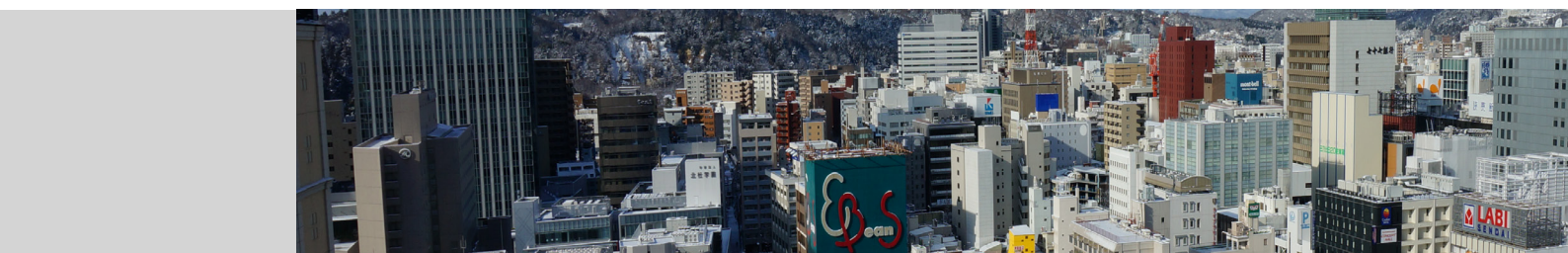




the Dutch Approach in Japan.
 exchange of ideas for contemporary challenges in planning.
 Smart Work Week, Kamaishi, January 25-29 2013

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Preface



island of 'Deshima'



Foreword

Radinck J. van Vollenhoven

Ambassador of the Netherlands to Japan

It is a great pleasure to introduce this unique booklet on “the Dutch Approach in Japan ” reporting on the exchange of ideas by Japanese and Dutch experts illustrated with examples from the Netherlands. What started out as a report of the Netherlands -Kamaishi Smart Work Week, turned into an overview of contemporary challenges and solutions in both the Netherlands and Japan. This represents a next step in the long cooperation between the Netherlands and Japan, in particular, the Tohoku region.

The first contacts between the Dutch and the Japanese people in Sanriku, the north of Japan, was made in 1643 when a Dutch ship drifted to the shore of Yamada after a long and dangerous journey. Although foreign trade and exchanges were limited to Dejima in Nagasaki, the people of Yamada welcomed the Dutch crew and provided them with food and water. Since then, we have built strong friendships and ties with the people in the region.

When the news of the Earthquake and Tsunami broke out on March 11 2011, the Dutch people, especially in the city of Zeist, which is a sister-city to the town of Yamada, were simply shocked, but made swift and compassionate responses to the tragedy. Emergency aid, rescue dogs, and donations rushed in.

Our solidarity with the Japanese people goes beyond emergency measures. In efforts for recovery and reconstruction, we wondered what we could do for the people of the tsunami hit areas. And we learned that the city of Kamaishi values not only hard measures but also soft measures against disasters, known as the “Kamaishi Miracle”: the story of school children who were trained to evacuate after the earthquake, and they actually saved their lives before the Tsunami. So knowledge is power. Knowledge is life. Reviving the city with smart technologies is one thing. Empowering people with knowledge and expertise is another. Dutch experts in the past and present could and can contribute to Japan in such aspects.

Looking back 200 years ago, Dutch civil engineers like Johannis de Rijke, George Arnold Escher and Cornelis Johannes van Doorn contributed greatly to the flood control and water management projects in Japan. Many of the civil engineering works done with the rivers are still working as they were built at that time.

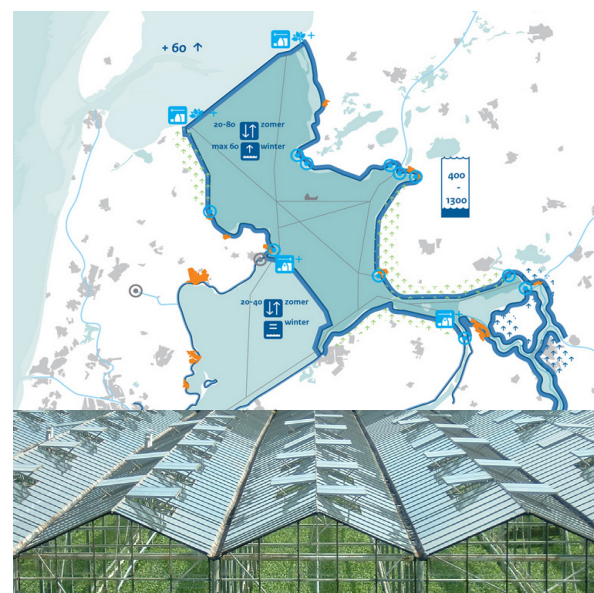


statue of Johannis de Rijke
photo at SWW workshop

These waterworks were a first example of the now well-known multidisciplinary approach, the so called “Dutch Approach”, to its city planning including safety issues, economic revitalization, environmental issues, landscape design, etc. We believe that this approach would be useful in Japan for example in accelerating Tohoku’s reconstruction.

In addition, the Netherlands’s advanced technologies in horticulture may be one of the keys to revitalize Tohoku’s economy since agriculture is one of the major industries of the region. Despite being the same area size as Kyushu in Japan, the Netherlands is now the number two largest exporter in the world of agricultural produce and food in terms of value by harnessing ICT and high tech in agriculture.

The Smart Work Week is just a first step for both sides to exchange ideas and inspire each other in finding new solutions. I hope that our dialogue will continue for many years to come and that this cooperation will contribute to a smart choice for the future of Kamaishi and other regions in Japan.



Radinck van Vollenhoven

Radinck J. van Vollenhoven
Ambassador of the Netherlands to Japan

Shared Challenges

Ton Venhoeven

Integrating water safety, water management and spatial planning

Japan and The Netherlands share complex issues regarding water safety and water management in relation to spatial planning and land use. And both The Netherlands and Japan have been faced with frequent and large scale flooding and necessary reconstruction, such as recently East Japan with the Tsunami of March 11 2011 and The Netherlands with the flooding of 1953. Both countries have learned from successful and less successful experiences in water safety management and reconstructions in the past. As a result, both Japan and The Netherlands have developed strategies and methods for the integration of urban planning, water safety and water management. Both countries would benefit from knowledge exchange and further development of knowledge on these issues.

Developing Smart Cities and economic redevelopment

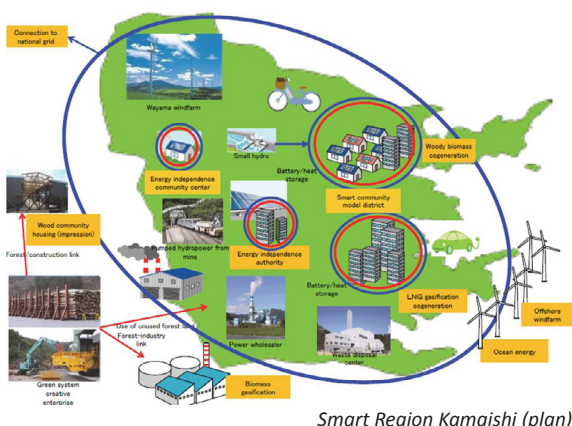
Today, both Japan and The Netherlands are also developing knowledge on how to face the challenges of our time related to shrinking regions, economic redevelopment, climate change and the environment. Issues vary from multimodal connectivity, sustainable and renewable energy supply, regional food production, improving the quality of life, resource management, water and waste management, to health and ageing populations. Results of studies into these separate topics are brought together into the research and development of smart cities in Japan and The Netherlands. Also in this research and development, exchange would be beneficial for both.



Japans reconstruction after the 11-03-2011 devastation

The Kamaishi Smart Work Week

From 25-29 January 2013, a Smart Work Week was organized by Tohoku University, the city of Kamaishi and the Embassy of the Kingdom of the Netherlands. This workweek aimed to investigate how a combination of Dutch and Japanese experiences in smart city concepts, flood prevention and reconstruction could be used for an integrated spatial planning approach to the Tohoku reconstruction context - and to the Kamaishi redevelopment in particular. The Japanese ambition to combine reconstruction planning with improving the quality of life, economic revitalisation and smart city development was one of the strongest reasons to investigate the potential benefits of such an integrated planning approach.



Working side by side

Among the most important questions during the workweek were: can the quality of the reconstruction plans be improved to stimulate economic redevelopment, how can smart city principles be implemented with maximum benefit for the city, its people and its economy, how can support from the local stakeholders and population be increased, and more technical questions, such as what technology is available for smart agriculture? Evaluating the decided and proposed plans and strategies, trying to find solutions to apparent dilemma's, what technology to use, what governance model would be the best for enabling smart city development, how to develop and interconnect the necessary infrastructure, what should be the first steps in the development, learning from each other, all this was the aim of the exchange of ideas during the workweek.

Combining Japanese and Dutch experiences and approaches

Experts from both countries brought in their own experiences, methods and planning principles. From the Japanese side the experiences with flooding, flood risk prevention and calamity control programmes, the lessons learned from the Fukushima disaster, the reconstruction plans, technical solutions for sea walls and smart city pilot projects, and the challenges of implementation of these plans were brought in. From the Dutch side, elements of the 'Dutch approach' in integrated spatial planning and first practical results and strategies of smart city development were used as input in this exchange of ideas. The workweek clearly demonstrated the usefulness of combining Japanese planning methods with the 'Dutch Approach'. It also showed that the exchange of research results and practical experiences regarding smart city development can be equally beneficial for both countries.

This booklet

To be able to communicate some of the key elements in this exchange of ideas to a larger community, this booklet contains an introduction to the themes and challenges, an overview of the Japanese and Dutch approaches and experiences, and an account of the exchange of ideas and the findings during the Smart Work Week in Kamaishi. The explanation of the 'Dutch Approach' to planning is illustrated with a variety of projects and early examples of Smart City Development in the Netherlands.



Smart Work Week workshops

In earlier days, windmills kept the land dry



Vermeers 'zicht op Delft'



Pieter de Hooch 'de binnenplaats van een huis in Delft'

Why the Dutch approach is interesting for Japan

Toshikazu Ishida

Distinctive Background of Man-made Dutch Environment

When we peruse the history of making human settlements in Europe, we instantly understand the distinctive pre-history of the Dutch contribution. In The Netherlands, especially in the lower part of the western region, "habitable land" holds an exceptional connotation. There the land means man-made, wet, peaty, today brackish subsoil and vulnerable environment for the water in general. Researchers have pointed out repeatedly that few countries exist where land of man has exerted a greater formative influence in the shaping of the landscape.

Without diking nearly half of The Netherlands would today be lying beneath the waves: the battle against the water is relentless and unending. The better you get to know the man-made country in the later Middle Ages, the more you will realize why of Dutch towns may be said that a higher proportion than elsewhere in Europe belongs to the "Planned" group than to the "Chance-grown". In a material shortage and difficult environment the Dutch have sustained a protracted and fierce struggle to wrest a living from their man-made land. This incomparable mindscape must be one of the clues to understand the significance of the 'Dutch Integrated Approach'.

Well Controlled Comfortable Living

Before buildings could be erected, particularly in the western lowlands, the site had to be drained, consolidated and raised above the level of the surrounding environment before any building could be undertaken, and large buildings had to be supported on deep piles: the former 17th century town hall (today the Royal Palace) of Amsterdam rests on well-planned 13,659 wooden piles. It is noticeable therefore, that whilst the oldest parts of Dutch towns built upon naturally high ground may present a somewhat haphazard picture, with street lines and scenes reminiscent of mediaeval towns in other countries, those on ground less firm and more vulnerable to flooding bear every sign of premeditated layout and strict control.

Housing construction also followed calculated rules. If you look at the paintings of the 17th century carefully, another miraculous feature regarding the well controlled man-made comfortable living space could be found. When looking at the details of the room interiors depicted by Johannes Vermeer or Pieter de Hooch, one asks oneself how they can build and maintain these clean and neat spaces on the floating environment of the wet and weak subsoil.

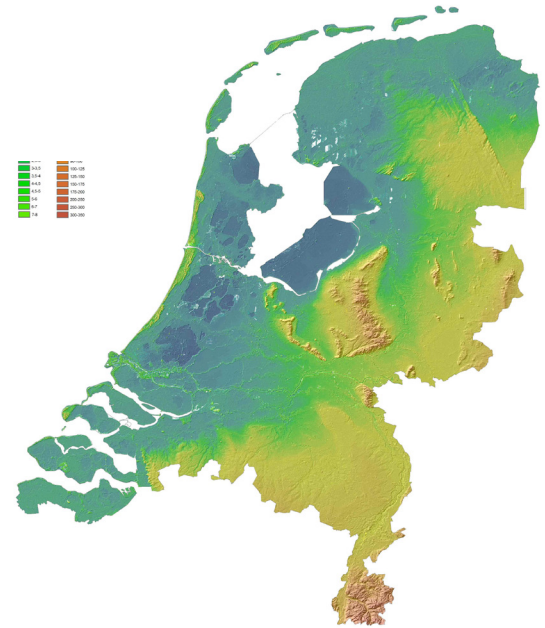
Integrated Dutch Approach for Japan's Trans-Disciplinary Challenge

"Planned", "Controlled", "Integrated", and "Comfortability", those are the essential keywords of the Dutch approach. This is also the reason why the Dutch approach is interesting for Japan. In general, the empowerment assignment for East Japan after the March 11th Disaster is a complicated and multilayered task. On the one hand it is true that this gives Japan a chance to generate a real innovative solution for the reconstruction scheme. However, it is also true that most of the problems have no precedent and sometimes possible solutions go beyond the existing administrative agreement such as land use, energy distribution and budget application.

In this difficult situation, the Smart Agriculture project proposed by the Dutch government for the Sendai Plain seems to be one of the suggestive examples. Not only have the Dutch developed the world top class technology for optimum reclaimed land use through the centuries but also evolved the unique integrated approach for the man-made horti-agriculture technology; they keep the obtained brackish infertile land as it is, they build mega scale greenhouses that distribute the most competitive valueable products based on the hydroponic system into the global market.

