and groundwater as well as soil and energy.

14.2.3 Policy-Content features

Variables	Description
<p>Time variables:</p> <ul style="list-style-type: none"> Examination of project for future plans Examination of time between project initiation and project construction <p>Knowledge variables:</p> <ul style="list-style-type: none"> The use of science about soil studied the use of advisory committees <p>Resource variables:</p> <ul style="list-style-type: none"> Examination of actor expertise according to field of interest Examination of application of tools (EIA, SEIA, Indicators) used in project area <p>Environmental Policy variables:</p> <ul style="list-style-type: none"> Examining the necessity of the project to consider soil resources its functions and values (behaviors) Examining the internalization of externalities 	<p>Time:</p> <ul style="list-style-type: none"> The project is studied for its impact in the future. Taken into consideration are future land-use changes, and the impacts of those changes on soil. The time between project initiation and project construction was 8 years. Planning a project is a crucial step. <p>Knowledge:</p> <ul style="list-style-type: none"> Scientific information is considered important. In Dutch legislation significant progress has been made to determine 'bad' and 'good' soils and understand soil potential and function. Advisory committees constitute external actors to the project. In this case CityChlor, as well as the architect firm Benthem Crouwel have been identified as key advice organizations. <p>Resources:</p> <ul style="list-style-type: none"> Actor expertise is mostly limited to the service sector. The actors rely on engaging with the public to sell services. Impact assessment measures and the use of indicators are standard and embedded in legislation. <p>Environmental Policy:</p> <ul style="list-style-type: none"> Planning behavior in this project has considered soil resources by considering a regional scale. In this way the functions of soils and its values are shaped by a larger pool of knowledge. Regulations require actors of new redevelopment projects to account for soil issues. In this way externalities for soil use are taken into consideration.

14.3 Discussion

14.3.1 Success factors of Integrated approach

Several factors found in this case study have resulted in an integrated approach which led to more sustainable soil management during urban redevelopment. These key factors are a high level of political commitment to manage the integrated process, the use of a long-term time perspective which involves the monitoring of soil conditions through time and allowed for sufficient gathering of relevant scientific information, and the formalization of a partnership between public and private spheres affecting the accountability mechanisms for each partners' use of soil.

High level political commitment for soil management can be said to indirectly affect the process of achieving an integrated approach because it legitimizes [administrative agreements](#) for urban redevelopment. Indeed all the partners interviewed in this case study were determined to partake with the centralized government plans which involved implementing the bio-washing machine.

[Time](#) has been an important factor in realizing the current results of sustainable soil management. The planning process started as early as the 1980s and continued until 2002 when a master plan was finally created. Finalizing these plans took another 8 years as project construction started in 2010. The benefits of taking sufficient time to plan the final project are diverse. Taking sufficient time allowed for sufficient [data](#) to be collected about the state of soils in the inner city area. Furthermore it allowed for a [stakeholder analysis](#) to

be carried out, and important agenda points and [objectives](#) for inner city redevelopment to be made and synchronized with the scientific data collected.

It is clear that on a general level horizontal integration efforts have taken place between the public and private. A mix of 5 partners from the public and private sphere took part in the project development. Partnering with each other contributed to creating an understanding of different interests for redeveloping the inner city area shifting the focus of redevelopment away from sector-bound goals towards regional and even national goals. The inclusion of more interests and goals also led to a shift from the consideration of just a single development phase, to the consideration of the entire development process from 'initiative' to 'management'. Furthermore the partnership also contributed positively to the sharing of knowledge which led to the acknowledgement of [costs and benefits](#) related to remediating the soils in the inner city area.

By focusing on regional and national goals rather than sector specific goals, and by considering the development cycle in its entirety, the scope of the project was increased. This resulted in soil pollution and the involved risks being examined from a different perspective. The risk calculations of soil pollution over a larger area and over a greater time frame allowed for the goals and interests of the partners to be adjusted. In turn this affected the cost and benefit calculations of the partners to remediate soils in the inner city area prior and during construction.

In summary it can be said that the integrative process has occurred in the planning/initiative phase for the Utrecht CU2030 project. The central government as a partner legitimized the interest in soil management and helped to facilitate administrative agreements as early as the 1980s to establish the objective of clean soils in the inner city. The use of a partnership between the public and private sectors resulted in expanding the development area, recalculating risks, re-evaluating costs and benefits and broadening the value concepts of clean soils. These factors have played an important part in the sustainable redevelopment of the inner city district of Utrecht.

14.3.2 Improvements for Integrated approach

What is noteworthy is that as a whole the full commitment by private actors for implementing the bio-washing machine and the necessary heat and cold system to remediate soils has not been realized. One of the reasons for not being fully committed lies in the fact that the bio-washing machine focuses on chlorinated compounds in soils over other sources of pollution such as heavy metal contaminants. These contaminants are also present in the inner city area of Utrecht. Measures used to ensure soil policy integration provide possible insights as to why. Most interesting are the coordination and communication mechanisms about soils. When questioned, the private partners Corio and ProRail, acknowledged a lack in the availability of data. Similarly the private partners acknowledged that there were insufficient consultation and participation forums about soils during the initiative/planning phase. The lack of these measures is evidence of the failure to share specific [knowledge](#). When questioned about this, the government informed that a database was being developed to share important data regarding soils. An important lesson to be learnt from this is that it is necessary to create a platform where the involved partners can contribute knowledge and information openly and in a transparent manner. The sharing of knowledge through an open platform by each actor could have led to other technical measures to be implemented which would take on board the other types of pollution present in the soils of the inner city area.



The sharing of knowledge with external parties is also important. While this does not necessarily have to take place on the same platform as the main partners, the sharing of sufficient information could lead to more insights and other items to be integrated into the project for sustainability purposes. Insights from an interview conducted with architect Benthem-Crouwel point to sub-optimal sharing of information leading to project design features that did not directly contribute to relieving pressures on soils.

15 Case description Hospital

Stuttgart-West



Figure 16.1 Sight of the Hospital after revitalisation

15.1 Introduction

In spring 2001 the project “Reconstruction of the Diakonie-Hospital” in Stuttgart-West started. The project focused on the fusion of two hospital units, the so called “Diakonissen Krankenhaus” and the “Orthopedic Hospital Paulinenhilfe”. Major aspects of this reorganization were to shorten distances and to save operating expenses. The project was located on the former grounds of the gas power plant “Seidenstraße”, which was closed down in 1878. Based on the results of historic data and the outcomes of on site investigations, the site was classified as contaminated land in the sense of German soil protection law. The soil contamination comprised the typical contaminants of gas production from coal, mainly polycyclic hydrocarbons. Due to this classification soil remediation was necessary. It could not be carried out previously due to the existing buildings.

