The National Network of Danish Test Sites for Development of Environmental Technology

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Background/Objectives. The Danish Regions are responsible for the task of mapping, investigating and remediating the orphan contaminated sites in Denmark. The task is huge, and the regions are deeply involved in development of better, cheaper and more sustainable methods to solve our task. The development is carried out in close collaboration with research institutions and private companies resulting in new technologies based on research and technology transfer from a wide variation of industries. At the same time, it is a clear political wish to help small to midsize businesses in the innovation processes. This includes technology verification where the regions are considered as a neutral partner.

One of the major challenges in technology development is access to suitable test sites. Often tests are only possible when we investigate or remediate contamination on third party ground. Here we are constrained by the consideration we must show the site owner with regards to the time frame and the uncertainty of whether the technology actually works and most important, that the new technology will not spread the contamination or create new problems.

To accommodate this, the Danish Regions have developed a diverse network of nine test sites that we either own or hold the right to use, making us independent of site owner concerns. The sites holds a diversity of chemical and physical conditions and represent the variety of challenges the regions face.

Approach/Activities. When a company approaches the network of test sites with a project, it´s guided to the suitable site´s coordinator. Here the conditions for the use of the site is agreed and often free of charge. In return for providing facilities and infrastructure, the regions typically ask the external project owners to sign an agreement that defines the project owner's liability for any damages and the region's right to share the data produced, unless other terms are agreed. Before a given project is conducted, a risk assessment is carried out to ensure the security of the project as well as issues that the project organization must overlooked.

Some test sites pose a critical risk to downgradient receptors, such as waterworks or streams. These sites are equipped with the necessary facilities to avert the risk while we use the sites for testing, such as pump-and-treat (P&T) plants. These facilities are used actively as testing infrastructure, such as fitting the P&T plants with piping to divert a part of the contaminated water to test new water purification methods.

Results/Lessons Learned. The test site network offers opportunities for increased cooperation between the regions, since new technology may be tested on different contaminants or geologies, specific to the individual regions. Many of the projects at the test sites are funded wholly or partly by the regions to solve some of our specific challenges. Some of these projects are financed through public-private partnerships in which the region and its partners (consultants, contractors and/or universities) all provide funding, which they can cash back when promising technology is commercialized. Besides the innovation an added benefit is that the tested technology will be visible to many visitors from the environment industry, and different tech developers will often work concurrently at a site, which may spark inspiration and new networks. Currently, two large research projects funded by the EU, the Danish state and private foundations are starting up at two of our sites. The easy access to testing facilities and their potential for outreach were some of the main arguments for funding these projects.