The distinctive feature of the Dutch green house farm is that they need mega flat land rather than fertile soil, and this is different from Japanese ordinary imagination. Dutch green house agriculture today is nothing but an advanced technology based, artificial factory environment that is maintained by robotics, IT technology based climate control, with efficient transport, like a Mega Green Factory.

Optimizing the unique border condition, requires a trans-disciplinary approach that is beyond the existing values and rules. If the March 11th Disaster could be a cradle of an innovative model towards the existing reconstruction scheme, the Dutch integrated method could be the real trigger for the positive empowerment for those damaged areas.







The Dutch Approach

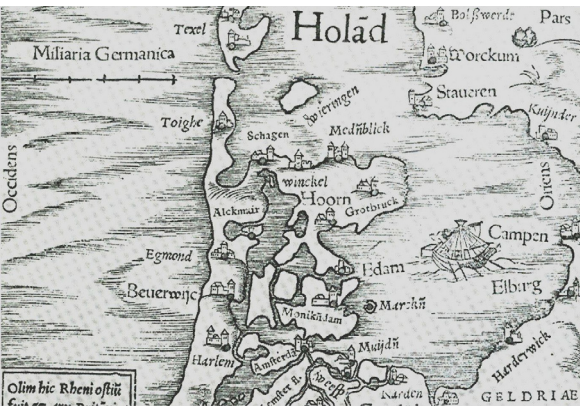
What is The Dutch Approach?

The Dutch Approach

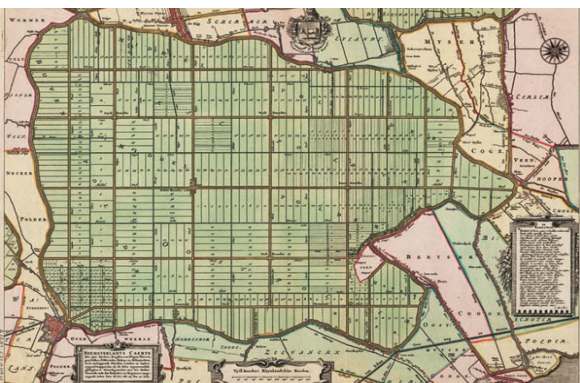
The ‘Dutch Approach’ refers to a planning practice in the Netherlands that is aimed at combining considerations of water safety and water management, mobility and land use with all other spatial planning issues in an integrated planning approach. This holistic planning approach includes collaboration between different government bodies at all levels and stakeholder involvement, and it also gives a large role to scientific research, business and public participation. Creating public support for necessary planning measures is one of the biggest advantages of the ‘Dutch Approach’. It originated from the way our ancestors dealt with interrelated aspects of water safety, spatial planning and participation in our complex Delta environment. ‘Building With Nature’ is a key element of the Dutch Approach.

A holistic approach of complex planning issues

The ‘Dutch Approach’ has turned out to be very suitable for complex planning issues, where economic and environmental dilemma’s struggle with financial and societal feasibility, resilience of the water defence systems, efficiency and sustainability of mobility infrastructures and other considerations of spatial planning. The Dutch Approach not only includes stakeholder involvement and building alliances, it also makes use of design as a tool for research, communication and decision-making, the 3-layer spatial planning concept and principles of adaptive planning and smart urbanism. With these elements, the Dutch Approach is able to develop, optimise and integrate plans for successful large scale engineering projects and generate public support at the same time.



An early map of Holland gives an impression of the challenges the Dutch faced in their waterrich delta.



turning the 'Beemster' into a 'polder' in 1607 is a famous early example of an integrated approach to large scale engineering.

The Dutch Approach consist of four necessary ingredients:

1. Creating **alliances** of power between public bodies, the private sector, knowledge and society at large
2. Using **design** as a tool for research, debate and decision making;
3. Elaborating integrated and comprehensive **spatial visions**: sustainable, flexible, socially based and feasible;
4. Balancing **governance**: the right combination of vision, instruments and real projects.

3-layer spatial planning concept

To develop these ingredients and to gain support for the proposed directions, the 3-layer spatial planning concept is a crucial part of the Dutch Approach. This spatial planning concept distinguishes between planning considerations on the subsoil, the network level and occupation issues.

Subsoil Level

Planning at subsoil level deals with making use of - and improving natural conditions. At this level, strategies for water management (blue) and water safety can be developed, but decisions on this layer are also crucial for the development potential of infrastructure, cities, nature, biodiversity and (organic) agriculture (green).

Network Level

Planning at network level brings together all relevant aspects related to networks and infrastructure development. Here shortcomings of the current situation are identified and possible future trends, scenarios and requirements are researched. Here decisions on future infrastructure, on the integration of infrastructures, on multimodal connectivity and accessibility are prepared. Decisions on this level are important for developing the required smart infrastructures but also for creating the necessary conditions for sustainable urban development and land-use.

Occupation Level

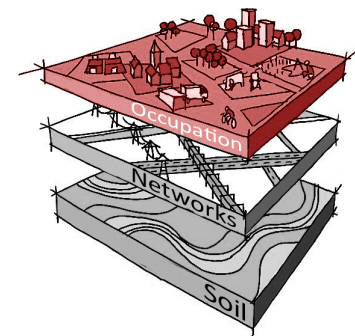
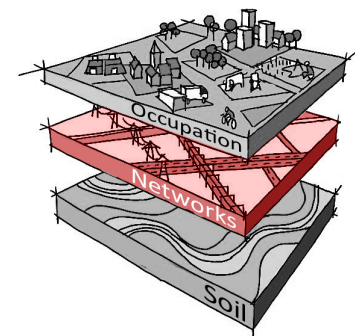
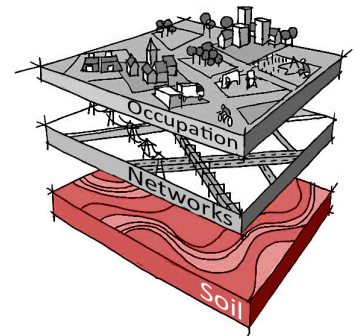
Planning at occupation level aims to improve the way urbanisation, agriculture and other economic activities make efficient and sustainable use of the conditions created by subsoil and networks. Economic, ecologic, social, cultural and technical considerations play an important role in planning and optimising this layer.

With the 3-layer planning concept in place, projects can be developed that make the best use of the different layers. If a project has a positive effect on all three levels, it is a good, integrated project and a very efficient investment. Such a project will easily gain public support. If the project works well on one level but causes big problems at the other two levels, it is not a very sustainable project, a bad investment and people will try to stop it. To allow for the best decision making, smart technology, open data and public participation are used at all levels.

International application

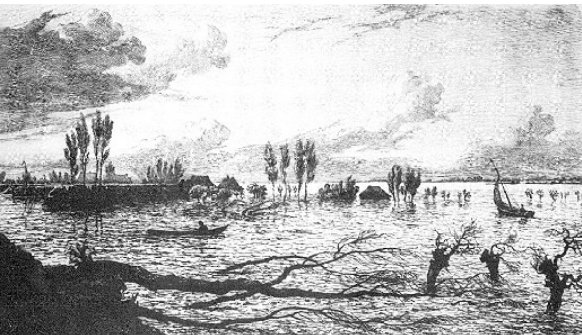
The Dutch Approach is not only implemented in The Netherlands, but also tested and used in many countries abroad, such as in New Orleans (USA) after hurricane Katrina, in Ho Chi Min City (VN), and Mumbai (IN) and many other cities and regions around the world. Now that the world is facing major challenges in its urban development, including severe environmental challenges, this 'Dutch Approach' may offer a helpful tool to deal with the complex challenges of today.

Source: Dutch Ministry of Infrastructure and the Environment



History of the integrated Dutch Approach to planning

painting of the 1421 Elisabethflood.



the 'Afsluitdijk', closing off the 'Zuiderzee'



flood of 1953

A history of flooding and reconstruction

The history of integrated Dutch water management and planning dates back to about the 9th Century. The country lost large areas of land during the period until the 13th Century. At the time the only way the people could protect themselves from floods was to live on dwelling mounds or 'terps'. In the same period work began on the reclamation of peat lands in the west of the country. This resulted in a considerable reduction of the water levels and in turn resulted in the soil subsidence (sinking) of the land in the polders.

The polders below sea level were particularly vulnerable to flooding by the sea. Floods regularly claimed many victims throughout the centuries, such as the St Elizabeth Flood of 1421 that caused tens of thousands of fatalities. After many floodings, the Dutch were forced to start building dikes around the peat lands and the densely populated clayey inland regions.

Early community involvement

Windmills were introduced between 1250 and 1600 - just in time to ensure that the subsiding lands could continue to be used for agriculture and to provide for the drainage of lakes. The canals that came with it, remained important transportation routes until today. Maintaining the dikes and sluices was expensive. The maintenance costs were shared by setting up community groups, the predecessors of the later water boards. Every farmer in the community was responsible for the maintenance of a specific length of the dike. Later on the water boards took over the maintenance of the dikes to guarantee their strength. This was funded by the landowners, who paid water taxes.

The Netherlands' Golden Age, in the 17th Century, was also favourable to land reclamation. The modernisation of Dutch society resulted in achievements such as the drainage of the 18,000-hectare Haarlemmermeer lake that would later become home to Amsterdam Airport Schiphol. The first large-scale engineering project carried out in the 20th Century was the construction of a large dam (the Afsluitdijk) to close off the Zuiderzee. Closing the open connection between the North Sea and the centre of the Netherlands reduced the risk of flooding. The former Zuiderzee is called the IJsselmeer.

The Deltaworks

However, the fight against water was far from over: water continued to lay claim to the land every now and again, such as during the catastrophic floods of 1953. The fatal combination of a north-westerly storm and spring tide resulted in the inundation of large areas of the provinces of Zeeland and South Holland. Over 1800 people died. The flood also caused enormous damage to houses and property. Measures to prevent a repetition of this disaster were proposed in the Delta Plan.

The Dutch delta consists of the outflow-area of the rivers Rhine, Meuse and Schelde. They flow into the North Sea in proximity to each other, which resulted in this very vulnerable region. To prevent the disaster of 1953 from happening again, a very straightforward, technocratic solution was chosen. All of the river-outlets had to be closed off and controlled by moveable dams. In the end, the project took more than 50 years to build and was completed by the closure of the 'Nieuwe Waterweg' in 1996.

'Building with Nature'

The mono-functional solutions proposed in the Delta Plan not only solved the problems, they also created new ones. Already in the beginning of the seventies, the planned closure of the Oosterschelde created massive opposition from fishermen, shellfish farmers, sailors and environmental organisations, claiming the closure would create more problems than it would solve. The government finally gave in and decided to build a semipermeable dam.

Since those days, the roles of civil engineers have changed due to the demand for 'integrated approach', sustainability and a scientific approach to risk management. Important other reasons for this changing role are budget limitations. As a result, civil engineers have learned to develop combined solutions that are less expensive and fulfil requirements from different scientific, business and public perspectives at the same time.

Along the way, the age-old 'fight against water' was replaced by 'Building With Nature' - engineering in consonance with the forces of nature - a much more cost effective and ecologically sustainable strategy. Over the years, with this new approach to planning and engineering, the Dutch revived the age-old approach of integrating issues of water safety and water management with spatial planning and public participation. This method of integrated spatial planning has since been dubbed the 'Dutch Approach'.

the 'Deltaworks'



building with nature: 'Sandmotor.'

Sources: diverse sources were used, among which some from the Dutch Ministry of Infrastructure and the Environment

Examples of the Dutch approach in the Netherlands

Ton Venhoeven



The Dutch Delta, with the Rhine and Meuse discharging water from higher regions of Europe.

Challenge:
climate change adaptation and improving the environment

Room for the River Programme

Climate change is on-going, with increased heavy rainfall and periods of severe drought. At the same time, as the rivers flood the floodplains each year, the water distributes sediments which in turn reduces the space in the riverbeds and floodplains that was initially allowed for annual floods. So it shouldn't have come as a surprise, but despite all taken measures, the Netherlands were nearly confronted with large-scale river flooding in 1993 and 1995, in both cases due to the increased river discharges caused by large volumes of melt and rainwater from the upstream regions in Germany and Switzerland. In the event of 1995, more than 200,000 people had to be evacuated to prevent casualties. This was a clear wake-up call. After these events it was clear that a new approach to water management was needed: instead of continuing to increase the height and size of the dikes, the Government decided to create more room for the river water, since high river discharges will inevitably occur more frequently in the future.

Size, scope and objectives

As a result, the Dutch department for Public Works and Water Management, Rijkswaterstaat is working on the 'Room for the River' programme. The Room for the River project site encompasses four rivers: the Rhine, the Meuse, the Waal, and the IJssel. The design work consists of integrated spatial planning with the main objectives of flood protection, master landscaping and the improvement of overall environmental conditions. Completion of a basic package of forty projects is foreseen for 2015.