The planning of the reconstruction needed to consider an important specific aspect of the site: an existing hospital in the direct neighborhood needed to be protected against all emissions from the soil remediation site. The soil remediation was therefore carried out within a completely isolated tent with an area of about 5.000 m² under permanent negative pressure. More than 96.000 tons of contaminated soil were excavated

and disposed of. The project was finished in 2007. The project used the unique chance of a redevelopment of an hospital site to remediate the historic contamination of a former gas power plant. The source location of the contamination could be excavated almost completely. The reconstructed site covers and seals the remaining contaminants and prevents further emissions. The site represents one of the largest hospital projects in southwest Germany and stands as a model for other comparable situations.

<u>Project Hospital Stuttgart West</u>	
<u>Total</u> <u>Investment costs</u>	<u>83 million euros</u>
<u>Start year initiation of project</u>	1998
<u>Start year construction</u>	2001
<u>Completion</u>	2007
<u>Urban redevelopment area</u>	<u>1,1 ha</u>
<u>Population of metropolitan Stuttgart</u>	600,068 (approx.)
<u>Partners</u>	Diakonie –Klinikum Stuttgart und Diakonissenkrankenhaus und Paulinenhilfe GmbH, Stuttgart Stadt Stuttgart, Amt für Umweltschutz Stadt Stuttgart, Tiefbauamt

Table 16.1 Summary of Stuttgart, Hospital West

The soil remediation and the reconstruction was preceded by an intensive planning process during 1998– 2001. The concept was developed and authorized by a close cooperation of architects, engineers and the representatives of the hospital and the city of Stuttgart.

15.1.1 Actor description

The final plan that was formalized in 1999 includes the following main partners:

- The Diakonie Hospital Stuttgart and Diakonissen Hospital and Paulinenhilfe GmbH
- The City of Stuttgart
- The Federal State of Baden Württemberg

The main actors, the city of Stuttgart and the Diakonie Hospital Stuttgart GmbH were both owners of sub-areas of the site. The soil contamination was located on the premises of the city of Stuttgart. The redevelopment plan of the hospital offered the unique chance for the city to deal with the soil- and ground water contamination which lay in their responsibility as the owner of the contaminated land. Only the city as the responsible owner could apply for the public funding by the state of Baden-Württemberg. Also the plans of the Diakonie Hospital afforded the chance to get rid of the eye-sore of the partially disused and overgrown location and a useful reuse of the Brownfield site. On the other hand the Diakonie Hospital needed the city of Stuttgart as a partner since the remediation of the contamination was a prerequisite for the intended extension of the hospital.

15.1.2 Innovations

In the course of the project innovative measures needed to be employed in order to facilitate the excavation of highly contaminated soils in the direct vicinity of housing areas and even more sensible in direct contact to the facilities of the hospital. The excavation was carried out under a tent that was permanently held under negative pressure. In addition a ground water extraction in combination with a water treatment facility was operated. However the main task in this context was not so much the technical challenge but more the organizational aspects and communication. The neighbours and patients as well as the representatives of the hospital and the city needed to be informed on short notice about all measures during the entire process of remediation in order to prevent complaints or accusations from affected parties.

15.2 Analysis

The level of integration in the Hospital West Stuttgart project was analyzed with respect to actor features, institutional features and policy content features. Where possible, these features are described using the [success factors as defined in Chapter 4](#).

15.2.1 Actor features

Variables	Description
<p>Actor variables:</p> <ul style="list-style-type: none"> • Looking at actor type (public, private), • Looking at actor configuration (partnership type) <p>Interaction variables:</p> <ul style="list-style-type: none"> • Looking at the methods in place to communicate and create an identity about soil and benefits thereof 	<p>Actors:</p> <ul style="list-style-type: none"> • The actors consist of public and private actors. • The partnership can be described as a win-win situation for both main partners. I.e. the goals of each party could only be reached by close cooperation. <p>Interaction:</p> <ul style="list-style-type: none"> • There are two main partners in charge to create an identity about soil and communicate the importance of them.

15.2.2 Institutional features

Variables	Description
<p>Objective variables:</p> <ul style="list-style-type: none"> Examining overall project goals Examining the goals of actors for soil management <p>Power variables:</p> <ul style="list-style-type: none"> Identification of power and interest in project through assessment of leadership and coordination mechanisms <p>Rules and Regulation variables:</p> <ul style="list-style-type: none"> Examination of dialogue (top down or bottom up) Examination of reporting about soil Examination of communication tools 	<p>Objectives:</p> <ul style="list-style-type: none"> Project goals for soil in the redevelopment project are defined nationally and refined in order to promote regional implementation. One of the actors has goals for soil management while the other more actively stimulates brownfield redevelopment. <p>Power:</p> <ul style="list-style-type: none"> Leadership is displayed by two main players. Out of those, the Diakonie Hospital coordinates the project showing leadership functions. <p>Rules and Regulations:</p> <ul style="list-style-type: none"> Originally a top-down dialogue displaying decentralized activities through the collaboration with other parties. Soil reports are mandatory.

15.2.3 Policy-Content features

Variables	Description
<p>Time variables:</p> <ul style="list-style-type: none"> Examination of project for future plans Examination of time between project initiation and project construction <p>Knowledge variables:</p> <ul style="list-style-type: none"> The use of science about soil studied the use of advisory committees <p>Resource variables:</p> <ul style="list-style-type: none"> Examination of actor expertise according to field of interest Examination of application of tools (EIA, SEIA, Indicators) used in project area <p>Environmental Policy variables:</p> <ul style="list-style-type: none"> Examining the necessity of the project to consider soil resources its functions and values (behaviors) Examining the internalization of externalities 	<p>Time:</p> <ul style="list-style-type: none"> The time between project initiation and project construction was 9 years. Despite the fact that this time frame seems long, it includes all necessary investigations, negotiations, the application for public funding and the construction phase. <p>Knowledge:</p> <p>Scientific information is used.</p> <ul style="list-style-type: none"> In the German soil protection law, the term soil quality is an important issue. Soil quality, meaning the vital physical und biological functions of the soil, has to be protected. This represents the core statement of soil protection philosophy. Indicators are used to describe soil quality and understand soil potential and function. Advisory committees were arranged in a very efficient way. The main partners kept all decisions within a small board of responsible actors. <p>Resources:</p> <ul style="list-style-type: none"> Actor expertise is not limited to the public sector. Impact assessment measures and the use of indicators are standard and embedded in legislation. <p>Environmental Policy:</p> <ul style="list-style-type: none"> Planning behavior in this project has considered soil resources. The contaminated soils were cleaned up and reused offsite. Regulations require actors of new redevelopment projects to account for soil issues. In this way externalities for soil use are taken into consideration.

