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WISE innovation in urban water systems of Copenhagen

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Abstract: In August 2015 the WISE project was initiated with the goal to increase development in urban **W**ater systems in the Capital Region of Denmark through 24 **I**nnovation co-operations between researchers and **S**mall medium sized **E**nterprises (SME) (the **WISE** project). The WISE project is a prime example of matchmaking of researchers and enterprises, introduction of the newest knowledge into SME innovation, and creation and improvement of new smart products to the market. The major learnings from the project has been that: interest in cooperation among researchers and SMEs exists and blossoms through the project; it is possible to go far in relatively small innovation projects; the 24 innovation projects perform differently on the output indicators as they have individual strengths. The project also delivers an insight into state-of-art technologies and concepts within urban water systems in Copenhagen which is the city looking forward to welcome the IWA WWC in 2020.

Keywords: Water technology; Small medium sized enterprises; EU Regional Development Fund; Innovation

The water sector is recently experiencing a tremendous political focus in Denmark as in the rest of the World, with sustainable growth and development high on the agenda (UN, 2015). To increase the innovation in Small Medium sized Enterprises (SMEs) in the region of Copenhagen, Denmark, the WISE (**W**ater, **I**nnovation, **S**mall medium sized **E**nterprises) project initiated in 2015. The goal is by 2018 to have launched 24 innovation projects supporting development of new innovative concepts or technologies within the water field, where at least 20 of the projects should subsequently introduce new products or services to the market. WISE assists development throughout various themes: climate adaptation, water metering, water treatment technologies, wave and heat energy systems, sensor technologies in sea- and lake water, etc. One example is a project developing smart water meters that can inform the consumers in real-time where in the household the water consumption is occurring. Another project is incorporating a rain and storm water management tool in early phase architectural planning processes to support successful implementation of nature based solutions. The projects aim at increasing innovation at the SMEs by developing one of their technologies or services. The projects work as co-operations between an SME, preferably with other SMEs as partners, and one or more university researchers. The WISE project funds the researchers' hours, and it is prerequisite that the SMEs co-finance an equivalent amount of working hours during the project.

The key learnings from the WISE projects are starting to take shape, as the project is now (September 2017) two thirds through its lifetime. The first learning is that there is a great interest in cooperation between SMEs and researchers. However, it was experienced that the matchmaking process, matching the researchers with the SMEs, was more time consuming than expected when setting up the WISE project. This learning is reflected in the fact that first half way through the lifetime, the project had a breakthrough in terms of a strong increase in granted innovation projects. The timeline of the WISE innovation projects (figure 1.1) shows that there is an upstart

phase before matchmaking between SMEs and researchers leads to initiation of projects. Informing networks about the project, identifying SMEs and contacting them, as well as creating the administrative set-up took longer than expected.

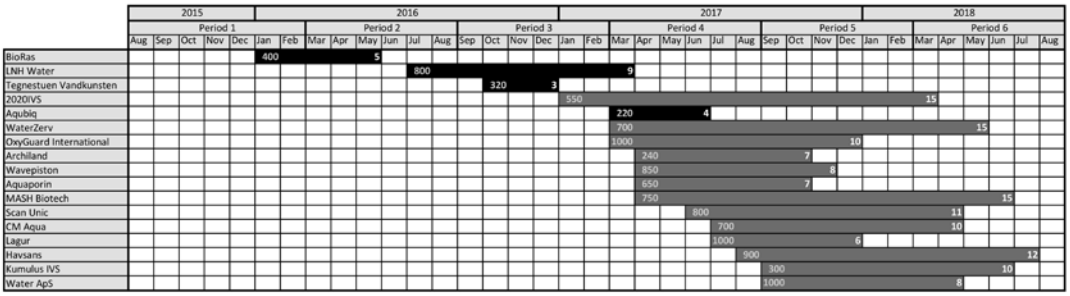

Figure 1.1 Timeline of the 17 innovation projects granted until September 2017 under the WISE project. The names of the SMEs are listed in the left column. The black colour of the individual projects indicates that they were completed before September 2017, while the grey colour indicates ongoing projects. The white number to the left in the individual timelines are the total research hours in the project while the white numbers to the right are the length of the individual project in months.