Room for the river has three objectives:

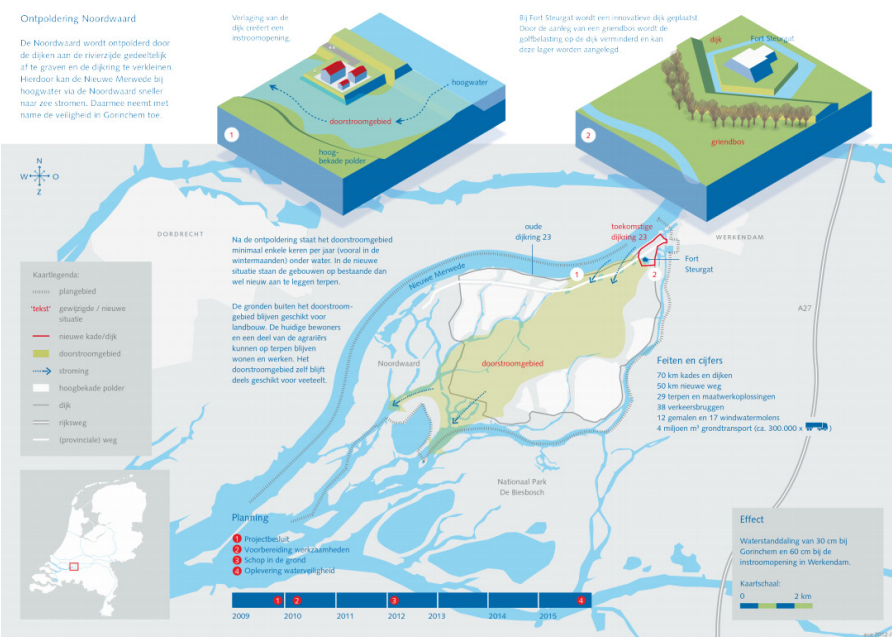
1. by 2015 the branches of the Rhine will cope with an increased discharge capacity of 16,000 cubic metres of water per second without flooding
2. the measures implemented to increase safety will also improve the overall environmental quality and natural beauty of the river region
3. the extra room the rivers will need in the coming decades to cope with higher discharges due to the forecast climate changes, will remain permanently available

Creating local support

Measures in the plan include: placing and moving dykes, de-poldering, creating and increasing the depth of flood channels, reducing the height of the groynes, removing obstacles, and the construction of a “Green River” which would serve as a flood bypass. These measures together will result in lower flood levels. But the road to achieve these objectives is dynamic: provided that the performance goals are met, participants - either being municipalities, communities or other interested parties - can submit ideas and come up with alternatives for civil engineering or spatial planning that also meet the demands. If they succeed, the government plans are exchanged by the participant’s plans. By this unique approach, experiences and interests of local communities are taken into the planning procedure and local support is greatly enhanced.



Impression of new situation at the city of ‘Nijmegen’, with more room for the river ‘Waal’ (Delta-branch of Rhine)



farmers can stay during floods



‘Depoldering’ Noordwaard (2015) as part of ‘Room for Rivers’: area will be flooded more often. Present dikeing will disappear. upper: current situation, below: future situation.

The Deltaprogramme

Multi-layer safety

In general, prevention is the most cost-effective approach towards limiting flood risk, but the Delta Programme will also focus on the concept of multilayer safety. Recent floods in Europe and hurricane Katrina, made the Dutch government realize that flood protection policy should be broader in scope than just prevention of floods. Only preventive measures (such as dikes) give a feeling of infinite security, but in reality there is always a chance that things go wrong. Therefore the Dutch government introduced the concept of multi-layer safety (National Water Plan, 2010). In this concept, in addition to the prevention (layer 1), attention is also given to spatial development (layer 2) and disaster management (layer 3). The three layers together represent the level of flood protection. This concept looks much like the safety concept Japan is currently using

Innovation and multi-functional use

The Rhine-Meuse delta provides opportunities for testing innovative (Delta) Dyke concepts, including the multi-functional use of dykes, in strategic locations. These are very wide dykes that one can also build upon. This is a concept that is developed and has been implemented in Japan (Tokyo). Other examples of innovative concepts include adjusting discharge distribution across the tributaries of the Rhine and construction of new, closable flood defence systems. According to the principles of multi-layer safety, the possible consequences of a flood may be limited by adjusting and improving spatial organisation and disaster management.

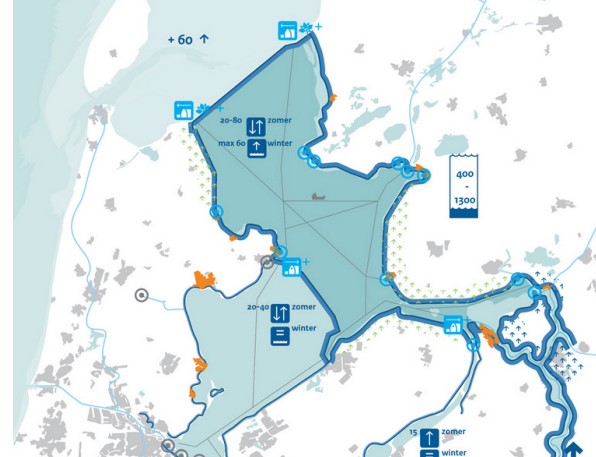
Added value

In many locations, tasking concerning flood risk management and spatial adaptation is accumulating, for which the Delta Programme guarantees a cohesive approach. Linking the required measures to regional developments reveals efficient solutions with more social added value. Opportunities of a 'no-regret' nature that have arisen can already be seized; something which is important for our country and supports our economy. On average, agriculture loses out on €0.4 billion a year in yield due to drought. A lack of freshwater or low water levels in the rivers can also damage other sectors (shipping and transport) and nature. Groundwater levels that are too low cause damage to foundations in built-up areas.

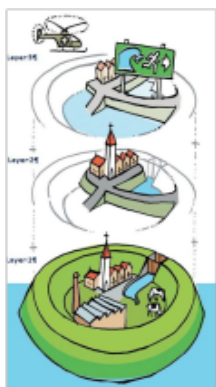
Creating fresh water reserves

Depending on how the climate and the economy develop, damage resulting from water shortages may increase considerably. In 2014 the Delta Programme 2014 will advise on strategic decisions for these objectives, together with the first generation of measures to make the water system more robust. These may include interventions to make better use of the water supply in the IJsselmeer lake, to optimise water distribution in the main water system or to limit salt intrusion in the western part of the country in addition to agreed maintenance, and to realise alternative water supplies. Measures are also required for the 'elevated sandy soils'.

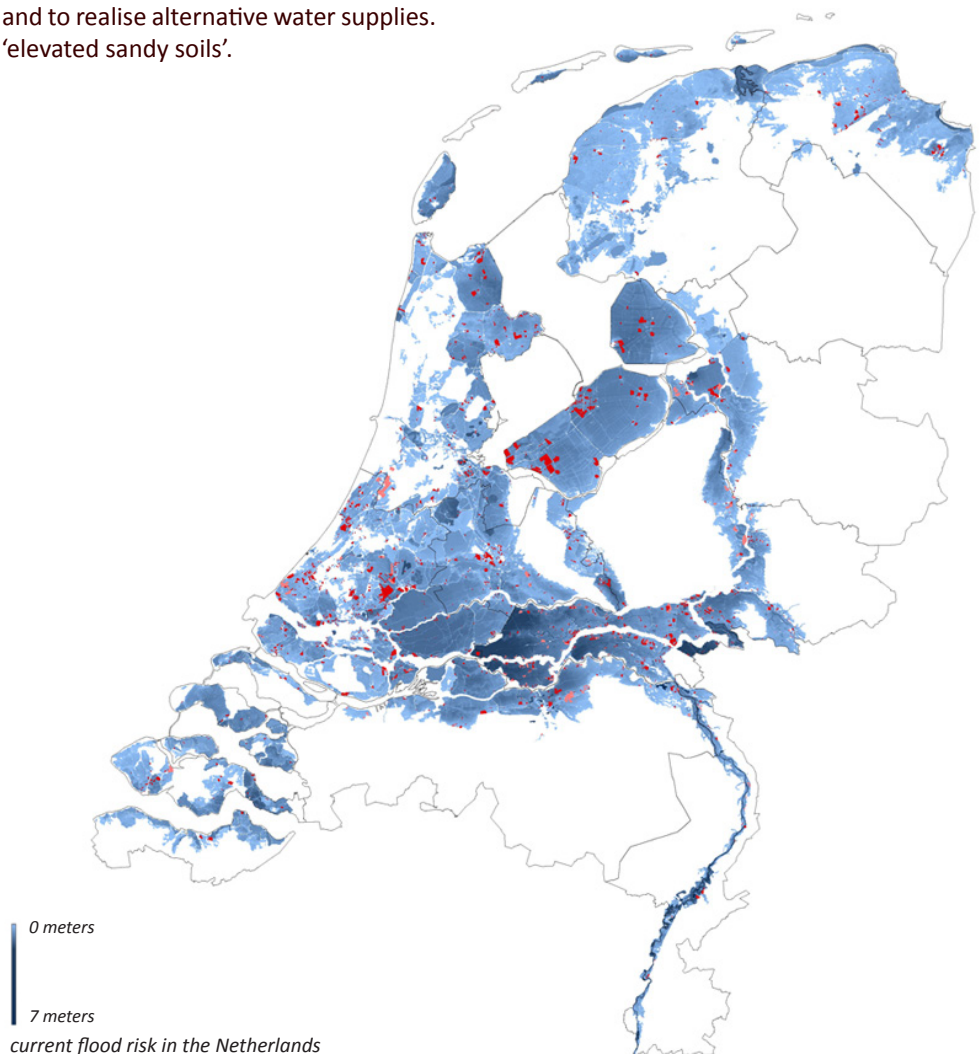
also draught is an aspect taken care of in the Deltaprogram



fresh water reserve 'IJsselmeer' to irrigate dry land.



multi layer safety



current flood risk in the Netherlands

Long term vision Randstad 2040

'Randstad' is not a very familiar name like Tokyo or London, but it is something like a city. It represents the combined metropolitan conurbation of Amsterdam, Rotterdam, The Hague, and Utrecht with their surrounding cities in the Netherlands. This is one of the most densely populated areas of North Western Europe, containing some 7 million inhabitants. Economically speaking it is the most powerful region of the Netherlands with a mixed urban service economy, strong ports, and large agriculture and distribution sectors. It is also a region that is situated mostly below sea level, and prone to flooding from the rivers. In 2008, with the 'Randstad 2040' vision the Dutch government presented a vision on future challenges and long term strategies for the Randstad, to be able to prepare for an internationally competitive economic development, an attractive living environment and a sustainable future. Since then, the goals of Randstad 2040 have been integrated in a whole range of structure visions and development plans and programmes.

Goals of Randstad 2040

Still today there are many conflicting spatial claims, for living, working, agriculture, for accessibility, flying, for water storage, heritage, landscape, energy, etc. At the time, reasons to make such a vision were the deterioration of living conditions as a result of all these conflicting interests, climate change, accessibility problems and decreasing competitiveness. In the words of the OECD: on the short term traffic congestion, housing market, and governance, and on the long term economic growth, climate change, energy supply, and water safety. Regional goals were to create attractive regions with a high quality of life, good accessibility and powerful cities. At the national level the goal was to create an attractive, safe and climate resilient delta with a strong economy.

Design as method and balanced governance

The use of scientific data, research, dialogue and building alliances are key elements of creating a long term vision with the 'Dutch Approach'. Design was used as tool for research and communication. Design ateliers were set up to develop extreme models for discussion and exchange of viewpoints; one for studying water and green, one for networks and one for urbanisation. Public participation was organised through meetings, public debates and internet forums. The governmental planning structure and related legislation were adapted to get a clearer demarcation of responsibilities, a more effective implementation, but also to be able to use local knowledge and to improve regional and local support and enthusiasm.

Amsterdams 'Zuidas'

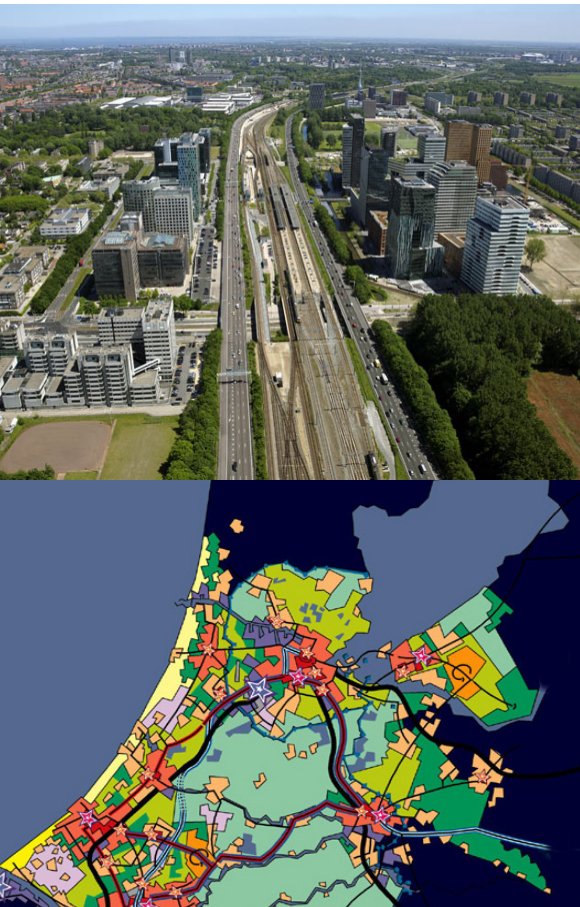


image from Randstad 2040-studies.

Randstad 2040 brings together strategies, goals and projects in different fields of expertise

1. Subsoil: water management and landscape development Improve and develop delta water management, water security and safety, nature, landscape, and metropolitan parks
2. Networks: economic development, infrastructure, accessibility. Focus on Amsterdam metropolitan area, Rotterdam The Hague and Utrecht, and Randstad as a whole, reinforce existing international and regional infrastructure networks for rail, road, (air)ports and extend high speed rail network, harbour network and airport network
3. Occupation: living and working environments, cities and transit oriented development Strengthen existing cities, accommodate expected growth by focussing on inner city intensification, station area development, improve quality of the living environment
4. Key projects and alliances: Port cooperation, urban transformation

Dutch approach to Smart city planning

Margot Weijnen

The metabolism of cities

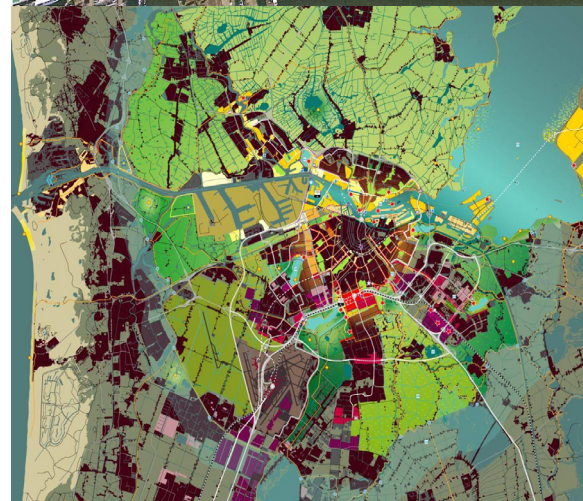
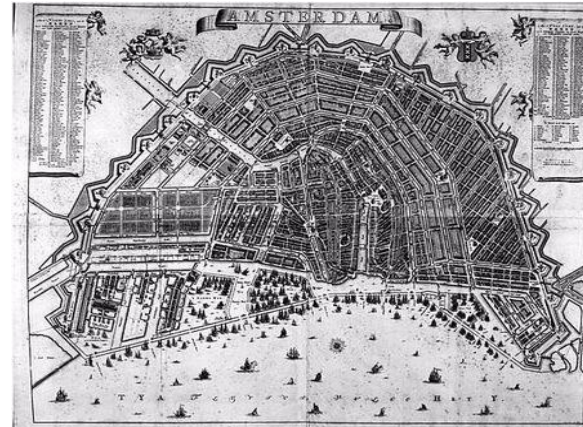
Infrastructure systems are of vital importance for cities. Throughout history it can be seen how natural infrastructure dictated the sites where successful settlement could occur, how manmade infrastructure was designed to protect cities from harm if sufficient natural protection is lacking, and how modern infrastructure networks emerged to sustain the urban population and the economy. Modern cities cannot function without infrastructure networks for energy, water, waste and waste water removal services, transportation, information and communication services. The city is like an organism, with infrastructure systems providing the skeleton, the nervous system, the arterial system, and the metabolic pathways.