15.3 Discussion

15.3.1 Success factors of integrated approach

Several factors found in this case study have resulted in an integrated approach which has helped to realize urban redevelopment.

Communication

The main success factors were, as overall effective tools, a well organized project structure and clear communication rules. Especially the integration of all affected parties during the phase of the soil remediation by effective information led to a sufficient level of acceptance despite the problematic inner city situation.

Identifying and involving actors

The main project partners involved all necessary other actors and especially all relevant offices of the city administration. The most important ones were the office for the protection of the environment, the office for construction and the office for urban planning.

Building a business case

Building a business case involved the agreement between the main parties how to separate the costs related to the soil contamination from the costs for the conventional construction works. An efficient way of cost sharing was found including public funding for the costs related to the soil contamination.

Seeking common goals

The main partners could only achieve their individual goals by a close cooperation and by the formulation of a common goal, the successful combination of soil remediation and reconstruction of the hospital. The individual goal of the city was the remediation of the massive soil contamination on their premises as well as Brownfield reuse. The objective for the hospital was the redevelopment of their facilities.

Process management

The project was accompanied by a rigid process management starting from the planning process and continuing throughout the construction phase. All decisions were bundled within a small board of responsible actors. The project management for the soil remediation was incorporated in the overall project structure as a sub-project.

Managing knowledge & technical innovation

The major challenge with respect to knowledge and innovation during the project was not so much the methods applied for soil remediation and emission protection but more the coordination of all measures on a small inner city site adjacent to the hospital.

Making use of a longer time frame

The factor time did accompany the project in a sense that the precise timing of the different measures (demolition, soil remediation, reconstruction) within the given time frame became more important than the total length of the available project time.

Arranging Administrator Involvement and Organization form

This private-public cooperation made very short lines of communication possible between the project management and the local authorities/regulators. The limited number of responsible actors can also be mentioned as a success factor. It didn't make complex arrangements necessary. During the execution phase it guaranteed clear responsibilities and swift response on incidents or complaints.

Dealing with rules

Existing rules and regulations were applied to the project as given by legislation. In the case of noise emission during soil remediation caused by the negative pressure fans however a compromise had to be

found. The limiting values of acceptable noise emission could not be reached during night times. Since the hospital itself had an interest in the timely completion of the remediation due to her own building schedule, this situation was accepted.

15.3.2 Improvements for integrated approach

The case study of the revitalization of the former gas plant “Seidenstraße” in Stuttgart can be summarized as a complete success. The project was awarded the [“Flächenrecyclingpreis”](#) in 2010 from the state of Baden Württemberg in recognition of the realization of a difficult inner city development. The combination of the two properties into one revitalized piece of land legalized even the enlargement of the usable floor space compared to the former situation.

Despite the fact that only two major partners were involved, a closer view reveals that there were more relevant interests of importance. Within the structures of both main players there were technical, legal and economic players to be coordinated and integrated. The main success factor was efficient internal and external communication. The clear-cut project structure combined with a clear and driving common goal ensured a sound base for a successful implementation of the project.

16 Case Study – Gent Sint-Pieters Station



Figure 15.1 Gent Sint-Pieters station

16.1 Introduction

The [Gent Sint-Pieters Project](#), situated in Flanders concerns the restructuring of the area around Sint-Pieters train station including the station itself. The station itself was built in 1913 and it was recognized that it was not designed to handle the current capacity of commuters and inhabitants of Gent. The project as a whole therefore now involves creating 82,500 square meters of space for offices, 110,000 square meters for apartments and 20,000 square meters for recreation and shops as well as improvements to the rail infrastructure (GentSintPieters, 2012). It was also realized that there were large quantities of unused land

which, when developed, could be of significant value. In total 6 partners are involved with the plan; Stad Gent, Eurostation, NMBS-holding, De Lijn, Infrabel and Agentschap Wegen en Verkeer.

Many cities in Flanders are developing projects on strategic sites such as railway station areas, waterfronts, inner cities and abandoned industrial sites with the aim to make cities more attractive for living and working (Coppens, 2007). These projects are mostly developed by public-private and public-public partnerships. The attention on such areas is partially the result of a shift towards a more strategic oriented spatial planning policy, and partially because of the new emphasis of the Flemish Urban Policy on the physical aspects of urban development with new policy programmes and subsidies

The city of Gent recognizes the need for sustainable development. It understands the need to redevelop the station area whereby the fundamental themes in sustainability are addressed: people, planet and prosperity. Soil contamination in the project area was therefore not determined to be a big threat. In Flanders, [OVAM](#), which is the Public Waste Agency of Flanders, is responsible for waste management and soil remediation. It did not determine threatening issues related to soil contamination in accordance with the land use for most of the project area. The main soil topic in the Gent project is the extensive lowering of the groundwater table to enable the many subsoil structures. The lowering of the groundwater table can cause environmental threats such as desiccation and setting. Furthermore the spreading of groundwater contaminations due to the lowering of the groundwater table was taken into account in the MER (Environmental Impact Assessment). Of the many identified locations with soil contamination only for one site a soil remediation was required due to risk of contamination spreading ([see MER, 2005, chapter 7.5](#)).

