

LARGE SCALE WATER RESILIENT BUILDING

An inventory of international projects, Dutch legislation and planned initiatives in the Netherlands

Final report

Client SEV Experiments for Housing
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Our reference A921980/R20065081

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Date 16 November 2006

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SUMMARY

More and more areas in the Netherlands have a combined ambition for building and water related issues. Storage of peak run off, temporary artificially flood areas, recreational lakes and flood plains; they are all examples of areas where water resilient building is not a question anymore but a requirement.

The SEV wants to contribute to a large scale introduction of water resilient building. This refers to a built environment in which water quantity has been used as a starting point comparable to how constructional and fire safety are dealt with at the moment.

The SEV wants to initiate a program Building and Water in 2007. The emphasis will be large scale residential building. The SEV wants to know what such a residential area will look like.

To understand where the focus of the program should be INTRON has been commissioned to inventory the following;

- International projects
- The applicability of the Dutch Building Decree
- Planned initiatives in the Netherlands.

Based on desk-research and after consultation of a wide range of national and international experts the following observations and recommendations have been made:

Observations

The fun factor is widespread

The combination of living in a house in a surrounding with water is attractive for many people. Solving the ambition to combine water management and housing is almost never the starting point for residents. Housing in and on lakes is usually recreational and a luxury product.

Many small scale projects exist

In all surveyed countries (Canada, England, Germany, Japan, the Netherlands, Scotland and the United States) water resilient housing is present. However, none of the countries use water as an integral requirement during planning, design, construction and the use phase of houses. Exemptions are Hamburg (Germany) with water resilient houses along the river banks and British Columbia and California with several marinas containing float homes. The scale in California has resulted in the necessary attention by government and legislation to safeguard fire safety and calamity evacuation.

Insurance is no problem, if required by government

Insurance develops in areas where the government requires the possibility of having it. It never initiates from insurance companies themselves. The United States and England are good examples.

There is no (legislative) framework

No specific chapter or translation of the Building Decree exists to reflect the water related aspects of building in the Netherlands. This contrasts with California and British Columbia where specific chapters are available for float homes. This leads to the situation where some requirements can not be used without further interpretation while others are lacking. Calamities led to the introduction of legislation outside the Netherlands. The Netherlands has the opportunity not to wait for this to happen. Interviewed experts plea for priorities during the physical planning phase ('bestemmingsplan' in Dutch) and the building permit from the local authorities ('bouwverordening' in Dutch).

Streamline the decision making process

Techniques for resilient building are not lacking or do not pose a limitation. Most techniques have not been tested in large scale areas yet, but this comes with every innovation and change in building culture. The techniques will be refined automatically when more projects are delivered.

It is the current decision making process that is limiting the potential for water resilient building, both in the planning phase and the construction phase. Involved parties often want an innovative solution but do not know to implement them or have insight in existing technologies. Involved parties are looking for 'normal' reassurances. This framework is lacking in the Netherlands. This holds back both initiators and legislators.

The use phase is never a point of consideration

The response given by the interviewed experts did not include aspects like durability, maintenance, and resale value. In other words, all other phases of the life cycle after the initial construction were not considered. This can be characterized as symptomatic for a market that is still in its infancy and eager to grow.

The perception of water resilient housing in the Netherlands is 'to float'

The majority of projects that are being initiated in the Netherlands are based on flotation. Variations are amphibious houses that do not float all the time. Other forms of water resilient housing, such as wet proofing and dry proofing, are relatively seldom found. This is in sharp contrast with the UK where a market flourishes for products that keep water out when water levels rise. This is strange for a country where many houses are protected by dikes, and where relatively simple alterations can reduce the risk of water damage. Apparently we confide in the safety provided by our dikes. Cases like our own flooding in 1953 and Katrina in New Orleans should be enough warning to prove us wrong here. Especially since it seems that water related problems will only increase in frequency and magnitude if we consider the signs of global warming and the trends in weather phenomena.

Recommendations

The SEV has to choose its focus point for the Building and Water program in 2007. INTRON has the following recommendations:

Position yourself as a knowledge center

The knowledge and experience of success and failure already exist for float homes. This knowledge is however, available to specific parties involved and not for the good of everybody in the Netherlands. No party is collecting all relevant information. The SEV can do this or initiate an entity for this purpose. Most interviewed experts welcomed such an initiative.

For other water resilient types of housing, less knowledge and experience is available. During the coming years water resilient building will remain taking place on a small scale, but lessons will be learned. If these lessons can be bundled it provides a stepping stone for large scale projects. The SEV can claim the role as knowledge center for both developments.

Focus on the decision making process

The biggest challenge in promoting water resilient housing lies within the decision making process. Experience teaches us that water projects tend to take longer than other building projects. All parties concerned contribute to delays in the current market: planners, water control bodies, local authorities, fireman, etc. The SEV can contribute to streamlining this process.

Draft guidelines and manuals

INTRON recommends developing publicly available information sources to promote innovative solutions. A good example is the German Bauschutzfiibel for adaptations in houses in flood-prone areas.

The SEV can facilitate the legislation by drafting a standard or guideline that includes private and public legal aspects, including an interpretation and examples for technical solutions. The market can then adopt this guideline, improve it with experiences and to apply it for quality assurance purposes.

Support, participate or initiate experiments

Several parties all over the Netherlands are on the verge of starting one or more demonstrative projects. The scale varies from individual houses to floating neighborhoods. To speed up innovative housing projects it is necessary to appoint an independent party that can give guidance for all project stakeholders. To widen the scope of water resilient housing from 'just' float homes.

An independent party can ask the right questions by setting criteria when tendering for experiments. Both roles fit well within the goal and scope of the SEV.

The full report is available in Dutch at the SEV. Please e-mail Jeroen Singelenberg: singelenberg@sev.nl