Cities are very robust systems

However, the city is more than a metabolic system. A successful city has a strong identity which defines its attractiveness to talented people and new businesses. Successful cities are incredibly robust systems: building on a strong identity rooted in history, they are able to continually re-invent themselves and adapt to changing conditions. Smart city governments have recognized infrastructure systems as a means to re-create and emphasize their cities' identity, therewith stimulating new economic development and creating better quality of life for their citizens. The Dutch approach to smart city development hinges on the integration of spatial planning, intelligent and robust infrastructure development, appropriate governance and business models, and last but not least, the socio-cultural dimension that defines the city's identity.

Cities are leading the transition

Two examples from the Netherlands are illustrated: the cases of Amsterdam and Eindhoven. In the fascinating world of infrastructure systems, many cities are seen to be re-defining their roles. Rather than leaving infrastructure planning to the national government, municipal governments are taking the lead. They forge alliances with public and private infrastructure providers and incumbent industries to provide smarter infrastructure services and to create physical space and facilities for experiments. In smart cities, infrastructure development responds to the needs and concerns of the citizen. A smart city is socially inclusive, with infrastructure services that are affordable, accessible and acceptable for all citizens. A smart city is also a digital city, providing open data and communication platforms that invite all citizens to participate, thus creating a strong sense of community. In short, infrastructure systems are part of the key for municipal governments to create added value for their citizens, in terms of welfare and wellbeing.



*Challenge:
how to create energy and support for smart city initiatives*

Smart City Amsterdam

The characteristics of the 'Dutch Approach' are also recognizable in planning Amsterdam Smart City. Amsterdam Smart City, or ASC, is a unique collaboration between the inhabitants of Amsterdam, businesses and governments in order to illustrate how energy can be saved, now and in the future. This is accomplished by forging alliances and stimulating bottom-up initiatives. Together they share information and develop a new way of looking at existing problems. If possible, existing regulations by the government are changed when this is needed to make progress. ASC has grown into a broad platform, with more than 70 partners that are involved in a variety of projects focusing on energy transition and open connectivity.

Accelerating climate and energy programmes

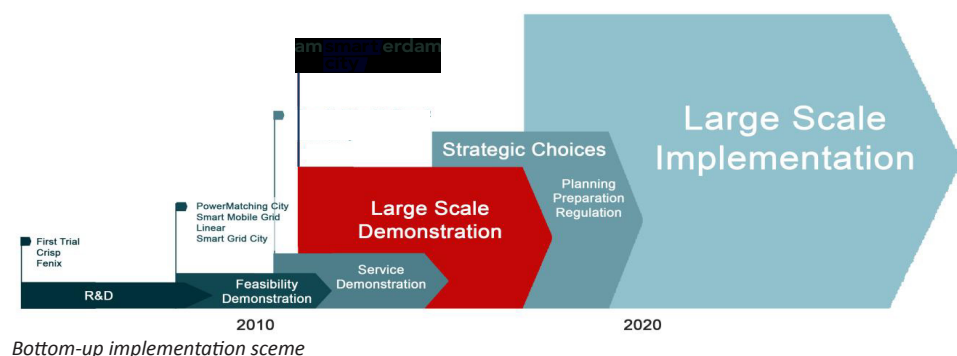
Using a collective approach by bringing partners together and setting up local projects, ASC makes it possible to test new initiatives. The most effective initiatives can then be implemented on a larger scale. All the acquired knowledge and experience is shared via the ASC platform. In this way, ASC helps to accelerate climate and energy programmes. The ultimate goal of all activities is to contribute positively towards achieving CO2 emission targets, as well as aiding the economic development of the Amsterdam Metropolitan Area. In doing so, the quality of life will improve for everyone.

In 2012, Amsterdam wins the World Smart Cities Award – as a result of its open data policy in transport and traffic, incl. real-time traffic data on main routes



Amsterdam Smart City is the total sum of

1. testing innovative products and services
2. understanding the behaviour of the residents and users of the Amsterdam Metropolitan Area
3. sustainable economic investments.



Challenge:
How to curb declining industry and shrinking population

Smart City Eindhoven

Brainport Eindhoven Region is a specific example of the Dutch Approach because it applies the principles of the Dutch Approach to achieve technologic and demographic improvement. Eindhoven has been a city focussed on technology since Philips - which was founded here in the late 19th century - and other companies like the DAF automotive industry, played a big role in the development of the city. This was illustrated by the founding of the Technical University Eindhoven in 1956. In the early nineties, Philips - and with it the city of Eindhoven - were in serious trouble because of severe global competition. At that time, Philips' research activities were scattered throughout the city of Eindhoven and the city lost many inhabitants to villages and competing regions in the Netherlands and abroad.

High Tech Campus

In 1998, the decision was taken to intensify the focus on technology by developing the 'High Tech Campus', an R&D initiative by Philips which evolved into a powerful innovation hotspot after Philips opened up their existing facilities to other companies in order to share knowledge. Nowadays, the campus occupies around 100 hectares and houses more than 100 companies (Philips, Océ, Fuji, NXP, ASML, Intel, IBM, etc.) with over 8000 researchers of 50 different nationalities. These companies not only compete, but also cooperate on new innovations at the edge of what is technically feasible. Together they are responsible for over 50% of patent applications in the Netherlands.

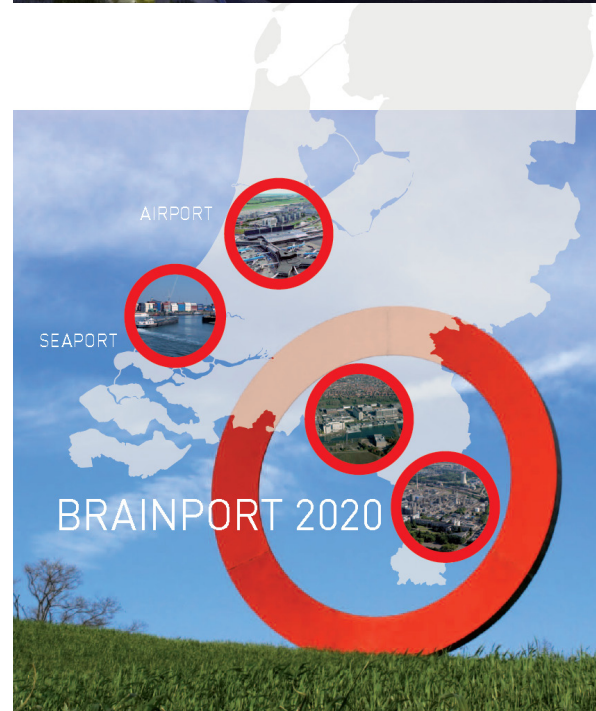
Brainport 2020, top economy, smart society

Today, the campus is the heart of Brainport 2020, a national strategy to further develop this region -including the chemical cluster further south- into a smart and innovative hot-spot with a focus on cross-border links to Belgium and Germany. Over 30% of the nation's budgets on R&D go to Brainport Eindhoven. The South-eastern part of the Netherlands, with Brainport as core technology centre, is responsible for 35% of all national exports, 45% of all private R&D investment and 55% of the patents. With this technological development, the city of Eindhoven has developed an increasingly successful way to cope with a potential decrease of the region's population by attracting (inter)national young talents to the city.

In 2011 the Eindhoven region was declared "smartest region in the world" by the Intelligent Community Form.

Sharing of research infrastructure at High tech campus

1. 20,000 m2 multi-purpose labs & clean rooms, reliability lab, electromagnetic compatibility (EMC) centre, RF/DC measurement lab
2. 15,000 electronic instruments for hire
3. 3500 m2 pilot factory
4. Ample social and sports facilities
5. Ecological quality and promotion of sustainable business practices.



share in the Netherlands



population
18%



foreign
investments
25%



researchers
26%



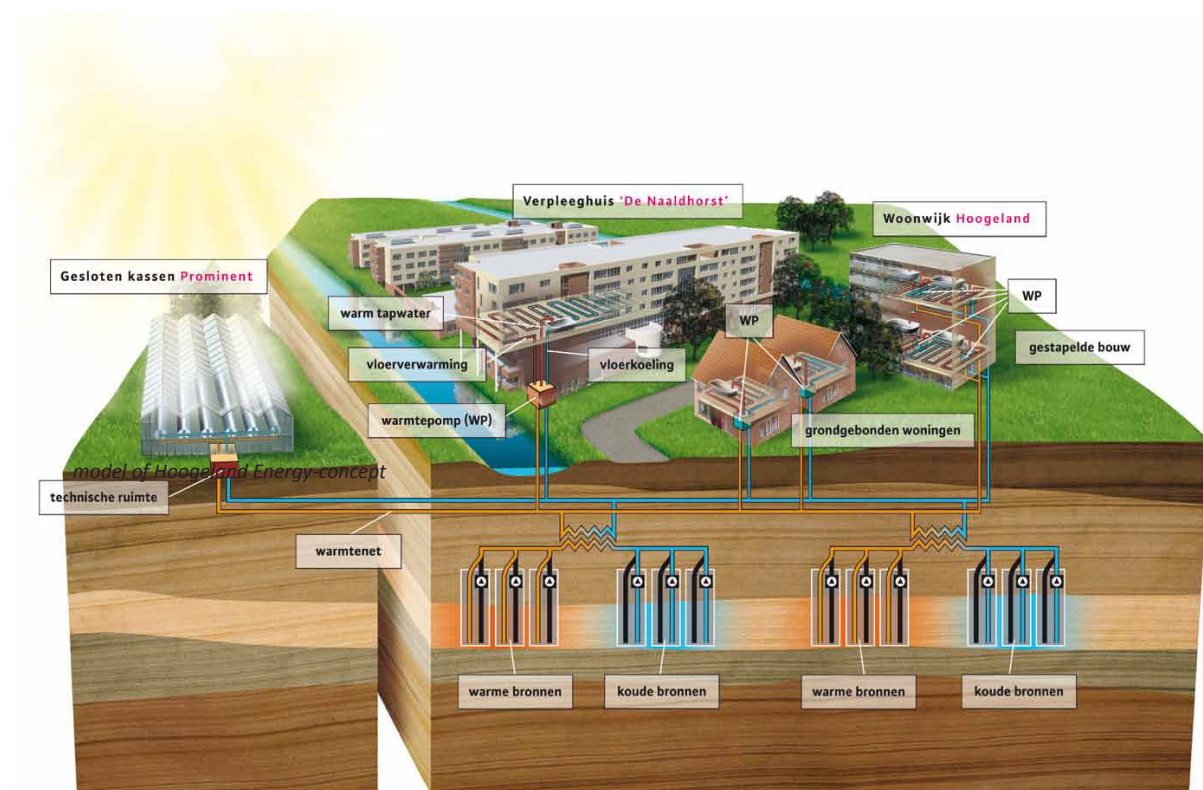
export
35%



private R&D
45%



patents
55%



Challenge: Use agriculture as supplier of energy

Hoogeland Energy Concept

Dutch approach to smart agriculture

The Hoogeland residential district in Naaldwijk, a town in the dutch greenhouse area, is the first housing project in the Netherlands where the houses are completely heated and cooled with surplus energy from the nearby greenhouses.

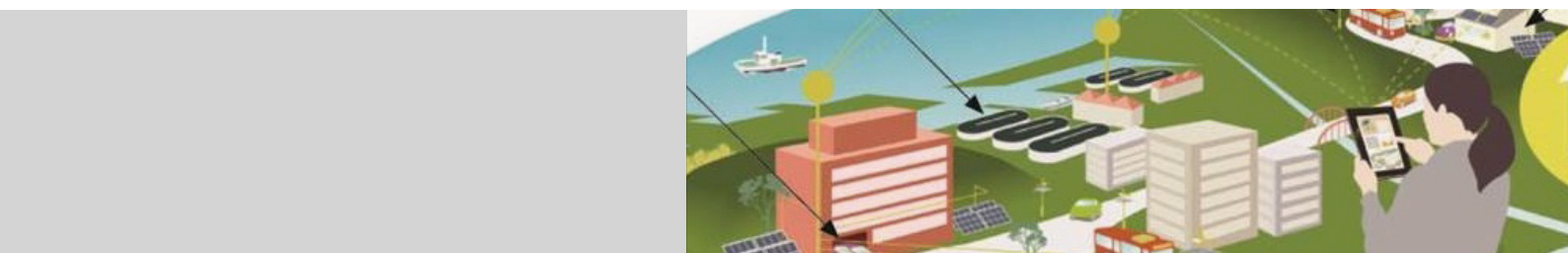
a regular greenhouse produces 5 times more heat than what is needed for producing the crops. This heat would normally be discharged by opening the greenhouse-windows. In Hoogeland however, this heat is stored by pumping heated water into underground layers. In wintertime, this warm water is extracted from the ground and used to heat the nearby houses.

after all heat is extracted, the water goes back into the ground again until the next summer, when it can be used for cooling the houses as well as the greenhouses. By using closed systems with heat-exchangers, the warm water can also be used as tapwater. No fungi or fertilizers from the greenhouses can get into the closed water-system of the houses.