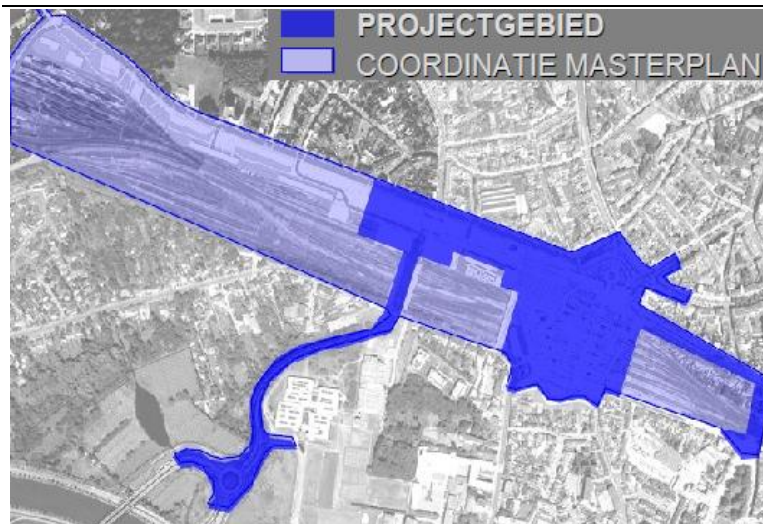


Figure 15.2 Project area Gent Sint-Pieters

Project Gent Sint-Pieters	
<u>Total (expected) Investment costs</u>	496 million euros
<u>Start year initiation of project</u>	1998
<u>Start year construction</u>	2006
<u>Estimated completion</u>	2021
<u>Urban redevelopment area</u>	8 ha
<u>Population of metropolitan Gent</u>	247,486 (approx.)
<u>Partners</u>	Stad Gent Eurostation NMBS-holding De Lijn Infrabel Agentschap Wegen en Verkeer

Table 15.1 Summary of Gent Sint-Pieters

In 1998 a plan for the Gent Sint-Pieters station and surrounding city redevelopment was eventually initiated. The plan is seen to be an integrated one which aims to improve the sustainability of the inner city. Important details of the plan are summarized in the table. The redevelopment includes adapting the neighbourhood and the station to the [needs of the 21st century \(eurostation, 2012\)](#). The construction of a renewed train, bus and tram station, an underground car park and bicycle sheds, a connecting road with the R4, the creation of a green nature area and sustainable real-estate developments are the major challenges.

16.1.1 Actor description

The plan that was initiated in 1998 and completed in 2005 includes 6 main partners:

- Stad Gent is the municipality of Gent. It is a public organization whose task involves ensuring the wellbeing of the citizens of Gent as well as the wellbeing of all visitors to Gent.

- Eurostation is a real-estate developer, founded in 1992 and owned by the national railway company. Its task is to renew railway stations in Belgium, and to increase the value of the real estate property of the railway company.
- De Lijn is a regional transport company, involved in the project with an interest to increase the quality of its transport services, by offering a better tramway and bus accommodation and a better integration with rail transport.
- NMBS-holding is a largely state-owned national organization and gives direction to its two subsidiary organizations; Infrabel and NMBS. Infrabel is responsible for maintaining the rail infrastructure in Belgium, while NMBS is the main organization in charge of exploiting trains.
- Infrabel is a public organization owned by NMBS-holding, and is responsible for maintaining the rail infrastructure in Belgium.
- Agentschap Wegen en Verkeer (AWV) is a public state-owned regional organization responsible for safe and sustainable mobility of all road users in the province of Flanders. It manages and maintains the road infrastructure while providing information on transport-related issues.

The main partners identified comprise of *public* actors. The development of a public partnership according to the literature leads to advantages: sharing responsibilities & distributing risks, increased availability of resources, increased interaction, increased rational democratic decisions. A description of the historical development and project innovations will follow, providing insights into the actual advantages of this partnership configuration in comparison to the perceived advantages.

16.1.2 Innovations



Figure 15.3 Building site Gent Sint-Pieters

Soils and particularly soil pollution are not considered to be a fundamental problem in the Gent Sint-Pieters station project. In fact, large excavations are taking place at present in order to create underground parking for both cars and bicycles, and to place other infrastructures for trains (GentSintPieters, 2012). These excavations have several effects as it involves the removal of large quantities of good soils. Moreover, the new facilities being built on the excavated sites lead to soil compaction, rendering them unusable hence unsustainable for future use.

In the wider scheme of soil management the project does involve the redevelopment of brownfield areas. This relates to improving the economic value of land as well as the optimization of space in dense inner city areas. The soils that are excavated are not disposed of, rather they are reused to make sound barriers and to help with other infrastructural developments nation-wide. It remains unclear to which extent the excavated soils will retain their properties when fulfilling their new functions. Another soil management aspect includes the fact that the project involves compensating for some land loss by creating a park in the near vicinity of the project.

16.2 Analysis

The level of integration in the Gent Sint-Pieters Project was analyzed with respect to actor features, institutional features and policy content features. Where possible, these features are described using the [success factors as defined in Chapter 4](#). The complete analysis is available in the [thesis of Steven van Beek](#), a summary is provided in the tables below.

16.2.1 Actor features

<u>Variables</u>	<u>Description</u>
Actor variables: <ul style="list-style-type: none"> Looking at actor type (public, private), Looking at actor configuration (partnership type) Interaction variables: <ul style="list-style-type: none"> Looking at the methods in place to communicate and create an identity about soil and benefits thereof 	Actors: <ul style="list-style-type: none"> The actors consist of only public actors. Top-down initiatives completed by decentralizing tasks, i.e. giving the other parties the opportunity to collaborate in the project. Interaction: <ul style="list-style-type: none"> There are three partners in charge to create an identity about soil and communicate the importance of them.

16.2.2 Institutional features

<u>Variables</u>	<u>Description</u>
Objective variables: <ul style="list-style-type: none"> Examining overall project goals Examining the goals of actors for soil management Power variables: <ul style="list-style-type: none"> Identification of power and interest in project through assessment of leadership and coordination mechanisms Rules and Regulation variables: <ul style="list-style-type: none"> Examination of dialogue (top down or bottom up) Examination of reporting about soil Examination of communication tools 	Objectives: <ul style="list-style-type: none"> Project goals for soil in the redevelopment project are defined nationally and refined in order to promote regional implementation. None of the actors have direct goals for soil management but do promote brownfield redevelopment. Power: <ul style="list-style-type: none"> Leadership is displayed by three main players. Eurostation is the main coordinator for the project however. Rules and Regulations: <ul style="list-style-type: none"> Originally a top-down dialogue displaying decentralized activities through the collaboration with other parties. Soil reports are mandatory, Communication tools for soils are still being developed. There is recognition of the interrelatedness between soil and groundwater.

