
Highlights from Roundtable:

How to Enhance the Commercial Outcome of Public Support Schemes for Cleantech

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Disclaimer: *It should be noted that all participants do not necessarily agree with all the individual recommendations in this paper*

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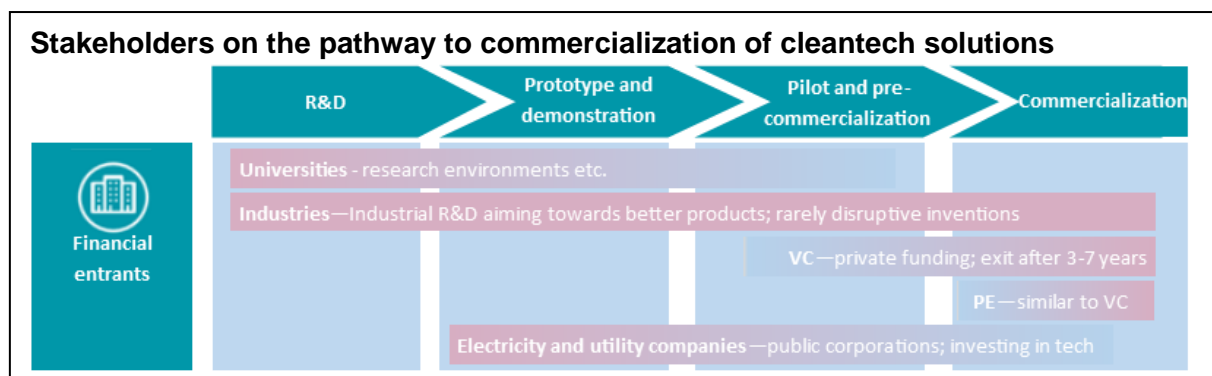
Highlights from Roundtable: How to enhance the commercial outcome of public support schemes for cleantech

Denmark is the EU country accounting for the largest share of exports coming from cleantech solutions. Hence, we have established a brand as a pioneering country in energy technology. However, the Danish government's ambition to double exports from its 2015-level of around DKK 70 billion to 140 billion by 2030 requires new measures that strengthen the commercial output. Public support schemes play a key role in bridging the gap between R&D and commercialization. It is crucial to bridge this gap to scale up the business potential of new innovative technology.

Denmark has a good track record with our public support schemes for technology development and demonstration programs, e.g. EUDP and MUDP. This track record is important to maintain in terms of the existing schemes' ability to support and enhance innovative demonstration activities in utilities within power, heat and water/waste water treatment. The support schemes pave the way for co-operation between utilities and industry enabling the development of innovative solutions with the potential to become commercially viable.

But our track record has room for improvement in terms of converting publicly supported innovation activities into viable business opportunities capable of attracting private investors. This deficiency is pointed out in recent analyses, e.g. Deloitte Monitor's report from June 2017¹ and the Global Cleantech Innovation Index also from June 2017. According to the latter report "Denmark is seen as a relatively inefficient cleantech innovation converter"².

On 1 November 2017, the Danish Intelligent Energy Alliance and the Danish Energy Association assembled the key stakeholders represented in the process of commercializing cleantech solutions. The objective was to allow them to share their considerations and recommendations on how to enhance the commercial outcome³ of public support schemes in Denmark.



¹ Deloitte Monitor, Danmark som energiteknologisk pionerland (2017), <https://goo.gl/Xxmz1d>

² Cleantech Group and WWF, The Global Cleantech Innovation Index 2017, p. 16, <https://goo.gl/uDem94>

³ The commercial output is defined as viable business opportunities, jobs and export.

Considerations and Recommendations from Key Stakeholders

The considerations and recommendations outlined in this paper are to contribute to the further development of public funding schemes. The aim is to improve the use of public energy technology schemes to bridge the pre-commercialization gap from the demonstration phase to commercialization, e.g. by demanding more focus on ability to attract private financing.

There is a significant room for improvement in assisting developers increase their commercial success when leaving the public support schemes. To achieve this, there is a need to enable the private sector to frame the value proposition: How may co-operation with utilities strengthen the value proposition? How can existing programs like EUDP and MUDP assist?