This project is not only driven by an attempt to lower energy-consumption. The Farmers make an extra income out of the energy they deliver to the housing-project, which makes it a truly sustainable concept.



Surplus energy from greenhouses is used to heat nearby houses





A Japanese-Dutch exchange of ideas

on multi-disciplinary challenges in planning



Japan's multi-disciplinary challenges in planning



The experience with the Great East Japan Earthquake and Tsunami of 11 March 2011 has changed the public image of Japan. Together with the accident at the nuclear power plant, this caused a big change in the Japanese energy policy and approaches taken to date. While working to reconstruct the areas afflicted by the Disaster, the most important mission of developing social infrastructure, is “protecting public safety and security”, but in view of the recent events, this is not the only challenge. Planning reconstruction will serve as a test of how the Japanese Government can promote building a sustainable, vigorous homeland and communities throughout Japan while faced with population decline, aging, fiscal restraint, energy constraint, and natural disaster risks. With these conditions in mind, dealing with major environmental issues and improving global competitiveness are equally important.

General policy on introducing low-carbon society

In order to advance initiatives for a low-carbon society, the Ministry will display its comprehensive strength to give shape to what should be used as environmental performance standards for houses and other structures, means of transport, and public facilities, which constitute local communities and national life. Furthermore, by combining these into a package of towns, houses, transport facilities, and other factors, it will promote energy creation, storage, and conservation for entire urban areas.

An overview of the new values and related policies

1. realisation of sustainable society: by construction of low carbon and recycling oriented society, and by enhancement and intensification of regional life and economic functions.
2. Ensuring of security and safety: by disaster – resistant housing and regional development, and by proper maintenance, control and renewal of infrastructure.
3. Economic vitalisation by expansion of demand by utilising personal assets etc., and by taking private sector funds and knowledge into public sector.
4. Enhancement of international competitiveness and presence: by overseas development of Japan's fields of expertise and international contributions, and by promotion of infrastructure development for international competition.

Interdisciplinary and intergovernmental collaboration

Because of the many interrelated planning issues, the MLIT is advancing new initiatives to ensure sustainable and energetic national land and regional community development by establishing closer cooperation among different departments in its organizations, with related government agencies, and with regional communities while taking into consideration changes in the national awareness caused by the earthquake.

Future environmental cities

Before the earthquake, as part of its New Growth Strategy, the government had worked out a plan to create future environmental cities, and under this plan, it had intended to generate the world's highest class of success examples in the development of technology, systems, and services and in city planning for the future and disseminate them throughout the country and to the rest of the world, but it also included this plan in the Strategy for Japan's Reconstruction, which was adopted after the earthquake. Major companies like Toshiba, Mitsubishi HI, Hitachi and Panasonic are investing heavily in smart city projects implementing state-of-the-art technologies.

Low carbon cities with reduced environmental impact

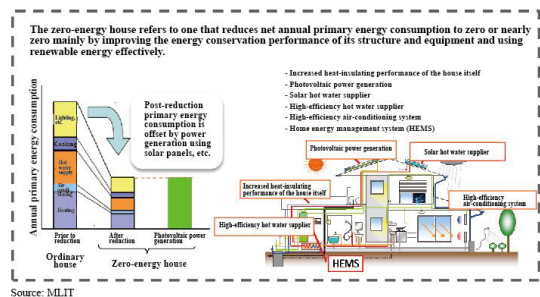
Six municipalities in the stricken areas among which Kamaishi City, Iwate Prefecture, were chosen as model future environmental cities, and they are expected to build exemplary future environmental cities and spread them throughout the country. In view of the on-going drastic review of city planning triggered by the earthquake, MLIT also aims to establish disaster-resistant land use and transport systems with disaster-prevention and disaster-reduction functions added to them - its top priority issue - and work



Other measures to promote sustainability, community, quality of life, and security

Houses form the basis of our livelihood, it is important to develop and maintain favourable residential environments and beautiful streets while securing the safety and disaster-resistance in urban areas. From the perspective of deepening the relationship between schools and community development, the environmental consideration, and the disaster-prevention, the MLIT will enhance and promote coordination between restoration of schools that were hit by the great east Japan earthquake and the community development. More specifically, the MLIT will collaborate with the Ministry of Education, Culture, Sports, Science and Technology and the Ministry of Agriculture, Forestry and Fisheries to promote measures such as the securing of safe and secure location for community and school, the combining school facilities and public institutions, the development of eco school which promotes the zero energy and lignification, etc., and the development of community disaster prevention and evacuation bases.

Chart. 71 Conceptual Diagram of a Zero-energy House

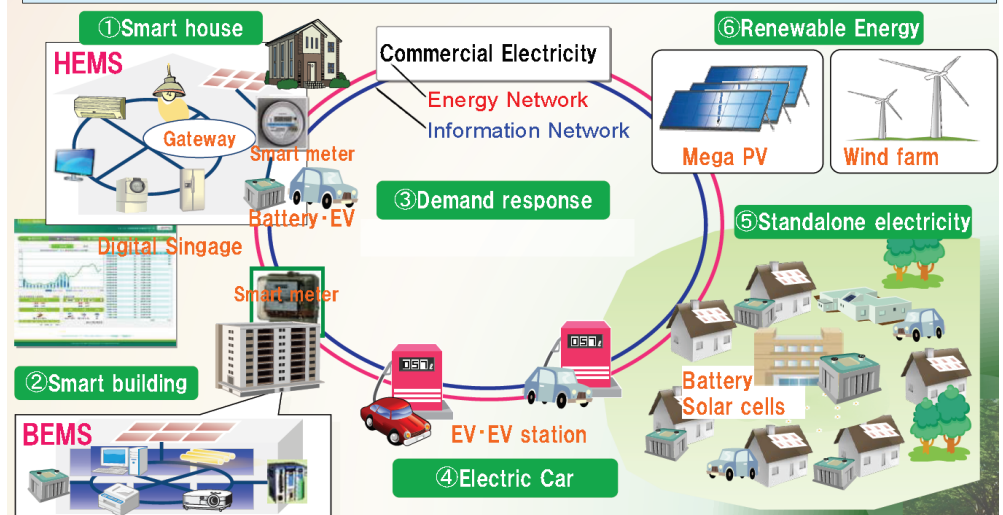


Energy measures to realise future environmental cities

1. Intensification of urban functions, promotion of public transportations, etc.
2. Promotion of management of green space and use of unused energy, etc.
3. Introduction of low-carbon buildings

Construction of Smart Community

1. Coupling of Energy & ICT (Integration Communication Technology)
2. Construction of energy network based on renewable energy
Self-production & Self-consumption of renewable energy
3. Save energy & Save CO2 output using ICT.

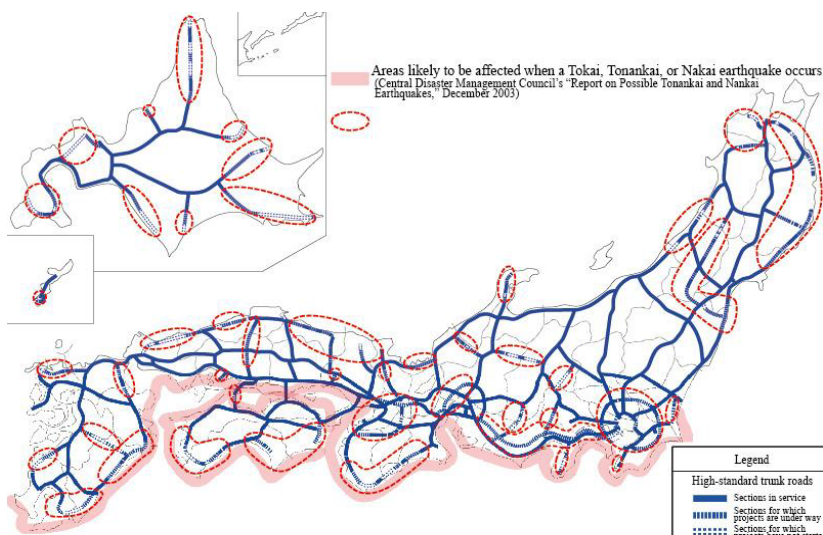


Before starting the Smart Work Week and workshops, it is good to know current progress in planning and reconstruction. Most reconstructions of coastal and river defence systems, sewage systems, roads, railways, airports and seaports will be completed before April 2013. Parts that were severely damaged - for example by the tsunami - are expected to be reconstructed before April 2016. Also most measures against sediment disasters will be completed before April 2016. In areas where tsunami are assumed to occur, construction of levees of the necessary heights is scheduled to be generally completed in 2017.

*Based on 'WHITE PAPER ON LAND, INFRASTRUCTURE,
TRANSPORT AND TOURISM IN JAPAN, 2011'
by the Japanese Ministry of Land, Infrastructure, Transport and Tourism
(MLIT)*

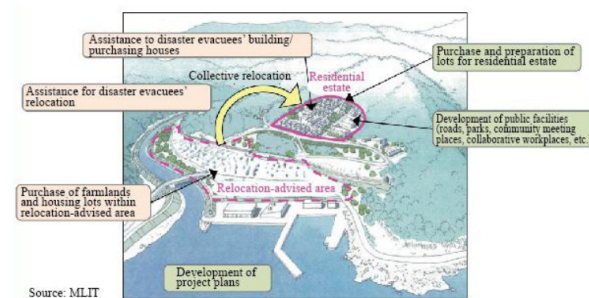
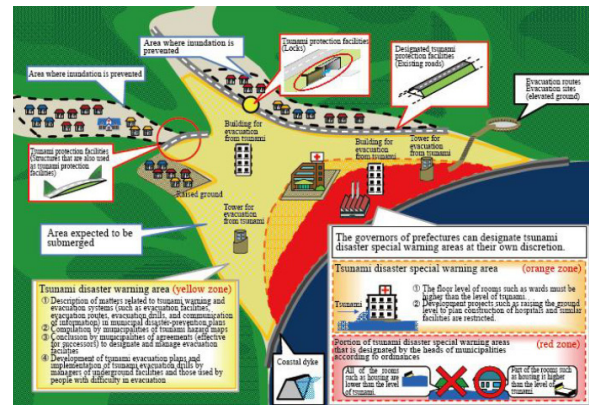
an overview of recovery planning and main reconstruction principles and projects

1. improvement of urban areas
2. relocation to uplands from coastal areas and improvement of communities
3. improvement of emergency transportation roads and evacuation roads
4. improvement of rainwater drainage and water and sewage facilities
5. development of parks for disaster prevention and for symbolizing reconstruction from the Disaster
6. elevation of trunk roads
7. development of river and seas
8. development of tide-prevention forests.

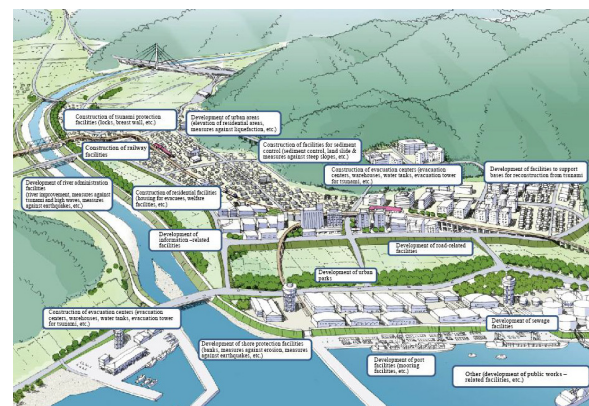


reconstruction of infrastructure, source: MLIT

conceptual diagram of Development of Tsunami-resistant communities (source: MLIT)



Accelerate collective relocation for disaster prevention.
(source: MLIT)



reconstruction plans, source: MLIT

The Kamaishi Smart Work Week

Themes and challenges

The Japanese policy on reconstruction also gives a good indication of the civil engineering measures that are required in the reconstruction effort of Kamaishi. Apart from the general aims to ensure security and safety, the overall policy demands economic vitalisation, enhancing international competitiveness, and the realisation of a sustainable society. To achieve this, Kamaishi adopted the construction of a low carbon and recycling oriented society (port), and aims to enhance and intensify regional life and economic functions. This diversity of goals requires an optimal collaboration between civil engineers, architects and urban planners, as well as an optimal communication with and among the different ministries and government bodies.

Improving disaster science: the IRIDeS organisation

Support amongst the communities for the reconstruction plans is very important, but not always easy to achieve. It appears that in spite of the apparent engineering qualities, not many communities are happy with their present master plans since often they consider it unclear how they are compensated or they don't see that the everyday qualities of life are provided for. How to improve disaster science and disaster mitigation is the reason why Tohoku University founded the International Research Institute of Disaster Science IRIDeS. This organisation not only conducts research, it also helps local communities to improve the quality of reconstruction plans, and the planning authorities to improve local support.

Curbing demographic trends

The new energy policy that has been developed by the Japanese government is very relevant in relation to the reconstruction. Tohoku aims at substantially increasing the production and use of renewable energy, for environmental reasons, but also to create new economic activity in the region and to attract businesses and people. There are good reasons for this policy. The demographic trends in the Kamaishi region show a steady decline in the number of inhabitants, from around 90.000 in the mid-sixties to 38.000 around 2010. In the same period the percentage of elderly rose from 3.4% to 33.5%. Curbing these trends by making an attractive, smart and prosperous region is one of the main ambitions of all reconstruction plans.



site visits and workshops at the Kamaishi Smart Work Week

Kamaishi's ambitions are

1. a green environment, comfortable living
2. work and satisfying lifestyle
3. a thoroughly networked society to allow for exchange of people, goods and information
4. Smart Community Concept in Kamaishi

Kamaishi future city

An important ambition is to reduce the dependence on traditional power sources by adopting the 'Smart Community Concept in Kamaishi'. This concept is adopted to increase production and use of renewable energy and create jobs, but also to become independent from the national grid in case of disaster. The decision to adopt such a strategy was the final step in a series of smaller decisions to stimulate the region's shrinking economy with sustainable economic initiatives. In 2003, the shipping port of Kamaishi was designated as recycling port, in 2004 Kamaishi was certified as Eco Town District, in 2009 it was designated as depopulated region, and finally in 2011, Kamaishi was selected by the Japanese government as a Future City.