16.2.3 Policy-Content features

Variables	Description
<p>Time variables:</p> <ul style="list-style-type: none"> Examination of project for future plans Examination of time between project initiation and project construction <p>Knowledge variables:</p> <ul style="list-style-type: none"> The use of science about soil studied the use of advisory committees <p>Resource variables:</p> <ul style="list-style-type: none"> Examination of actor expertise according to field of interest Examination of application of tools (EIA, SEIA, Indicators) used in project area <p>Environmental Policy variables:</p> <ul style="list-style-type: none"> Examining the necessity of the project to consider soil resources its functions and values (behaviors) Examining the internalization of externalities 	<p>Time:</p> <ul style="list-style-type: none"> The project is studied for its impact in the future. Taken into consideration are future land-use changes, and the impacts of those changes on soil (OVAM). The time between project initiation and project construction was 8 years. Planning a project is a crucial step. <p>Knowledge:</p> <ul style="list-style-type: none"> Scientific information is used. In Flemish legislation indicators are used to determine 'bad' and 'good' soils and understand soil potential and function. <i>Advisory committees were not directly identified. The main partners aim to engage other actors throughout the project development (GentSintPieters)</i> <p>Resources:</p> <ul style="list-style-type: none"> Actor expertise is limited to the public sector. The actors all engage with the public to provide services which cover various infrastructures. Impact assessment measures and the use of indicators are standard and embedded in legislation. <p>Environmental Policy:</p> <ul style="list-style-type: none"> Planning behavior in this project has considered soil resources but has extended this beyond the region through considering the national scale. In this way the functions of soils and its values are shaped by a larger pool of knowledge. But the impacts do not remain local. Regulations require actors of new redevelopment projects to account for soil issues. In this way externalities for soil use are taken into consideration.

16.3 Discussion

16.3.1 Success factors of integrated approach

Several factors found in this case study have resulted in an integrated approach which has helped to realize a moderate level of sustainable soil management during urban redevelopment. These key factors are the use of a long-term time perspective which involved overseeing the effects of the project for the end-users and required sufficient gathering of relevant scientific information, and the formalization of a partnership between public spheres. This impacted the accountability mechanisms for each partners' use of soil or exploitation of it and the cost and benefits for pursuing with the development of the project.

Time has been an important factor in realizing the current results of sustainable soil management. The planning process started in 1998 and continued until 2004 when a master plan was finalized. Finalizing the initial plans took 7 years as project construction eventually started in 2006. The benefits of taking sufficient time to plan the final project are diverse. Taking sufficient time allowed for sufficient data to be collected about the state of soils in the inner city area as well as the project area. It allowed for development plans to assess the risks of certain land uses in relation to soil use and function - in the Environmental Impact Assessment several alternative project development scenarios were tested using a risk-based assessment which is a typical requirement in Flemish policy.

The final plan required soil remediation of one site. Other soil matters involved the removal of a substantive quantity of soil, in an exploitative fashion, to realize the technical underground parking garages. An alternative use for the soil was included in the [impact assessment \[section 7.5\]](#). In this sense soils are sustainably managed, because rather than being exploited and disposed without using its scarce and valuable properties, the soils and its qualities are conserved. The conservation of soil is realized by using soils to make sound barriers. The sound barriers in turn contribute to social sustainability for the citizens of Gent as it is expected to positively impact the living quality in the area. Other uses for the exploited soil involve using it in other projects.

The time aspect also allowed for an improved [stakeholder analysis](#) to be carried out. In the early stages of project initiation only two main stakeholders were involved (Eurostation and NMBS-holding), but more stakeholders became involved during the development of the initiation. This meant important agenda points and [objectives](#) for inner city redevelopment could be better established and coordinated. Additionally these could be better synchronized with the total scientific data available for the area.

It is clear that on a general level sound horizontal integration efforts have taken place between the public organizations. A mix of 6 partners from the public sphere took part in the project development. The public focus involves advantages and disadvantages. The advantages come in the form of facilitating [administrative agreements](#) which is considered an important part of an integrated approach. Clear roles are needed during project development to prevent overlapping and enhance the project efficiency.

Partnering with each other also contributed to creating an understanding of different interests for redeveloping the inner city area shifting the focus of redevelopment away from sector-bound goals towards regional and even national goals. The inclusion of more interests and goals also led to a shift from the consideration of just a single development phase and single construction, to the consideration of the entire development process from 'initiative' to 'management' and the consideration of a larger spatial development. Furthermore the partnership also contributed positively to the sharing of knowledge which led to the acknowledgement of costs and benefits related to up-scaling the project area.

By focusing on regional and national goals rather than sector specific goals, and by considering the development cycle in its entirety, the scope of the project was increased. This resulted in soil pollution and the involved risks being examined from a different perspective. The risk calculations of soil pollution over a larger area and over a greater time frame allowed for the goals and interests of the partners to be adjusted. In turn this affected the [cost and benefit](#) calculations of the partners to remediate soils in the inner city area prior and during construction.

In summary it can be concluded that integrative urban processes have taken place throughout the project. The public partnership which involves the government at several levels has legitimized the project and also contributed to the interest in soil [management](#) because of the public's duty to assure the wellbeing of its citizens. The public influence of the project has also helped to facilitate administrative agreements more easily including establishing the objective of clean soils in the inner city. The use of a partnership between the public agencies has resulted in expanding the development area, recalculating risks, re-evaluating costs and

benefits and broadening the value concepts of clean soils. These factors have played an important part in the sustainable redevelopment of the inner city district of Gent Sint-Pieters.

16.3.2 Improvements for integrated approach

What is noteworthy is that the partners involved are mostly public agencies, although some are considered quasi-public-private organizations. The public-based partnership has several implications for the project. These implications come in the form of limiting the broader horizon of the project such that all contaminants in the soil are fully dealt with; only one site required soil remediation while other sites were considered polluted as well. While the above argued that the partnership contributed positively to the project, the public focus also brought limits with it. The objectives of areas in the vicinity of the project area for example consisting of some private organizations, which could hypothetically involve more soil considerations, have clearly been overlooked in the broader sense.

Measures used to ensure soil policy integration provide possible insights as to why. The use of knowledge for instance has been limited without the inclusion of the private sphere as a signatory party to the redevelopment. This has resulted in overseeing various soil issues of other parties. The rules and regulations for soil quality were also limited by the public scope and project-area scope which was considered in the final redevelopment plan. By limiting the project area and project scope, soil quality did not need to be strategically assessed for a greater mix of functional uses.