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The ability to attract private financing is believed to be an essential indicator of developers' ability to gain commercial success. Venture capital (VC) can play a vital role in this process due to their competence profile. However, many areas of the green transition are not fit for venture capital e.g. windmill projects (hardware) with no return within the first five years. Hence, there is a need to make a clear separation long term investments low yield investment and short term high yield investments in e.g. software.

It is important to emphasize that the existing public support schemes have a purpose that we do not wish to undermine, namely supporting demonstration activities that enhance innovation in utilities through their co-operation with industry on the development and demonstration of innovative solutions. However, there is a potential to improve the business and export oriented outcome.

The questions to reply are: How may Denmark participate in developing the way we produce, distribute and use energy? How can Denmark stimulate financial institutions to participate? Individual corporations will not have the amount of financial means to stimulate these business opportunities. The answer to these questions revolves around public funding's ability to interact with the structure of the companies to bring new technology to the market.

The considerations and recommendations on how to enhance the commercial success of publicly funded innovative projects fall into three main categories:

1. General issues concerning regulation incl. support schemes
2. Assessing business cases in the process of ongoing support schemes
3. Bridging the gap between existing support schemes and private financing to enhance commercialization

Michael Hesselager, Ministry of Energy, Utilities and Climate: The ministry is engaging in the debate with stakeholders about how to enhance the effect of public support in terms of commercial outcome. This needs to happen for the good of the environment as well as for the good of business.

Knud Pedersen, chair of Radius and the Danish Intelligent Energy Alliance: We need a strategy for co-operation between utilities, industry etc. Linked to this strategy we need to see interaction with commercial partners, where utilities apply their infrastructure to facilitate the business ideas of commercial partners. An essential means for this is digitalization.

1. General Issues Concerning Regulation Incl. Support Schemes

Recommendations (1a-1d)

a. Regulation and support schemes must be stable. Changes will undermine confidence in the return of investment and hence a change will undermine trust for years.

Jan Bach Jensen, SE Blue Renewable: *We urge government to secure stable, long term regulation to develop financially sustainable solutions and new business models. Access to funding is not the barrier for larger infrastructure projects if the regulatory framework is stable.*

b. Support schemes should not try to pick winners. It is recognized, however, that there needs to be a difference in terms of support levels depending on how mature the cleantech solution is.

Kalundborg Forsyning, Hans Martin Friis-Møller: *We see no entrepreneurial acceleration mainly because there is no confidence in legislation. People don't want to invest when regulation changes. Long term relation is needed and so is demand driven research and development.*

c. For utilities (power, heat, gas and water) to be able to participate and invest in demonstration activities they need regulation that enables innovative projects as well as assistance from public support schemes (e.g. EUDP and MUDP).

Claus Birn Jensen, Jyske Bank: *Investors are looking for proof of concept. Hence, the overall requirement is to have stable framework conditions. Change of regulation results in change of pay-back.*

d. Regulation of utilities, e.g. the executive order on DSOs income framework (bkg. om indtægtsrammer for netselskaberne) needs to allow for innovative demonstration activities without punishing the companies financially.

Simon Kristensen, Best Green: *When regulators say they don't wish to pick winners then – without doing anything – they're actually doing just that, namely the one that can exist in the current legislative framework. However, this business may not be the one that can scale up and become a commercial success abroad.*

Ole Johnsen, Billund Vand / Billund Energi: *Our current experience is that regulation of the water sector punishes investment activities in this sector. We cannot receive investment funding (public or private) without lowering the water fee correspondingly. Hence, we would like a regulatory framework that is more similar to the one that has recently been approved for DSOs.*

2. Assessment of Business Cases in the Current Support Schemes

Recommendations (2a-2c)

a. There is a need to assess and improve existing support schemes with the aim of strengthening the ability to demonstrate activities that potentially may lead to exports.

b. Future assessment of applications should aim at encouraging the cooperation between partners on demonstrating energy system solutions and potential export.

c. Performance indicators of the activities supported must have a content that aims at strengthening commercial success. Inspiration may be found in international programs like Tekes and SDTC.