The Kamaishi Smart Community Master Plan Development Project

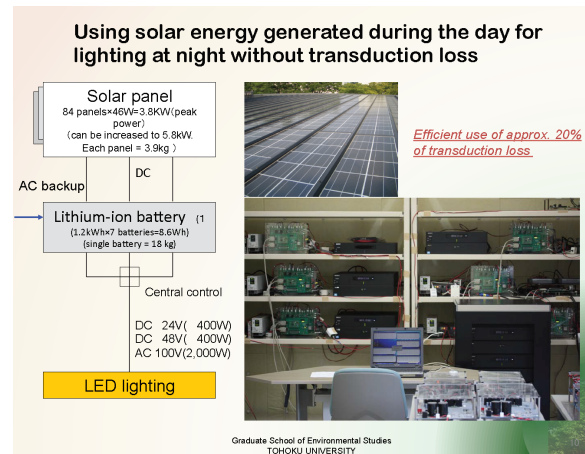
There is a lot of potential to develop the Smart Community Concept in Kamaishi: for example a biomass power plant and the Wayama wind farm can be developed, an old mine can be used for power storage, and the waste disposal centre can be improved to produce energy from waste and biomass. Several projects have been identified: the development of a Smart community model project, an energy management system, the introduction of independent, renewable energy in public facilities/disaster prevention centres, an initiative for creating new employment opportunities by introducing biomass production and shiitake farming, the creation of a hub for ocean energy (wave energy and floating wind farms), and the Kamaishi Smart Community Master Plan Development Project.

Ecollab

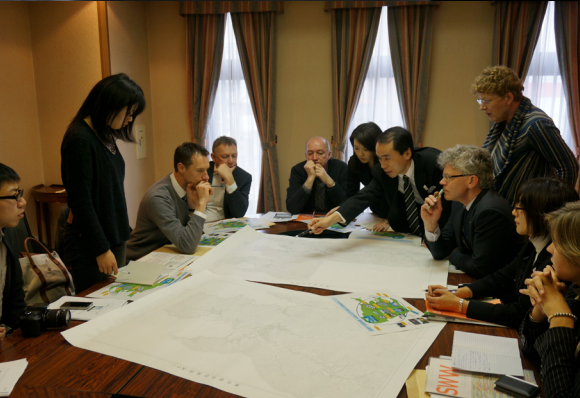
Individual buildings can generate and store the energy that is needed for their independent functioning, but the required technology for large scale implementation is still in the development phase. Development of such technology is the goal of Tohoku University's test project 'Ecollab'. The name - 'Ecollab' - is a combination of the words 'ecology', 'collaboration', and 'laboratory'. Ecollab is an experimental zero energy building that was opened in June, 2010. The concept of Ecollab is "Harmony of Nature and Advanced Technology". Effective use of nature is possible through effective use of natural light, effective use of wood, and natural air ventilation. Advanced Technology can be applied in humidity control walls using advanced materials, and in a DC low voltage power supply system with large scale Li-ion batteries of 12kwh, using solar energy generated during the day for lighting at night, without transduction loss.



'Ecollab'



Ecollab technology



site visits and workshops at the Kamaishi Smart Work Week

Smart communities

After the disaster, all cities supported a re-construction plan to create a smart city based on renewable energy. Ecollab technologies are able to contribute to this re-construction with developed versions of so-called new building energy management systems. These systems are a combination of hardware (batteries, inverter, converter, lighting, EV charger, solar panels etc.) and software systems. These systems can be up scaled to create Smart Communities. It requires integration of Communication Technology in electricity production/consumption, the construction of an energy network based on decentralised production/consumption of renewable energy, and saving energy and saving CO2 output using ICT.



The Kamaishi Smart Community Master Plan Development Project

based on lectures by and discussions with Mr. Naoyoshi Yamada the Director General of the Tohoku Bureau of Economy, Trade and Industry, Professor Kazuyuki Tohji of Tohoku University, Mr. Takahiro Sasa of the Industrial Development Division of Kamaishi City, Professor Akida Kurosaki of the Institute of Industrial Science, University of Tokyo, Department of Mechanical and Biofunctional Systems, Prof. Yasuaki Onoda from Irides and Department of Architecture of Tohoku University, Prof. Toshikazu Ishida of Tohoku University, Assoc. Prof. Katsuya Hirano from Irides, Assoc. Prof. Michio Ubaura from Irides, Faculty of Architecture, Assoc. Prof. Yuzuru Isoda from the Faculty of Engineering, Jeremy Bricker from Irides, Prof. Makoto Okumura from Irides +and Faculty of Civil Engineering

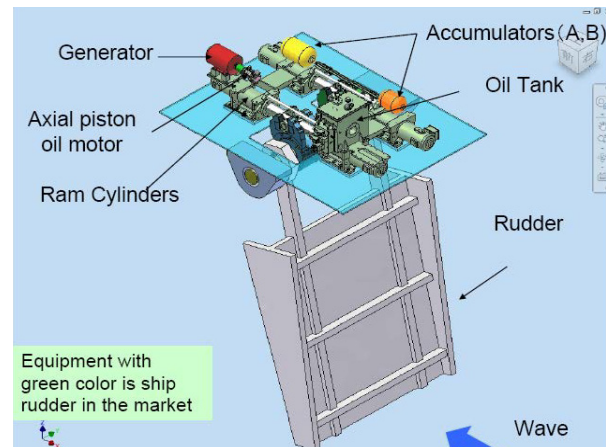
Tohoku University Environmental Energy Project

The core institution of Tohoku University has held 7 disaster forum to evaluate the real conditions of stricken areas and consider recovery strategies. On November 17 2011, together with Tohoku localities and universities nationwide, the Tohoku Recovery Clean Energy R&D Symposium was held addressing next-generation energy and its application. The University of Tokyo suggested the use of wave and tidal energy in Kuji city, Iwate Prefecture and Shiogama, Miyagi Prefecture.

With a National Renewable Energy Centre Kamaishi could become an advanced testing environment for Marine Energy (Wind, Wave); University Tsukuba and Tohoku University group put forth proposals for algae biofuels for Sendai city. Tohoku University and Tokyo University group created a Biomass Town concept for Ishinomaki, Miyagi Prefecture and proposals for geothermal energy (there are many hot springs in Osaki city, Miyagi Prefecture.)

Architecture for an indispensable mobility-capable local energy control system was also laid out in a project that brought together plans for green energy. The ultimate goal of the project is that the policies and strategies created by a consortium of universities and local governments will lead to concrete, substantial contributions to recovery.

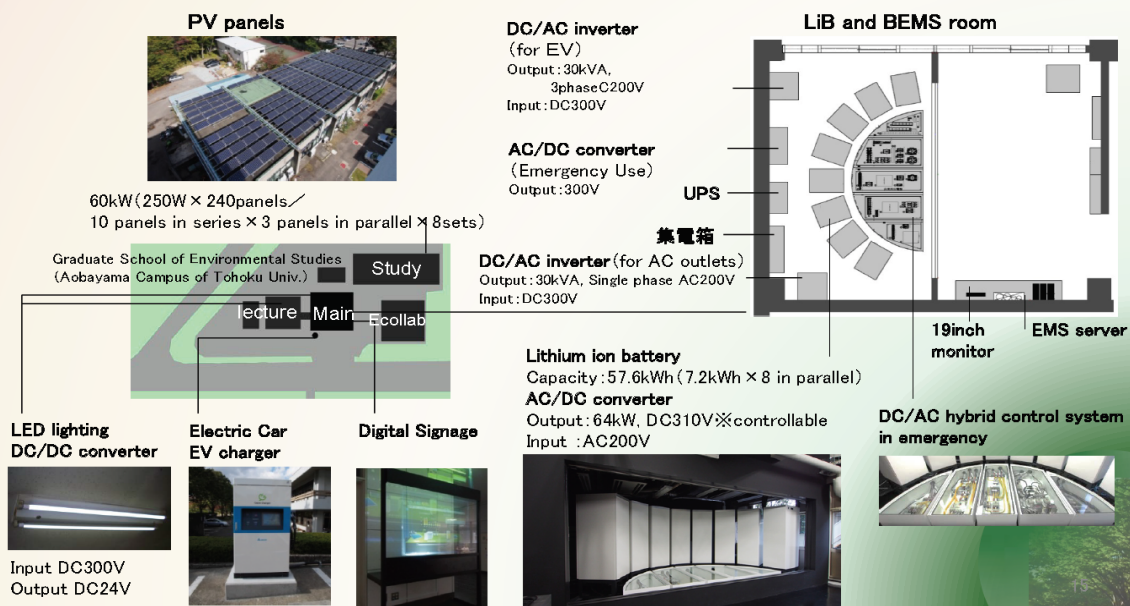
Wave energy



Floating windfarm

New Building Energy Management System(Hard ware)

I. Instrumentation



Workshop Smart City 1: **Unosumai**



sitevisit Unosumai

The workshop started with an explanation of both the damage by the earthquake and tsunami, and the reconstruction plans. Before the disaster, Unosumai had a very beautiful green forested valley with a beautiful beach. A lot of tourists visited this place even though the numbers decreased a little over the past few years. Recreating this aspect of the city's attractiveness is one of the important challenges.

The current reconstruction plan

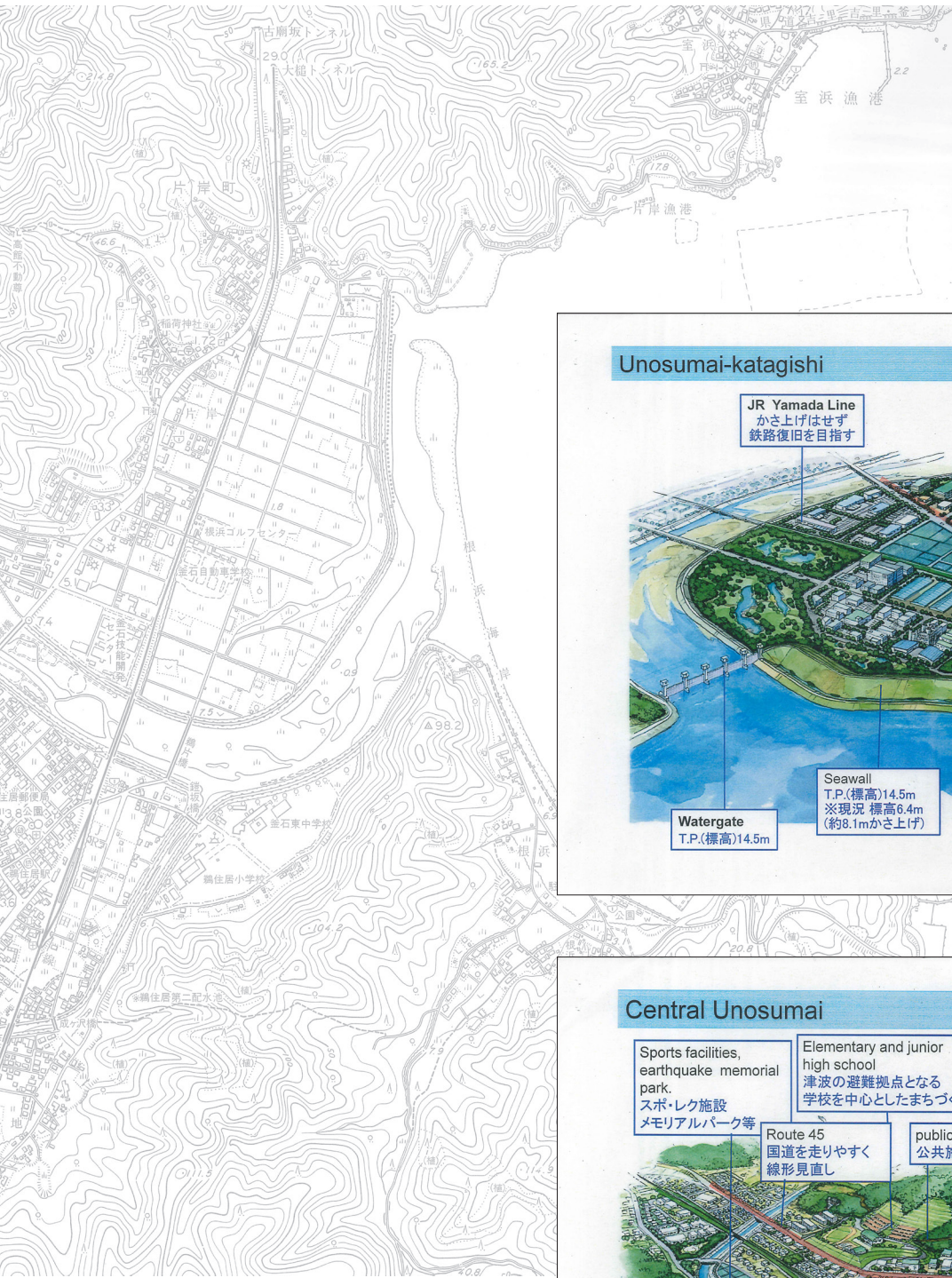
According to the existing reconstruction plan, the infrastructure of the Yamada line, the railway station and trunk road route 45 will be reconstructed, and the houses and residential areas with local roads and evacuation routes will be rebuilt at higher levels to prevent future flooding. The elementary school and junior high school will be situated next to the city hall and public facilities, and they will function as community and calamity centre during emergencies. Other elements in the reconstruction plan are offices, stores, an earthquake memorial park and a leisure park, a sports stadium and industrial sites. And of course the plans for the development of improved river and sea levees and water gate.