The second learning is that it is possible to go far into the desired research area of the SME even though the average WISE project only consists of 9.1 months of research either full or part time. In the innovation projects research is transferred to the SME efficiently, mainly because SMEs have strong learning cultures (Bamberry et al., 2015) and the co-operation with the researcher is requested and appreciated. This translates into the experience from the four completed WISE projects, which all had a satisfactory result, showing a new product on the market, and strong expectations of increased income. The supervision of the running projects supports this.

The third learning is that a clear pattern of the performance of the innovations projects on the output indicators is noted. When grouping the indicators defined by the EU Regional Development Fund and the Capital Region Denmark (Fund et al., 2014) three overall themes are observed: a) Growth and job creation; b) Green indicators; and c) future co-operation and publications. It appears that the individual project typically has strengths within one or few indicators and furthermore, that the overall WISE project will cover 24 innovation projects contributing to all the outputs and indicators. A full evaluation of all 24 projects will be ready for September 2018. An example of a scoring of an innovation project on the output indicators is seen here (Figure 1.2).

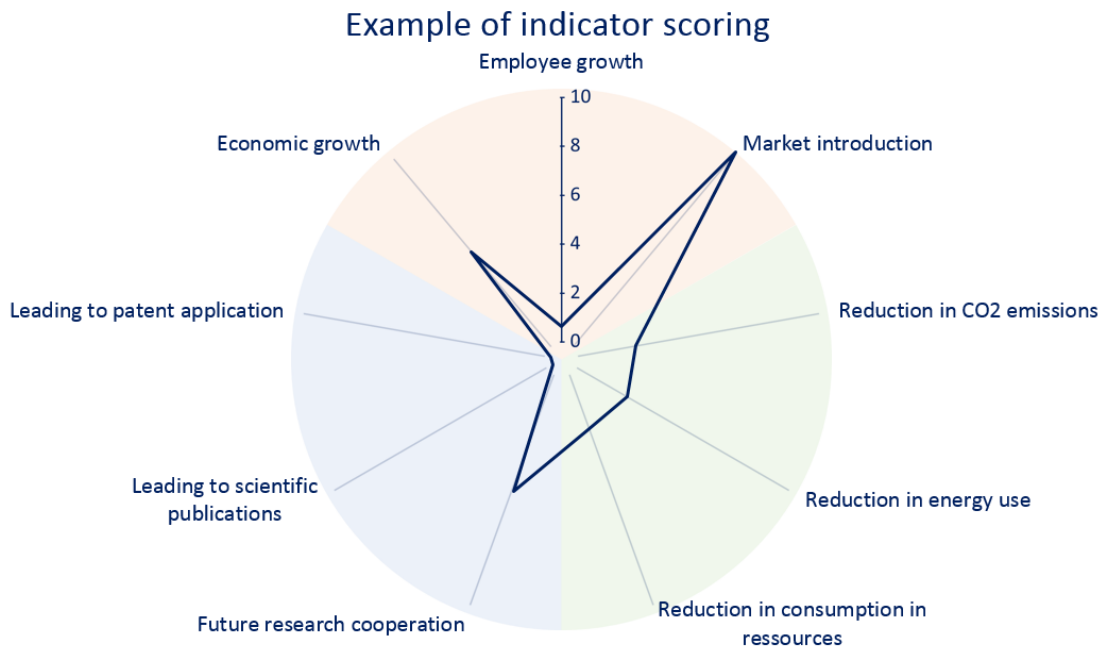

Figure 1.2 Performance of an innovation project between DTU Environment and an SME developing equipment and software for metering water consumption in households on the indicators defined by the EU Regional Development Fund and Capital Region Denmark.

At the conference, we will proudly present the outcomes of the overall project as evaluated in July 2018 when the project is in its closing phase. We can already now feel the bobbling innovation in the 24 projects and expect the WISE project to remain the inspiring journey it has proven until now. Furthermore, we will select two or three of the 24 innovation projects and highlight their technological development and outcome. In near future the technologies and services developed through the WISE project are ready to be introduced to the market and ready to showcase in Copenhagen when the city is hosting the IWA WWC 2020.

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