Jorma Heinonen, The Finnish Innovation Fund, Tekes: *When assessing business cases, we look at the team and their business strategy going forward. Funding is interrupted in several cases due to strategic failure, e.g. failure to raise additional funds from other investors, lack of evidence for commercial viability etc.*

Torben Funder Kristensen, Danfoss: *It is crucial to support the development of new technical solutions that can document a real positive impact in the green transition. In truth, the commercial success largely depends on the framework conditions in the marketplace. Hence for the development of new efficient cleantech to thrive, it is crucial to award innovations with a real impact.*

Rene Salvesberg, SET-Venture: *The challenge for these programs is on one hand to identify the relevant investment project with a good team and on the other hand to find the right level of support – and if needed stop the funding in time, when it turns out not to deliver the expected result.*

3. Bridging the Gap Between Demonstration and Commercialization

Recommendations (3.a-3.e)

Other ways of supporting commercialization of new innovative smart energy solutions are needed. Private financing is there, but the willingness to take risk is largely absent.

a. A bridging instrument is required that may pave the way for business cases to be able to attract private financing. To succeed the technology risk must be reduced.

Rene Salvesberg, SET-Venture: *We have identified smart energy – digital solutions - as the area for venture capital. Utilities versus distributed generation is not the issue. The real issue is business models related to this trend that bypass utilities. One must be rewarded for the willingness to take the risk, this is essential to venture capital.*

Alternative ways of supporting innovative businesses cases: Stakeholders in this field point to the fact that technology development is the “easy part”, but the business model is the tricky part. E.g. Best Green, the start-up supported by Vækstfonden, spends a lot of resources on struggling with legislation and linking up with partners to navigate in the legislative field. Hence, companies that are in the stage of scaling up may not need traditional public funding. Instead they may need counseling when they turn for help in the Danish embassies abroad, e.g. market analysis or networking opportunities.

b. What developers need is support in the shape of “permission to apply the experts on local markets to scale their business”.

c. Being able to meet market demands by moving away from single component solutions to development of energy **system** solutions. There is a need to explore how support schemes can support such development.

d. New sources of funding must be explored. E.g. Green bonds are seen as a market opportunity by some participants.

e. Bridging the gap to venture capital and private equity capital must look into how programs like e.g. Tekes in Finland and SDTC in Canada are assessing the businesses they support and how criteria are developed to stop funding in time when needed.

Søren Houmøller, 1st Mile: *There is a need for an instrument to mature technologies to such an extent that they are ready for the venture capital investments – bridging the gap between EUDP / MUDP funding and private financing potentially received in the commercial stage.*

Claus Birn Jensen, Jyske Bank: *The role of banks in this field is to finance well tested business cases that can be scaled up to even better business. What we experience is lack of energy system solutions where the technology risk is well covered by the partners involved. Hence, we see a need for better co-operation on test beds to develop the business case and co-operation among partners to develop energy system solutions and not single component solutions.*

The point about co-operation on system solutions is supported by **Hans Martin Friis-Møller, Kalundborg Forsyning**. He points to the fact that: *there is a need to bundle smaller companies into bigger schemes and coherent solutions*. On the issue of sources of funding he emphasizes that he sees *Green bonds as a viable source of funding that holds a significant market opportunity*.

Programs in Finland (Tekes) and Canada (SDTC) have experience with criteria about how to assess businesses which they support. Some key elements are listed below and are closely tied to the ability to raise private financing.

Tekes has three stages of support, stage 1+2 are grants, stage 3 is loan:

- Development of turnover of the support case
- Ability to get funding from other sources
- Scalability / Expanding into new markets

Sustainable Development Technology Canada (SDTC): At least 25% of the cost of activities needs to come from private investors and support can maximum be granted for 5 years (only grants no loans)

Concluding Remarks

There is no silver bullet for how to enhance the commercial output of public support schemes for cleantech. Nonetheless, this paper gathers the considerations and recommendations from key stakeholders on how this may be done most effectively. New inputs and ideas are needed for Denmark to maintain and improve our commercial outcome from clean tech solutions – now is *not* the time to rest on our laurels.

We encourage all stakeholders to find inspiration for how to move forward in this paper.

Finally, we would like to place a sincere thank you to the contributors to this paper. We look forward to continuing the discussion.

Michael Stevns, Siemens A/S: *There is a need for an enabling framework, a need for Denmark to avoid allowing previous successes to become a pillow impeding further development.*

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