Creating an attractive city

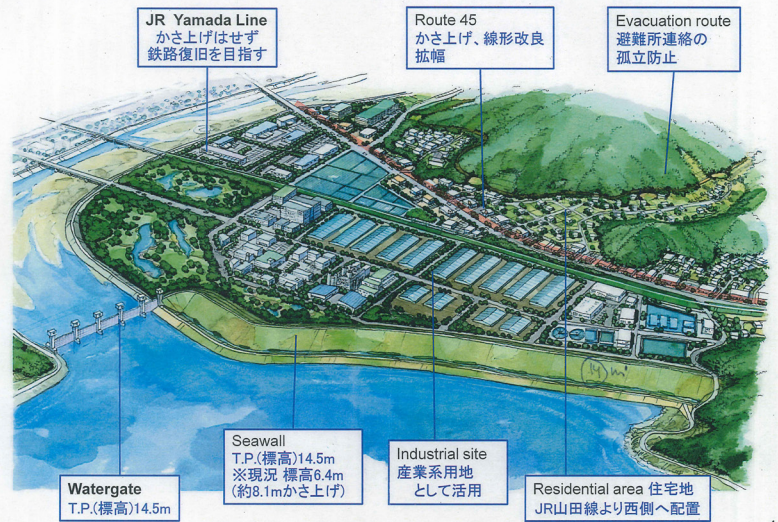
One of the most important issues is the question how to rebuild the economy and how to attract new inhabitants. As explained earlier, creating a vibrant smart city is the most important part of Kamaishi's strategy to achieve this. Current proposals are to develop a woody biomass manufacturing industry and industries that use renewable energy. One initiative is to build a shiitake mushroom factory that uses woody biomass for electricity generation. Next to this, tourism can be revived by restoring natural beauty, and by creating the earthquake memorial park, a multipurpose park, with sports facilities and Rugby stadium. Other plans are to create entertainment facilities and a shopping mall, and attempts to host the Rugby world-cup.

Creating an attractive green valley: proposals for the area north of the river

The first part of the discussion focussed on the question how to combine the principles of the existing reconstruction plans (no time to lose) with the best possible layout of the ingredients. Aim was to look for possibilities to create more safety and security, more economic development potential, more sustainability, and more beauty and attractiveness for people and businesses. A different layout of the park – stretched along the river instead of compact next to the water gate - could improve nature, biodiversity and the green image of the valley, which would improve tourist opportunities such as walking, hiking and mountain biking at the same time. Pathways connected to evacuation routes would train people to use these more frequently, but would also offer more options for ecotourism. This would also create better conditions for sustainable water management under all circumstances. For the industrial site it would mean a different shape, not a smaller one. If the seawall would be made accessible, it would create extra attraction, especially if a beach in front of this would re-emerge (which some say might happen by forces of nature).

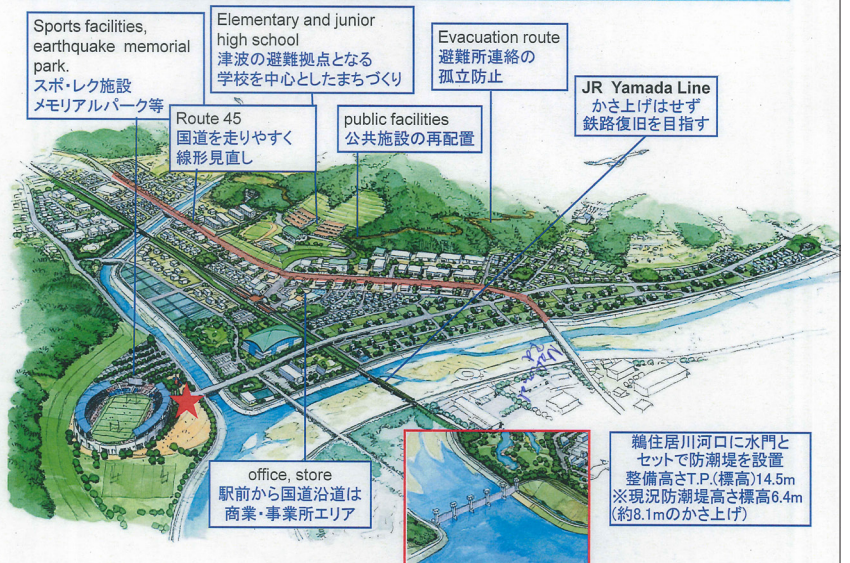


Unosumi-katagishi



4

Central Unosumi





Improvement of urban areas: intensified urban development around the station

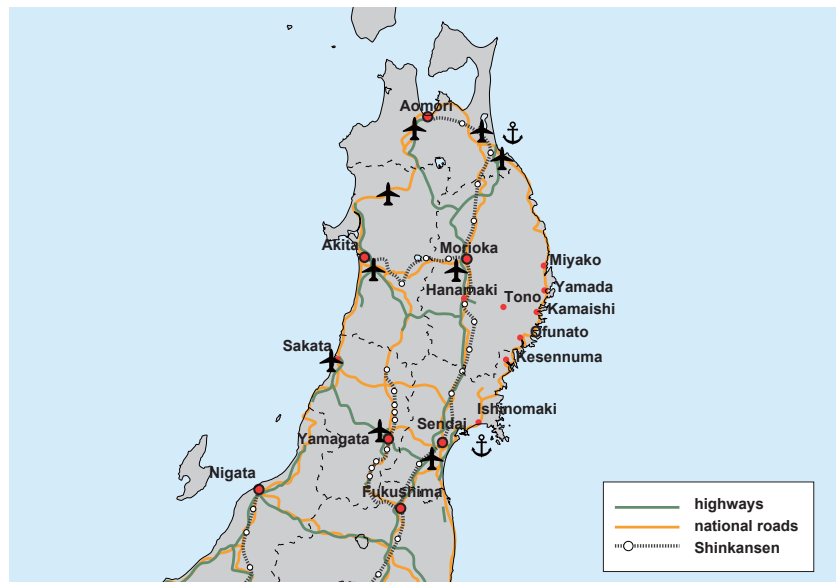
The second part concentrated on possibilities to optimise the redevelopment around the railway station of the Yamada line. The improvement of urban areas – one of the key elements in Japan's strategy for sustainable development - requires intensification of urban functions around stations, to promote walking and cycling and the use of public transportation systems. In this particular case, the new position of route 45 and the higher position of the new housing area, will create a barrier between the people of Unosumai and the railway station. This can be overcome by constructing a very attractive pedestrian boulevard - with beautiful trees and no cars - between the schools, the city hall, the housing area and the station, maybe with a bridge over the trunk road. This boulevard could also be connected to the evacuation routes, which again would make these attractive for tourists and inhabitants.

Transit Oriented Development and energy efficient transport systems

Ways of intensifying the density and functions around the station should be reconsidered to promote the use of public transport. In general, a better connectivity between different transportation networks, both for freight and passenger transport is required to develop beautiful pedestrian friendly cities and low carbon, energy efficient transport systems. Such integration of different traffic modalities into integrated mobility networks means fewer trucks in the streets, fewer cars, less CO2 in the air and more options for a healthier lifestyle.

Feasibility of the proposed industrial development and its relation with multimodal connectivity

The last part of the workshop focussed on questions of feasibility around the initiatives for low carbon, recycling oriented industrial development. Competitiveness is an important factor in the feasibility of the different proposals. All these industries need a large scale to be competitive on the world market. A large scale also means a lot of transport of raw materials and finished goods. Without properly integrated (multimodal) transportation networks, trucks will spoil streets that need to be attractive for tourists and inhabitants and a lot of CO2 is produced, but precious time is lost as well. A good multimodal connectivity (rail, road, water) is crucial for the feasibility of the industrial initiatives. At the regional scale the connectivity between different ports, main roads, rail, Shinkansen, and airports is an important condition for economic revitalisation.



improvement of the connection between Kamaishi and Hanamaki is very important for feasibility of plans

diagram of proposals to improve current plans;

1 creating an attractive valley by stretching the proposed park

2 improve watermanagement behind the seawall

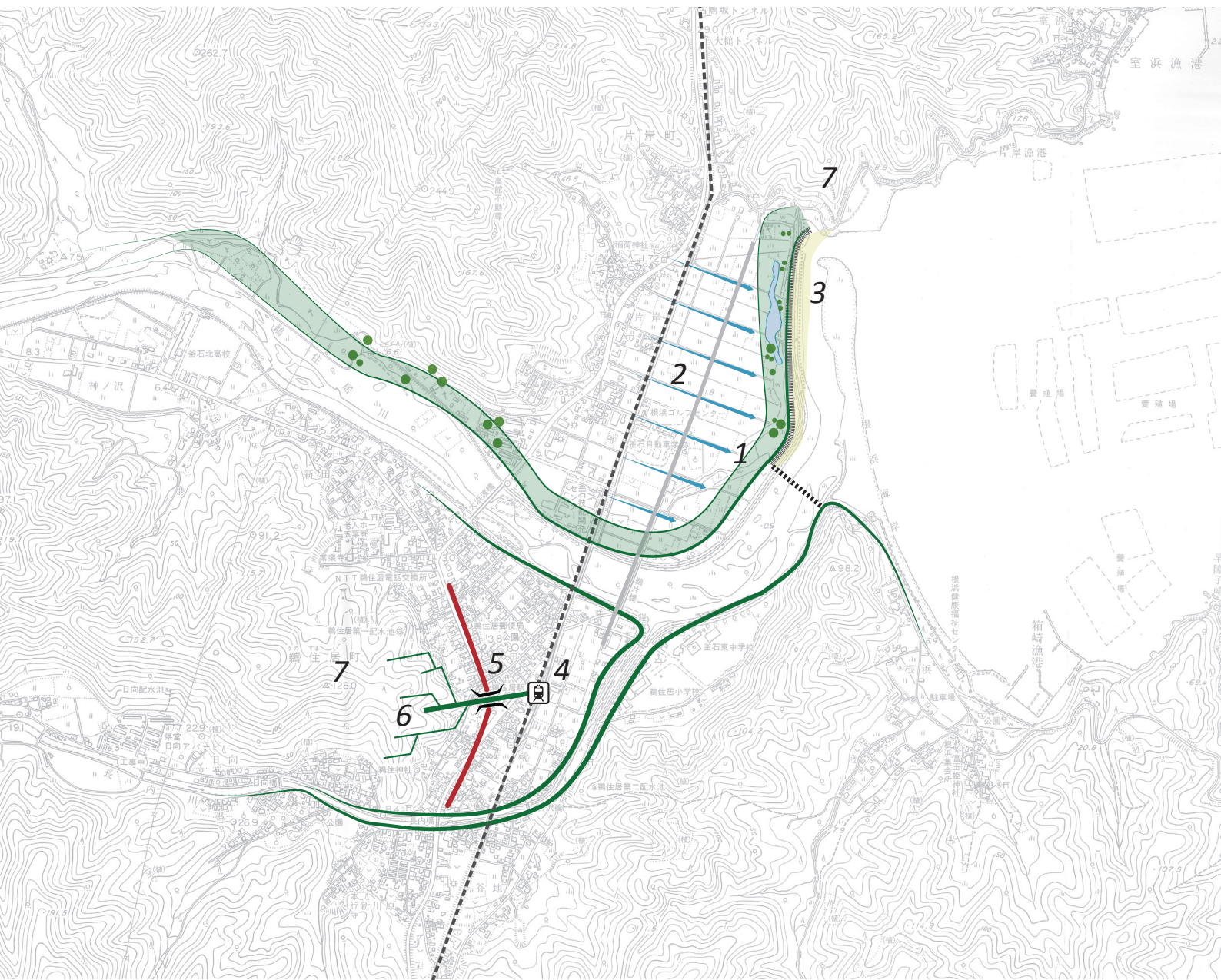
3 accessible seawall and beach regeneration

4 connecting different mobility networks for sustainable mobility; car, train, pedestrian

5 intensification of urban functions around the station

6 promotion of public transportation

7 combination of evacuation routes, a pedestrian boulevard to the station and development of tourist routes





Destruction of Kamaishi by the March 11th Tsunami

site visit Kamaishi



Workshop Smart City 2: **Kamaishi**

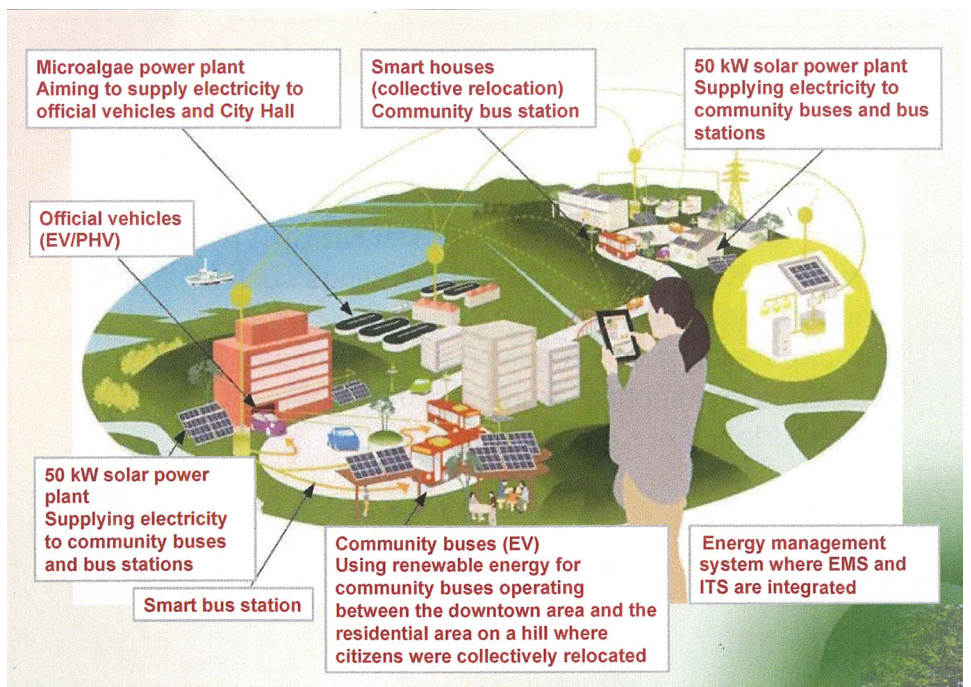
The workshop started with an explanation of *the Kamaishi Smart Community Master Plan Development Project* and a range of smart city components of that project. The question how to enhance implementation of this project raised quite a discussion. Some maintained that the main challenges and obstacles are not technological or spatial, but of a political, financial and cultural nature. Integration of these projects in the Smart Community Plan and implementing them in the actual reconstruction, at this stage seems to be very challenging and complex. Some participants were doubting whether the required public support for these projects was available at this stage and some were questioning the compatibility of the new business opportunities with current business activities in Kamaishi.