17 Case description Lyon Confluence



Figure 17.1 Lyon-confluence limits defined by 2 rivers (Source http://www.petus.eu.com/graphics/case_70.pdf)

17.1 Introduction

Lyon is the second largest city in France. It is situated in the east of France, relatively close to the borders of Italy and Switzerland. The station redevelopment project itself is located at the confluence of the Rhône and the Saône rivers. This finds itself right in the heart of Lyon, on the Perrache peninsula, which was dedicated to industrial and transport activities. It is now the place of one of the most ambitious urban development projects in France and in Europe. The planned developments are expected to double the size of the historic center ([Bolitho, 2010](#)).



Figure 17.2 Aerial view of central Lyon with Confluence project
(Source <http://www.lyon-confluence.fr/en/documents-for-press/>)

Well aware of the area's role for the city's future, Lyon's Town Council and Urban Planning have made its rehabilitation a priority. In 1998 talks began about redefining the industrial quarter to an attractive place for living and working (Bolitho, 2010). This strategic area is now being prepared for a new function which is more appropriate due to its central and pivotal location. The rehabilitation phase of the southern part of Perrache peninsula officially started in 1999. The Lyon Confluence project will offer all key elements of a town centre: offices, apartments, businesses, cultural and leisure centres. Public areas, parks, gardens and green belts will cover about a third of the whole project area (150 ha) (Ademe, 2012).

A specific organization on behalf of the Greater Lyon region, SEM Lyon Confluence, has been created for the project execution and management (Ademe, 2012). The company's main functions are the management of project design studies, the definition of the project execution methods, management of ownership, execution of demolition, construction and rehabilitation works and promotion of the site and project.

Part of the redevelopment process will aim to improve public transport and related facilities (Ademe, 2012). The tramline for example will be extended to link up with the metro, and new bridges are planned to be built. Also a multi-story parking garage is planned which will offer space for more than 1,000 cars. It is expected that by 2030, 25,000 inhabitants will live in the project area, 14,000 employments should be created by new leisure and cultural infrastructures and a large green space should be reserved (30-40 ha).

Soil quality in the project area will not be significantly affected by current developments, rather some improvements are expected. The project contributes to redeveloping brownfields and adding green areas to

the peninsula. The 'Place Nautique', which is an immense square, will be the biggest public space in the area. Half of its ten acres are taken up with a huge inner harbor, fed directly by the Saône. Because of the public nature of this square it is imperative for the soil and general environmental quality to be of adequate standard so as to avoid potential health risks by the users.

Important details of the plan are summarized in the table below:

<u>Lyon-Confluence</u>	
<u>Total (expected) Investment costs</u>	1.16 billion
<u>Start year initiation of project</u>	1999
<u>Start year construction</u>	2003
<u>Estimated completion</u>	2030
<u>Urban redevelopment</u>	150 ha
<u>Population of metropolitan Lyon</u>	467,000 (approx.)
Partners	<ul style="list-style-type: none"> • WWF • Greater Lyon • SPLA (local public redevelopment company) • (Nedo, since 2011)

Table 16.1 Summary of Lyon Confluence

17.1.1 Actor description

The plan that was initiated in 1999 includes 3 main partners as listed on the official public website [www.lyon-confluence.fr]:

- Greater Lyon Area - As the capital-city of the Rhone-Alps Region, which is at the peak of sustainable energy development in France, the Greater-Lyon demonstrates through its direct participation in this project its will to make environment-friendly urban and building design a major axis of its commitment toward sustainable development.
- SPLA - This local public/private limited company has been established in 1999 on the joint initiative of the City of Lyon and of the Greater Lyon Council, in partnership with public and private stakeholders interested in the development project of the Confluence. The shareholding gathers public and private operators recognized for their know-how and their skills in financial engineering of urban development.
- WWF – The World Wide Fund for Nature is a NGO which endorses the project due to the innovative partnerships the project has formed to promote sustainable development. Particular in the field of energy efficiency.

In 2011 a new organization entered the partnership; Japan's New Energy and Industrial Technology Development Organization (Nedo) (lyon-confluence, 2012).

- Nedo- the Japanese equivalent of the ADEME which is the French Environment and Energy Management Agency. Nedo is thus a Japanese public agency that promotes research and development as well as the dissemination of energy, environmental and industrial technologies.

17.1.2 Innovations

One of the main reasons why the project took off was due to the determination of the regional Council and the French Environment and Energy Management Agency (ADEME) to be part of a “programme of investment in the future”. One of the main innovations is that the “Lyon confluence” developer SEM has set up different various partnerships with a mix of stakeholders which can be grouped in three distinct organizations (Lyon-confluence, 2012):

- with the railway company: Improvements on disturbance and pollution reduction, integration of trains as an urban transport facility etc.
- with energy companies: Improvements on pollution reduction, implementation of new technologies etc.
- with a company in charge of rivers management: Improvements on riverbank management and conservation etc.

In setting up these other partnerships the goal of the project as a whole focuses on introducing eco-construction which combines high environmental quality and the use of renewable energies. The promotion of an innovative district development is carried out by RENAISSANCE in this project. This organization acts as a research institution to observe the energy efficiency and the ratio of renewable energy for the new developments.

At present the Lyon Confluence has already been listed as an eco-neighborhood by the French Ministry of Ecology and Sustainable Development and is now the first neighborhood in France to be officially recognized by the international conservation organization, the World Wide Fund for Nature (Bianchini, 2012). The results of the recognizable sustainability in the urban development process have led to different sources of funding, such as through the EU CONCERTO program (Ademe, 2012; Concerto.eu, 2012). The CONCERTO initiative includes a diversity of applications of renewable energy sources and energy efficiency measures in buildings (Concerto.eu, 2012).

In terms of soil management the project is expected to contain approximately 35 hectares of green spaces (lyon-confluence.fr, 2012). Although parks do not necessarily suggest fully appropriate soil management practices, they do help to determine a soil quality which has to be met. These soil qualities must be of such a standard that people are not affected health-wise, and the flora consisting of over 3000 plants of local species ([lyon-confluence](http://lyon-confluence.fr), 2012), will be able to thrive. Additionally, the soil quality standard must be such that it also attracts birds and wildlife.

17.2 Analysis

The level of integration in the Lyon Confluence project was analyzed with respect to actor features, institutional features and policy content features. Where possible, these features are described using the [success factors as defined in Chapter 4](#). The complete analyses is available in the [thesis of Steven van Beek](#), a summary is provided in the tables below.