Experimentation zone, public support, open data and bottom up initiatives

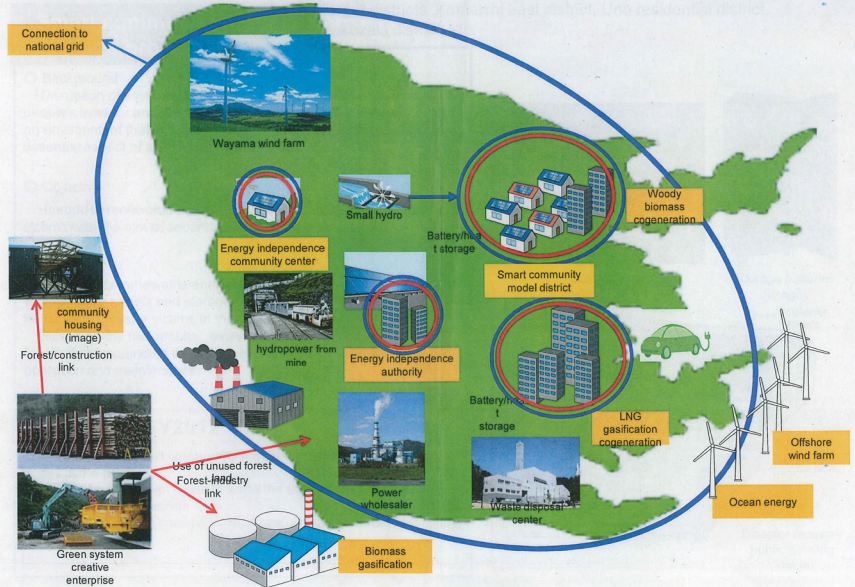
After a brief discussion it was clear that implementing such complex projects requires an intensive process of informing the public, a lot of communication with stakeholders and education of younger generations and families. Also more insight into the business case of the individual projects and commitment from potential partners in alliances is needed. For some technologies, for example decentralised power generation, a special experimentation zone might be required to overcome current legal or business obstacles.

Comparable experiences in Amsterdam

These obstacles and experiences seem very similar to comparable challenges in the Netherlands, specifically in Amsterdam. In that city, creating an open environment with open data, room for bottom-up initiatives, awards, pilot projects and room for experimentation with government rules, proved to be a better way to persuade the public and generate business initiatives than previous top down initiatives that failed. Next to this, education, communication and discussion appeared to be indispensable. Since the experiences are so comparable, exchanging knowledge (technology, governance, communication) between Dutch and Japanese ministries and Smart City initiatives may be very profitable for making progress.



6. A Vision for the Future - A Low Carbon, Energy-Efficient, Non-Resource-Intensive, Recycling Society



Kamaishi Smart Community Master Plan Development Project





An attractive city and a sustainable economy

The second part of the workshop concentrated more on process and community rather than on technology and spatial plans. Due to the planned reconstruction of an improved Sea-Wall the water safety was not a focus point in this workshop. From questioning the workshop participants, two main concerns for the future of Kamaishi as a viable community were identified: its attractiveness, both for existing residents and for its capability to attract new residents and businesses, and sustainability, its capability to sustain its future on the basis of a smart use of local resources such as wood, agricultural produce, energy and fresh water.

Testing public participation in the development process of accelerator projects

Mixed teams were created, all consisting of younger and older people, professionals from companies and local authorities and students, all in order to mix different ways of looking at the challenges. These teams developed draft proposals for projects that were later evaluated against the same criteria of attractiveness and sustainability. All workshop participants then individually valued the proposals on the basis of their perceived performance on both attractiveness and sustainability. Perhaps unsurprisingly, the projects that performed best on creating attractivity performed worst on sustainability and vice versa. Two strong projects were selected and adapted to combine a strong performance on both criteria.

Existing Buddha Statue as focal point of the city

The first project proposed to create a meeting point and view point at the base of the famous giant Buddhist statue overlooking the bay. Apparently, both young and older residents missed a focal point in the city and a place to feel a certain pride. The statue already was popular among young people, but the area is very inaccessible. That is why the proposal was enhanced with the idea of creating an electrically powered cable car from the waterfront to the statue. This addition would both greatly improve accessibility of the site but the cable car itself would also be an eye-catcher and eco-pilot project in itself.

Smoked fruit to promote Kamaishi

The second proposal that was highly valued by the team was related to the commercial exploitation of a very specific local kind of fruit. The Kamaishi region is apparently known for this fruit, but due to a highly specific preparation process the fruit cannot be kept fresh while being exported to areas far away. Processing these fruits requires a very energy consuming process of smoking. The proposal was to use local wood to fuel the smoking and also to use the wood to create a specific kind of architecture for the smoking facilities and the shops. A festival could be organised for people from all over Japan to visit Kamaishi during the harvesting and smoking period, greatly enhancing the town's touristic potential. All over the world, this kind of eco-tourism is flourishing and in the case of Kamaishi too it might be a serious addition to its current dependency on fishery and the steel factory.



Miffy Café

These proposals were only quick sketches, invented within a very limited time frame and with a limited amount of people. The idea however is, that a sense of ownership might be created by organising serious participation of all local stakeholders. The new Kamaishi should not merely be a safe place but also an attractive place, a town with a future. A few weeks after the workshop we were informed that a local 'Miffy Café' might be built in the centre of Kamaishi, to create a meeting place for the inhabitants. This proposal was developed roughly along the same lines as tested in the workshop, showing the need for bottom-up processes with some quick-wins next to the long-term and large-scale engineering projects, that are equally necessary and hold promises to more fundamentally redevelop the economic base of the region.





Findings of the Smartworkweek



Everybody was impressed by the scale of the disaster. Having said that, everybody was also impressed by the reconstruction efforts and by the professional contributions to the Smart Work Week of the many parties involved. There was a strong feeling that it would be very useful for all parties to continue to work together in order to develop the plans and to exchange knowledge and experiences.

Recommendations for the two projects in Kamaishi

Unosumai

The redevelopment of Unosumai could profit greatly from an integrated planning approach, wherein the goals of safety, water management, economic development, sustainable food production, sustainable mobility and tourism development are integrated into an attractive whole. This could be organised by developing a zoning plan for the area. Not only parts of the plan could become cheaper, also the sustainable development would be greatly enhanced. If this is done in the right way, this doesn't necessarily mean a delay in the execution of plans, rather execution would be promoted because of more support by the local community.

Kamaishi

For the city of Kamaishi and the chances of smart community development it is very important to develop the accessibility of Kamaishi, especially at the regional level. Also the development of an attractive and safe living environment with good services and nice public spaces is important. Finally collaboration between the different stakeholders can be improved and at the governance level, adaptations such as creating a smart city zone for experimentation can be made to make the introduction of sustainable smart projects a lot easier.



Specific examples to share with Japan

There are many Dutch projects and programs that could be of use in the Japanese planning context. Smart City Development examples from Amsterdam, Eindhoven and Heerhugowaard, and the Rotterdam Climate Initiative offer relevant experiences. Also the Hoogeland Energy Concept may be of use. On the Japanese side the advanced technical inventions are very interesting for the Dutch, we would very much appreciate to learn more about them and/or contribute to a successful development. This could be achieved for example through collaboration in research programs of both country's universities. In many respects there are interesting collaborations to be made, both in research and development as in implementing proven concepts. In Water and Flood Risk Management, 'Building with Nature' is an interesting concept to be exchanged with Japan.

Suggestions for a follow up of this Smart Work Week

As stated before, Japan and The Netherlands share complex issues regarding water safety and water management in relation to spatial planning and land use, and Japan and The Netherlands are also developing knowledge on how to face the challenges of our time related to shrinking regions, economic redevelopment, climate change and the environment. After the Smart Work Week, the answer to the question whether the integrated 'Dutch Approach' to planning could be of use in the Japanese context and specifically also in the reconstruction context and in Smart City development is definitely yes. But we also learned that Japanese experiences with calamity control and Smart City development could be very useful for the Dutch. Therefore it seems to be very valuable to continue this collaboration and exchange of ideas on contemporary challenges.

Collaboration between cities and Universities on Integrated Planning and Smart City Development could improve exchange and development of knowledge on Smart Cities and Integrated Planning Approach. This could become a long term collaboration. Working on the Smart Integrated Approach in the Kamaishi municipality could also become a more immediate collaboration. Exchanging information and experiences on different scales, jointly working on improving plans for the reconstruction could be very profitable for all the parties involved. In the words of deputy mayor of Kamaishi Y. Shimada:

'I have heard from residents in our community, who participated in the meetings, that it was of great enjoyment and significance. I am currently reading a book concerning the urban planning in your country. The more I study about it, the more I feel that there are various matters to be learnt from your country in face of earthquake recovery. It would be much appreciated if we could continue collaborating on various measures.'

Tohoku **Smartworkweek** was supported by



Kingdom of the Netherlands



Dutch delegation

Marc Glaudemans, Fontys University of Applied Sciences
Hans ten Hoeve, Ministry of Infrastructure and the Environment
Matthijs Kok, Technical University Delft
Ton Venhoeven, VenhoevenCS architecture+urbanism
Margot Weijnen, Technical University Delft

Support Dutch delegation:

Merei Wagenaar, Embassy of the Kingdom of the Netherlands
Sachiko Stone, Embassy of the Kingdom of the Netherlands
Helga Lasschuijt, VenhoevenCS architecture+urbanism

25 January 2013: site visit

Fukuhisa Hiramatsu, Kamaishi City
Yasuaki Onoda, Tohoku University
Toshikazu Ishida, Tohoku University
Students from Tohoku University
And Dutch delegation

25 January 2013: Kamaishi seminar

Opening by:

Takenori Noda, Mayor of Kamaishi City
Radinck van Vollenhoeven, Ambassador of the Kingdom of the Netherlands

Key note speech:

Naoyoshi Yamada, Tohoku Bureau of Economy

Presentations:

Kazuyuki Tohji, Tohoku University
Takahiro Sasa, Kamaishi City
Akira Kurosaki, University of Tokyo
Ton Venhoeven, VenhoevenCS architecture+urbanism
Margot Weijnen, Technical University, Delft
Matthijs Kok, Technical University, Delft

Moderator:

Yasuaki Onoda, Tohoku University

26 January 2013: Kamaishi workshop

Presentations:

Kenta Matsushima, CTI Engineering Co.
Toshikazu Ishida, Tohoku University
Marc Glaudemans, Fontys University of Applied Sciences

Table 1: Unosumai

Yoshika Fujimoto, Kamaishi High School
Yoshiaki Furukawa, Kamaishi City
Fukuhisa Hiramatsu, Kamaishi City
Toshikazu Ishida, Tohoku University
Takua Kaneta, Kamaishi City
Yoshio Kashiwa, Director of METI Tohoku Bureau
Kiyofumi Kawahara, Kamaishi Smart Community Promotion Cie
Takehisa Kobayashi, Tohoku Electric Company
Matthijs Kok, Technical University Delft
Jyunya Kuzuo, Iwate Prefectural government coastal area bureau
Kimi haru Nakae, Tohoku University
Minami Ogasawara, Kamaishi High School
Ushio Ohta, Tohoku University
Yuichirou Saito, City Planning Bureau of Kamaishi City
Takahiro Sasa, Kamaishi City
Tatsuaki Sawada, Kamaishi gas company
Yukio Takahashi, Forestry Association
Yousuke Tsunoda, Vice mayor of Ofunato
Ton Venhoeven, VenhoevenCS architecture+urbanism

Table 2: Kamaishi

Yoshihiro Azuma, Kitakushu Kamaishi desk
Marc Glaudemans, Fontys University of Applied Sciences
Aki Kawasaki, Kamaishi High School
Yoshio Kashiwa, METI
Yuki katagiri, Tohoku University
Reiko Kitatochi, Iwate Prefectural Government Coastal Area Bureau
Takashi Masaki, Kamaishi City
Yasuaki Onoda, Tohoku University
Hiromi Ohsaki, Reconstruction Agency
Ryuichi Oshida, Tohoku Electric
Kensuke Sasakim Kamaishi Smart City Community

28 January 2013: Sendai Workshop

Tohoku University:
Jeremy Bricker
Katsuya Hirano
Toshikazu Ishida
Yuzuru Isoda
Makoto Okumura
Yuichi Ono
Yasuaki Onoda
Michio Ubauru
And Dutch delegation

29 January 2013: Tokyo Roundtable

Hitoshi Arima, dSPACE
Arata Endo, Kogakuin University
Taichi Goto, Fukuoka Urban Laboratory
Koji Hatsushiro, Murata Manufacturing Co.
Yoshinobu Hayakawa, City of Yokohama
Toshikazu Ishida, Tohoku University
Yasuo Iwafuji, Ando Corporation
Aya Kubota, University of Tokyo
Yoshimichi Nakamura, Smart Energy Laboratory
Yasuyuki Omura, Reconstruction Agency
Yasuaki Onoda, Tohoku University
Eiji Oyama, Kokusai Kogyo
Keizo Sakurai, Nikkei Business Publication, Inc.
Kiyoaki Sugiyama, Kokusai Kogyo
Kazuoki Ukiana, Daiwa Lease
And Dutch delegation

May 2013

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info@venhoevencs.nl
www.venhoevencs.nl

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Hoogte Kadijk 143F15
NL-1018 BH Amsterdam
The Netherlands

T +31 20 6228210