17.2.1 Actor features

<u>Variables</u>	<u>Description</u>
<p>Actor variables:</p> <ul style="list-style-type: none"> Looking at actor type (public, private), Looking at actor configuration (partnership type) <p>Interaction variables:</p> <ul style="list-style-type: none"> Looking at the methods in place to communicate and create an identity about soil and benefits thereof 	<p>Actors:</p> <ul style="list-style-type: none"> The main actors consist of public actors and an NGO. The NGO acts in the interest of the public The public nature of the main project partners represents a top-down form of rule. <p>Interaction:</p> <ul style="list-style-type: none"> Soil is not directly communicated per say. But the holistic sustainable approach, especially energy and building sustainability, has been widely advocated. The project is recognized and funded by the EU CONCERTO.

17.2.2 Institutional features

<u>Variables</u>	<u>Description</u>
<p>Objective variables:</p> <ul style="list-style-type: none"> Examining overall project goals Examining the goals of actors for soil management <p>Power variables:</p> <ul style="list-style-type: none"> Identification of power and interest in project through assessment of leadership and coordination mechanisms <p>Rules and Regulation variables:</p> <ul style="list-style-type: none"> Examination of dialogue (top down or bottom up) Examination of reporting about soil Examination of communication tools 	<p>Objectives:</p> <ul style="list-style-type: none"> Soil management goals are refined from national standards to promote regional implementation. Not all the actors have direct goals for soil management, but to stay a front runner in sustainability it must be considered. <p>Power:</p> <ul style="list-style-type: none"> Leadership is shown by public agencies representing the greater Lyon council – SPLA, and SEM Lyon <p>Rules and Regulations:</p> <ul style="list-style-type: none"> A top-down dialogue with decentralization of tasks in a bottom-up manner as well as networked globally. Soil reports are mandatory and are done through Ademe Communication tools about soil exist (Basol & Basias). These recognize relationships with other activities. Communication to the wider public could be improved.

17.2.3 Policy-Content features

Variables	Description
<p>Time variables:</p> <ul style="list-style-type: none"> Examination of project for future plans Examination of time between project initiation and project construction <p>Knowledge variables:</p> <ul style="list-style-type: none"> The use of science about soil studied the use of advisory committees <p>Resource variables:</p> <ul style="list-style-type: none"> Examination of actor expertise according to field of interest Examination of application of tools (EIA, SEIA, Indicators) used in project area <p>Environmental Policy variables:</p> <ul style="list-style-type: none"> Examining the necessity of the project to consider soil resources its functions and values (behaviors) Examining the internalization of externalities 	<p>Time:</p> <ul style="list-style-type: none"> The project is studied for its impact in the future. Taken into consideration are future land-use changes, and the impacts of those changes on soil. The time between project initiation and project construction was 4 years. It is acknowledged that the planning phase of a project is a crucial step. <p>Knowledge:</p> <ul style="list-style-type: none"> Scientific information is considered important. In French legislation progress has been made to determine 'bad' and 'good' soils and understand soil potential and function. This is partly done through Ademe and its partner organizations. Advisory committees constitute external actors to the project. In this case there are many externally contracted actors identified as key advice organizations. They offer key suggestions for the development of the project. <p>Resources:</p> <ul style="list-style-type: none"> Actor expertise is unlimited but with a key focus on the energy sectors. The actors rely on networking internationally to show off the impact of the project development and obtain important grants. Impact assessment measures and the use of indicators are standard and embedded in legislation. <p>Environmental Policy:</p> <ul style="list-style-type: none"> Planning behavior in this project has considered soil resources by considering the regional scale of the peninsula. The functions of soils and its values are shaped by the objectives of the peninsula. Regulations require actors of new redevelopment projects to account for soil issues. In this way externalities for soil use are taken into consideration.

17.3 Discussion

17.3.1 Success factors of integrated approach

Several factors found in this case study have resulted in an integrated approach which lead to more sustainable soil management during urban redevelopment. These key factors are a high level of political commitment to manage the integrated process, the use of a long-term time perspective which involves the monitoring of soil conditions with the use of standardized indicators adjusted through time, relevant scientific information from international organizations, and the formalization of a partnership between public spheres affecting the accountability mechanisms for each partners' use of soil and identification of sustainability issues.

High level political commitment can be said to indirectly affect the process of achieving an integrated approach with soil management because it legitimizes [administrative agreements](#) for urban redevelopment. The centralized government plans which involved revamping the Lyon-Confluence peninsula was indeed seen as a necessary development, partly recognized due to the governments' prior attempts at creating a discussion about improving the greater Lyon area.

Time has been an important factor in realizing the current results of sustainable soil management. The planning process started as early as the early 1900s and continued until the end of the century. In 1999 the project was finally initiated, and it wasn't until 2003 when a master plan was finally created and construction

could start. The benefits of taking sufficient [time](#) to plan the final project are diverse as it also the case in the other case studies analyzed in this research. Taking sufficient time allows for sufficient [data](#) to be collected about the state of soils in the inner city area. Furthermore it allows for a thorough [stakeholder analysis](#) to be carried out, and important agenda points and [objectives](#) for inner city redevelopment to be made and synchronized with the scientific data collected.

The horizontal integration efforts that have taken place between the public do seem to offer room for improvements. A mix of 3 partners from the public and NGO sphere took part in the project development. A fourth partner was recently involved as well. Partnering with each other contributed to creating an understanding of different interests for redeveloping the inner city area shifting the focus of redevelopment away from sector-bound goals towards regional and even national [goals](#). But the lack of a recognized private party in the immediate partnership seems to dismiss the inclusion of more interests and goals, especially at the local level. Taken as a whole the partnership has helped to shift the development focus from the consideration of just a single development phase, to [the consideration of the entire development process](#) from 'initiative' to 'management' in the long run. Perhaps most important to ensure this consideration however is the [funding](#) by the EU CONCERTO for which a long-term outlook is required.

By focusing on regional and national goals rather than sector specific goals, and by considering the development cycle in its entirety, the scope and impact of the project has been increased. This resulted in environmental issues such as pollution and the involved risks of those issues being examined from a different perspective. The risk calculations of soil pollution for example were made over a larger area and over a greater time frame, which allowed for the goals and interests of the partners to be adjusted. In turn this affected the [cost and benefit](#) calculations of the partners for the developments planned on the peninsula.

In summary it can be said that there are clearly integrative processes which have taken place in the project. The central government as a partner legitimized the interest in environmental soil management and helped to facilitate administrative agreements. The use of a partnership between the public sectors resulted in expanding the development area, recalculating risks, re-evaluating costs and benefits and broadening the value concepts including in part those related to soils. These factors have played an important part in the sustainable redevelopment of the inner city peninsula of Lyon.

17.3.2 Improvements for integrated approach

What is interesting is that the [partners](#) involved are mostly public agencies. The public-based partnership has several implications for the project. These implications come in the form of limiting the broader horizon of the project such that all contaminants in the soil are fully dealt with on the entire peninsula. While the SWOT analysis was used to identify environmental problems, and the above argued that the partnership contributed positively to the project, there are clearly limitations. First the SWOT analysis does not contribute to making holistic plans to deal with potential sustainability weaknesses. So, although problems are identified and knowledge thereof is shared, it is up to involved actors to come up with solutions. This brings to the table the public focus of the partnership which also has limits - there is a lack of fundamental democratic debate which is necessary to ensure a wider perspective on issues. Despite the lack of full cooperation from private



organizations on the peninsula, the objectives for the project development seems to create an environment of overlooked opportunities.

Overall the use of [knowledge](#) has been limited without the inclusion of the private sphere as a signatory party to the redevelopment. The rules and regulations for soil quality were also limited by the public scope and project-area scope which was considered in the final redevelopment plan. By limiting the project area and project scope, soil quality did not need to be strategically assessed for a greater mix of functional uses other than the already administratively agreed-upon top-down plans.

18 More cases

More case descriptions can be found here:

- On the Dutch website of habiforum.nl
- In the Dutch report '[Analysis leading projects, practical experiences and recommendations from interviews and literature](#)'
- On the Dutch website of ruimtexmilieu
- In the Dutch report '[Ecosystem services in the practice of sustainable soil and land development, the Triple-O approach](#)'
- On the Dutch website of Bodemplus
- On the Dutch website of the Grondwatercollectief
- The Dutch '[Case book area oriented approach to groundwater management](#)' of SKB
- On the German website of Proside
- On the European website of Urbal Integration
- On the European website of REVIT
- On the German website of NBS (Nachhaltiges Bauflaechenmangement)
- On the website of the national Industriebrachen-Plattform Schweiz

Evaluations of projects in the CityChlor partner countries can be found on the website of CityChlor.

19 Technical Knowledge from CityChlor: more links

In the CityChlor program much knowledge was gathered with respect to technical aspects involved in characterisation and remediation of soil and groundwater contaminations with volatile chlorinated compounds in urban areas. This knowledge is accessible via the following links:

- Video's concerning characterization and remediation
 - [Direct push technology – a field investigation \(French\)](#)
 - [Direct push technology – a field investigation \(English\)](#)
 - [Enissa-membrane interfase probe \(MIP\)](#)
 - [NAPL-flute](#)
 - [Passive samplers – a field implementation](#)
 - [Well drilling for aquifer thermal energy store – the biowashing machine](#)
 - [Thermal treatment remediation in Stuttgart](#)
 - [Iron injection](#)
- [Main report characterization](#) - Report for groundwater, soil gas and indoor air characterization. This report concerns the questions why and how characterization for an area oriented approach is needed. The report describes techniques used within the CityChlor project
- On the topic of groundwater characterization several reports are available:
 - [Passive samplers for groundwater quality measurement](#). This is a guideline on passive sampling for groundwater: groundwater sampling strategies, passive sampling techniques, examples of use and general guidelines for an appropriate use
 - [Direct Push Technology](#). A report concerning the D PT for on site direct measurements
 - [Long Term Groundwater Monitoring Optimization](#). This report contains concepts and tools for the optimization of groundwater long term monitoring
- On the topic of soil gas characterization several reports are available:
 - [Soil gas characterization and monitoring designs of soil gas wells and soil gas sampling tools](#), a guideline.
 - [Attenuation of VC in the vadose zone](#). This concerns a study of VC degradation in the unsaturated zone at different scales
- On the topic of indoor air characterization several reports are available:
 - [The management of contaminated sites and soils: characterization of indoor ambient air quality in relation to potential soil pollution by volatile and semi-volatile chemicals](#). Contains methods for characterization of gaseous chemicals in indoor air for general populations
 - [Models for predicting transfers to indoor air](#). This contains tools for vapor transfer to indoor air modeling
- On the topic of human health risk assessment:
 - [State of the art of contaminated site management: Policy framework and human health risk assessment tools](#)
- On the topic of the area oriented investigation approach:
 - [Area oriented investigation approach for groundwater management](#)
- Several pilot cases with respect to characterization
 - [Innovative detection techniques: EnISSA-MIP and RNS](#), Introduction to the pilot project
 - [Pilot NAPL flute sampler](#) (Dutch report, English summary), a test with NAPL flute sampler in Kortrijk, Flanders
 - [Pilot Enissa MIP](#) (Dutch report, English summary), a test with Enissa MIP in Kortrijk, Flanders
 - [Characterization tools and monitored natural attenuation](#), introduction tot the pilot project
 - [Monitoring of \(bio\)processes](#), introduction tot the pilot project
- [Main report remediation techniques tested in the CityChlor project](#)

- On the topic of source remediation
 - [Iron treatment for groundwater](#)
 - [ISCO](#)
 - [Thermal treatment](#)
- On the topic of plume remediation
 - [Natural attenuation](#)
 - [Conceptual site model biowashing machine](#), a CSM of the biowashing machine in Utrecht, The Netherlands. Research question to monitor progress of the remediation in the Utrecht station area
 - [Remediation capacity biowashing machine Utrecht](#), results of the outcomes of the CSM of the biowashing machine in Utrecht, The Netherlands
 - [Combination of ATEs and remediation](#), a deskstudy for possibilities of ATEs as a remediation tool in Flanders
- Pilot cases with respect to remediation
 - [Nano-iron injection for source treatment](#), introduction to the pilot case
 - [Thermal treatment](#), introduction to the pilot case
 - [Biowashing machine](#), introduction to the pilot case



Document description

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Summary: This guide aims to find a solution for the above mentioned communication gap between different stakeholders. A gap that will lead to individual, suboptimal solutions. There is no fixed path towards a successful integrated approach for urban developments:

