HEINRICH BÖLL STIFTUNG
EUROPEAN UNION

World Future Council

Enhancing Regional Renewables Cooperation in the EU

Experiences and policy recommendations from a Study Tour to the North Sea Region

REGIONS FOR GREEN ECONOMY

100% RENEWABLES

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GREEN ECONOMY

The Heinrich-Böll-Stiftung (hbs) is a catalyst for green visions and projects, a think tank for policy reform, and an international network. Fostering democracy and upholding human rights, taking action to prevent the destruction of the global ecosystem, advancing equality between women and men, securing peace through conflict prevention in crisis zones, and defending the freedom of individuals against excessive state and economic power – are all objectives that drive the ideas and actions of the foundation. We work with 160 project partners in over 60 countries and currently maintain 32 international offices. The EU office functions as the hbs liaison office to the European institutions and is based in Brussels.

World Future Council

100% RENEWABLES

The World Future Council (WFC) brings the interests of future generations to the centre of policy making. It's up to 50 eminent members from around the globe have already successfully promoted change. The Council addresses challenges to our common future and provides decision makers with effective policy solutions. In-depth research underpins advocacy work for international agreements, regional policy frameworks and national law making and thus produces practical and tangible results. In close collaboration with civil society actors, parliamentarians, governments, business and international organizations we identify future just policies around the globe. The results of this research then feed into our advocacy work, supporting decision-makers in implementing those policies.

CONTENTS

EXECUTIVE SUMMARY

In five days in September 2016, 13 policy-makers and -shapers from 8 countries travelled 1,500 kilometres from Denmark via Germany and the Netherlands to Belgium. Their mission? Exploring what regional cooperation means in practice and how it can boost renewable energy in Europe. This report presents their **key insights**, presents the **learnings** from the visited projects and summarises the **main policy recommendations** for decision-makers on local, national and European level.

Renewable energy sources (RES) will have to play a predominant role in the EU's future energy mix in order to ensure a competitive, secure and sustainable energy system. Nevertheless, the current policy and regulatory framework does not facilitate this urgently needed transition, but rather reflects a business-as-usual approach. The current EU 2030 Climate and Energy Framework lacks ambition, firstly because of the low RES target of "at least 27%" but also due to its "EU-wide" level approach without binding or specific Member State contributions. Given this weak policy framework, there is however one mechanism which could increase the share of renewables to the needed scale and speed: regional renewables cooperation.

In fact, various European institutions have repeatedly called for regional cooperation in the context of the 2030 Climate and Energy Framework, the Energy Union debate as well as just recently in the context of the EU's 2016 "Winter Package" which also includes the revised Renewable Energy Directive (RED II). But it can go beyond energy policy: In times of growing euroscepticism, the regional approach can make "more Europe" attractive again, bringing the EU closer to its citizens

The study tour is the latest event in a cooperation between the Heinrich-Böll-Stiftung EU office (hbs) and the World Future Council (WFC), that are both committed to driving up regional cooperation for renewable energy.

The study "Driving Regional Cooperation Forward in the 2030 Renewable Energy Framework",[1] written by the consultancy Ecofys on behalf of hbs, explored the potential benefits of regional renewables cooperation and provides suggestions enhancing such cooperation. In addition, findings from the World Future Council's programme on 100% Renewable Energy in the EU show that there is a window of opportunity for adapting the legislative framework to strengthen regional cooperation to raise ambition on renewable energy.

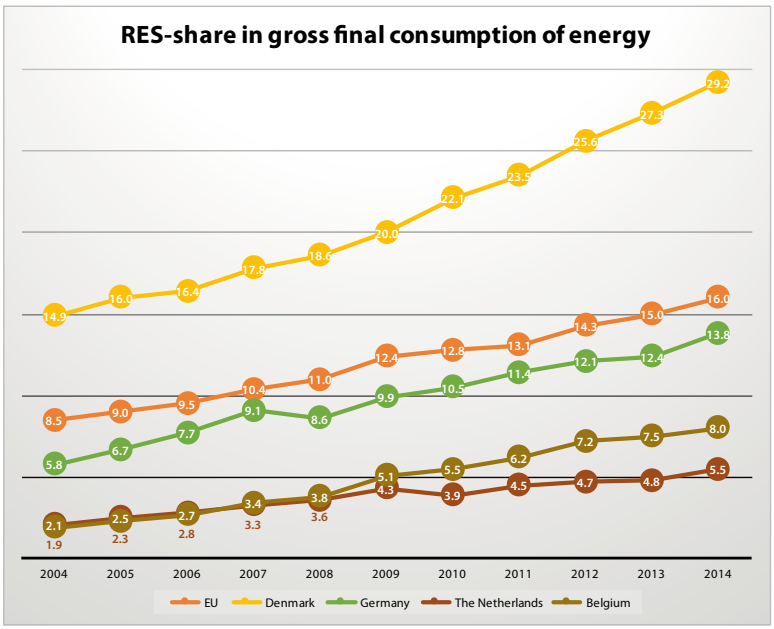
This was the reason for the hbs and the WFC to host a stakeholder workshop in April 2016 in Brussels. This workshop, as well as the study tour, is organized in the framework of the hbs' #Regions4GreenEconomy[2] series which is organized together with the representatives of different German Länder in Brussels, and the multi-stakeholder campaign #Go100RE.[3]

1 https://eu.boell.org/sites/default/files/hbfecofys_regional_cooperation.pdf
2 https://eu.boell.org/en/regions-green-economy
3 http://www.go100re.net

and unifying the Member States. Furthermore, regional cooperation on renewable energy bears the potential for huge cost and system benefits.

However, despite its popularity and frequent use as buzzword in current discussions, there is no common and clear definition what the term "regional cooperation" actually means. It should not focus exclusively on cooperating Member States, large energy utilities and TSOs, but also allow for participation of subnational and non-state actors, leading to higher political legitimacy and fitted solutions for local conditions. A common cross-border identity might be facilitated through these projects, while the revenue generated by decentralized energy plants is more likely to stay in the region.

In order to better understand the challenges for and possibilities of regional and cross-border contributions to a low-carbon economy and an energy transition, the Heinrich-Böll-Stiftung EU and the World Future Council hosted a study tour in the North Sea region. After discussing some projects of regional RES cooperation with EU policy-makers in Brussels in spring 2016,[4] the next logical step was to go out and explore. "Seeing is believing" was a central theme for the tour. 13 participants from Belgium, Croatia, Finland, France, Germany, the Netherlands, Poland and Portugal joined on the tour, representing various communities, projects and institutions from these countries as well as the EU-level. Travelling through a frontrunner region, the North Sea, served as a platform for in-depth learning about existing and possible future cooperation. The five-day trip provided first(-hand) insights and inspiration as well as networking opportunities with other participants and interlocutors. It is meant to be another milestone in defining regional cooperation as a mechanism that empowers sub-national governments in enhancing renewable energy across Europe. By disseminating the insights from the tour in a broad manner (via this report, consultations and policy debates, social media updates and through dissemination of the movie[5]) the two organisations hope to provide a basis for further discussion of regional cooperation as a tool for driving up renewable energies' deployment in the European Union.

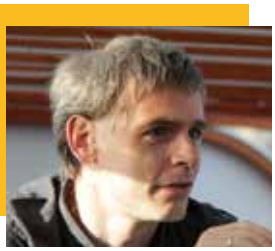


4 https://www.worldfuturecouncil.org/file/2016/05/WFC_HBF_2016_Driving_Up_Regional_Cooperation_for-Renewables_in_the_European_Union.pdf
5 https://www.youtube.com/watch?v=17-s2-bNQxo

IMPRESSIONS FROM POLICY-SHAPERS WHO JOINED THE TOUR

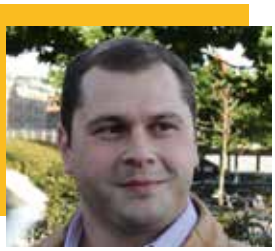
Melinda Loonstra-Buzogány I SEREH, The Netherlands

"My wow-moment was when we heard that the people of Sønderborg export their knowledge about sustainable development to China – their ideas get implemented and they got money for that."



Frederik Loeckx I Smart Grids Flanders, Belgium

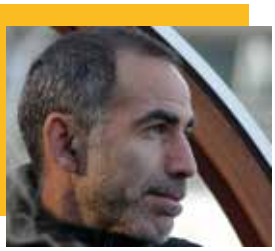
"Everybody is talking about business models. But the business model starts with people that fill in the parameters for the business model to work. The most successful regions were those where the people behind the business model were the most convinced and where there was an ecosystem of stakeholders involved. If you get all of them on board, you can do a lot. But if some stakeholders are missing, it is becoming difficult. Then you need a stakeholder as a champion that is trying to convince the others."



Alen Višnjić I Medjimurje Energy Agency, Croatia

"The cooperation between ambitious proactive people willing to change the energy sector in a sustainable way from the decision-makers to the general public is needed to put the words into actions."

"After the tour, I can take many new good tools and showcase examples with me to Croatia to argue what could be done."



Gustavo Hernandez I crossculturalbridges.org

"I joined the study tour to learn about why and how renewables can boost a transition to a low carbon economy in the European Union. Two things stroke me: Gender matters and small projects can make a difference."

IMPRESSIONS FROM POLICY-SHAPERS WHO JOINED THE TOUR

Johannes Vallivaara I Cluster Manager, ProAgria, Lapland/Finland

"The people from rural areas need good examples how their actions can change the world… And the game at EnTranCe was a thing that opened my eyes for that."

Alix Bolle I Energy Cities

"I think that cities need to occupy the political space more – at the national and the European level. Gathering all these local voices is very important."

Veerle Dossche I Cabinet Tine Heyse, City of Gent, Belgium

"It is also crucial to have policymakers at different levels to make this happen. They need to show the willingness to make this happen."

"It was very interesting to learn about the national support programme for front running cities in Germany. We need that in Belgium as well. I will look closer in the German case and work on establishing this programme in my country as well."

Kathrin Glastra I Heinrich-Böll-Stiftung European Union

"We clearly saw and experienced that the European regions have the brains to come up with smart solutions for more RES deployment and the hands to put words into action. The final key element is the willingness at all levels – then we will achieve truly regional renewables cooperation across borders."

KEY INSIGHTS FROM THE REGIONS AND FOR THE REGIONS

BUILDING AN ENERGY UNION BY DIFFERENT WAYS OF REGIONAL COOPERATION

The predecessor of the European Union, the European Coal and Steel Community (ECSC), was centred on energy. By creating a common market for two crucial resources, Europe was brought closer together after the war. Today, the crisis-stricken continent needs to come together again. The Energy Union[6] could provide an opportunity for that, via the means of regional cooperation. This allows the EU to get closer again to its citizens, to revive democratic participation and to strengthen our core values.

6 http://ec.europa.eu/priorities/energy-union-and-climate_en

But what do we actually mean by "regional cooperation"? One learning from the tour: it can mean a lot of different things in different contexts and for different stakeholders.

A closer cooperation between two or more Member States is one possible format which regional cooperation can take. Many policy-makers especially in the European Union context have these kinds of **"macro-level" cooperation on the national scale** in mind when talking of regional cooperation.

The Member States can cooperate by

- harmonising rules and procedures as we saw in the North Sea's off-shore wind sector;
- opening their support schemes to other Member States to attract investors from other countries and thereby closer integrate their energy markets as with the joint PV-tenders between Germany and Denmark; or
- increasing their interconnection by transmission grids and their transmission system operators (TSOs).

However, there is another dimension of regional cooperation: the **"micro-level".** In fact, the debate about regional cooperation in the European Union shows that the links between micro-regionalism and macro-regionalism are neglected from an empirical point of view, but it is also a political and conceptual problem. During the study tour, several successful examples for "micro-level" regional cooperation were found in the North Sea region, taking on different functions.

- Neighbouring municipalities on two sides of a border, who closely exchange and learn from each other as with Flensburg (D) and Sønderborg (DK).
- Technical interconnection in the distribution network and infrastructure cooperation in terms of research, planning, investments in renewables and demand-side management in order to establish a more regional and independent energy system on a local and cross-border level as with the SEREH-project between Emmen (NL) and Haren (D).
- Cross-border investments in RE production that feeds renewable electricity in neighbouring countries as investigated by investors in the port of Eemshaven (NL).

In all these projects, there are vertical and horizontal dimensions of cooperation with local stakeholders, different government levels as well as with other projects, cities and institutions in national and transnational networks. Hence, each type of the listed regional cooperation forms has specific challenges and opportunities and therefore needs adequate political measures.

In fact, the projects visited on the study tour showed that a **combination of different types of regional cooperation** plays a crucial role for achieving one of the core principles of the EU: economic, social and territorial cohesion among all Member States, North and South, East and West. Therefore only building on both macro- and micro-level regional cooperation will strengthen the Energy Union. A closer cooperation of and among Member States, TSOs and large companies is needed in order to connect both energy markets and energy infrastructure and to facilitate the energy transition in an efficient manner. At the same time, the Energy Union must provide a platform for cities and municipalities to exchange ideas, test innovations, compete over best solutions and collaborate across borders. This micro-level cooperation is also necessary because it offers a possibility to create fitted-solutions for local needs and establish adequate frameworks on national and European level. Hereby, it puts the European idea into practice on the local level and helps creating a shared regional identity that reaches across borders – and ideally, eventually, across all of the European Union. The visited projects showed that effective climate policy does not only depend on the decisions made on a European or national level, but also on the proper **implementation of these policies and the realisation of new innovative projects on the ground as well as trustful relations between stakeholders**.

LEARNING FROM EACH OTHER TO ENHANCE RES DEPLOYMENT

Projects that were visited during the study tour showed that **regional cooperation can help lag-gards** to learn from best-practice examples and **help frontrunners** to stabilise their position or even exports their ideas. This is particularly true for regional cooperation on the micro-level, meaning on municipality-, city- or regions-level. Danish local governments such as Copenhagen and Sønderborg prove that investing in sharing solutions can strengthen the local economy and open up opportunities for new business models. And the City of Flensburg underlined the importance of a national support programme for frontrunners to acknowledge success and further catalyse action. Participants underlined the fact that **knowledge exchange** about existing technologies, business-models and possibilities for regional cooperation is far from sufficient and **showcasing successful projects** is needed to inspire others to take similar action. This is the case, even though differences in living standards and average income exist for example between Eastern and Western European countries.

Meanwhile the national and European level must capitalize much more on the lessons learnt and experiences. This can mean improving the general database of past projects (e.g. INTERREG projects) and peer-learning processes such as European Week of Cities and Regions regarding targeted dissemination of results and recommendations across regions. While the regulatory conditions for renewable energy projects are different between such diverse regions as Lapland, Northern Croatia or Flanders, the visited projects from the North Sea region nevertheless offered some general insights, learnings and a toolkit for regional policy-makers to draw solutions for their own constituency. The North Sea region offered a good starting point for this, since RES deployment is already relatively high in this frontrunner area and there are examples for regional cooperation from the macro- to the micro-level.

On the other hand, in times when Member States' implementation of the EU 2030 targets is to be steered through an iterative governance process, **national plans and monitoring instruments built on local experiences and successes** can bring promising achievements.

FINANCING COMPREHENSIVE REGIONAL COOPERATION PROJECTS

The study tour has shown that many of the technical and physical solutions for a European energy transition exist already, but there is still a **significant financing gap**. To implement the wealth of existing innovative ideas, projects need the necessary funding to kick-start. Gathering the **necessary capital often remains a bottleneck**, even though many refurbishments and efficiency improvements will yield a return of investment within a short time period. This is also true for innovative cross-sectorial approaches such as the Energy & Data port in Eemshaven as well as the electricity, heat and transport integration. Banks and financing actors are important stakeholders, who can **incentivise and benefit greatly from regional cooperation**: a region with a decentralized, energy-efficient and low-carbon energy system is more likely to stop capital out-flow. It can even strengthen the local economy through additional profits from renewable energy production. Frontrunner regions offer innovative businesses an environment to flourish and both companies and cities will be able to gain from exporting to other regions across Europe: While the companies can increase profits by selling technological innovations, cities can export their knowledge and experiences and thereby improve their image and reputation.

As has been witnessed during the study tour, sufficient EU funding for the regional projects, especially cross-border projects, remains key. INTERREG or Horizon2020 are important pillars for many of the projects, but their administration remains a challenge for many regions. The strategic combination of the two instruments as well as remaining regulatory obstacles in participating Member States remain to be solved. While passing on knowledge from frontrunner to laggard regions is important, it is also crucial to provide the first with financial support for the way forward to reach for the "high-hanging fruits".

INVOLVEMENT OF ALL CITIZENS

As set out in the Energy Union strategy, households, businesses, communities and cooperatives are crucial enablers of the energy transition. Hence, no matter what form of regional cooperation is considered, **the key ingredient for achieving a European energy transition is the citizen's involvement**. Indeed, some of the strongest regions owe their low-carbon transformation to engaged citizens that promoted initiatives from bottom-up. For one part, this is because citizens as consumers of energy services are essential to creating the needed demand-side flexibility. After all, it is humans changing structures and setting change in motion. But they also play a key role in **supporting and financing the deployment of new infrastructure and technologies**. Putting in place the right incentives and frameworks to leverage new business models is essential to **create local value, achieve the envisioned results and gain citizens' acceptance and engagement**. This has been impressively demonstrated all across the North Sea region. Specific support schemes for low-income groups, targeted invitations to workshops and discussions or "energy efficiency ambassadors" rooted in these communities were typical showcases from the study tour. Also, the frontrunner communities are inclusive and **start from early on**: schools and even kindergardens are equally involved in public education as are low-income families. Even though the impact of educational programmes is hard to measure or even monetarise, they are still an undeniable key ingredient for the inclusion of the future generations.

"It is also crucial to have policymakers at different levels to make this happen. They need to show the willingness to make this happen."

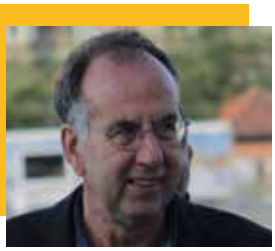
Veerle Dossche, City of Ghent

IMPRESSIONS FROM POLICY-SHAPERS WHO JOINED THE TOUR

Pieter Faber I NG4, Cities of the Northern Netherlands

"The developments are personal driven – that is a key factor".

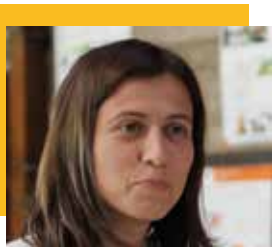
"Many people do not have set their mind set yet for a truly sustainable energy transition. They do not recognize its urgency as much as we do, that working in this field. But this is the real world. We need to face the real world and also find approaches to influence these people."



Rudi Gengler I SEREH, The Netherlands

"What I saw during this tour were many, many enthusiastic people together, working on these projects. I learned that we have to do it together".

"There is still some distance in Europe. Even between my Dutch home town and our German neighboring city, the traffic connection is not good. It takes a long time with the car to drive over to Haren. But our joint project has made us come together and there is a lot of trust between us now. We often cycle across the border to the project meetings, that is the faster way anyway."



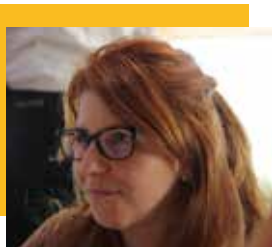
Susana Guerreiro I Sustainable Energy Youth Network, Portugal

"People do cooperate spontaneously if given the chance. At an institutional level we need to create the right incentives – not necessarily for imposing cooperation, but for creating the right frameworks for cooperation. Then people will cooperate naturally."

Magdalena Jaworska-Dużyńska I City Office of Karlino, Poland

"The biggest conclusion on the study tour: The start is always with people. And when I see so many interesting people I've already met and when I see so many interesting people who are so engaged... I'm sure: Seeing is believing. Now I believe that cross-border cooperation is possible."

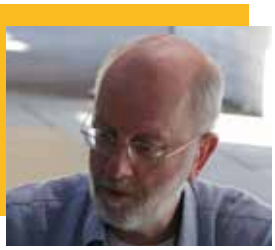
IMPRESSIONS FROM POLICY-SHAPERS WHO JOINED THE TOUR



Alexandra Lafont I Mission Opérationelle Transfrontalière, France

"You have to get policy and companies and citizens to get involved together and to enter into dialogue to really change something... As a French citizen, I really feel that strong democracy and transparency are needed for that."

"We have to think about strategies to facilitate this dialogue and to push actors to work together and act, not just talk."



Michael Laubenheimer I EU Commission, DG RTD, European Commission

"Make ideas happen – that's a key word of this tour and the projects we saw."

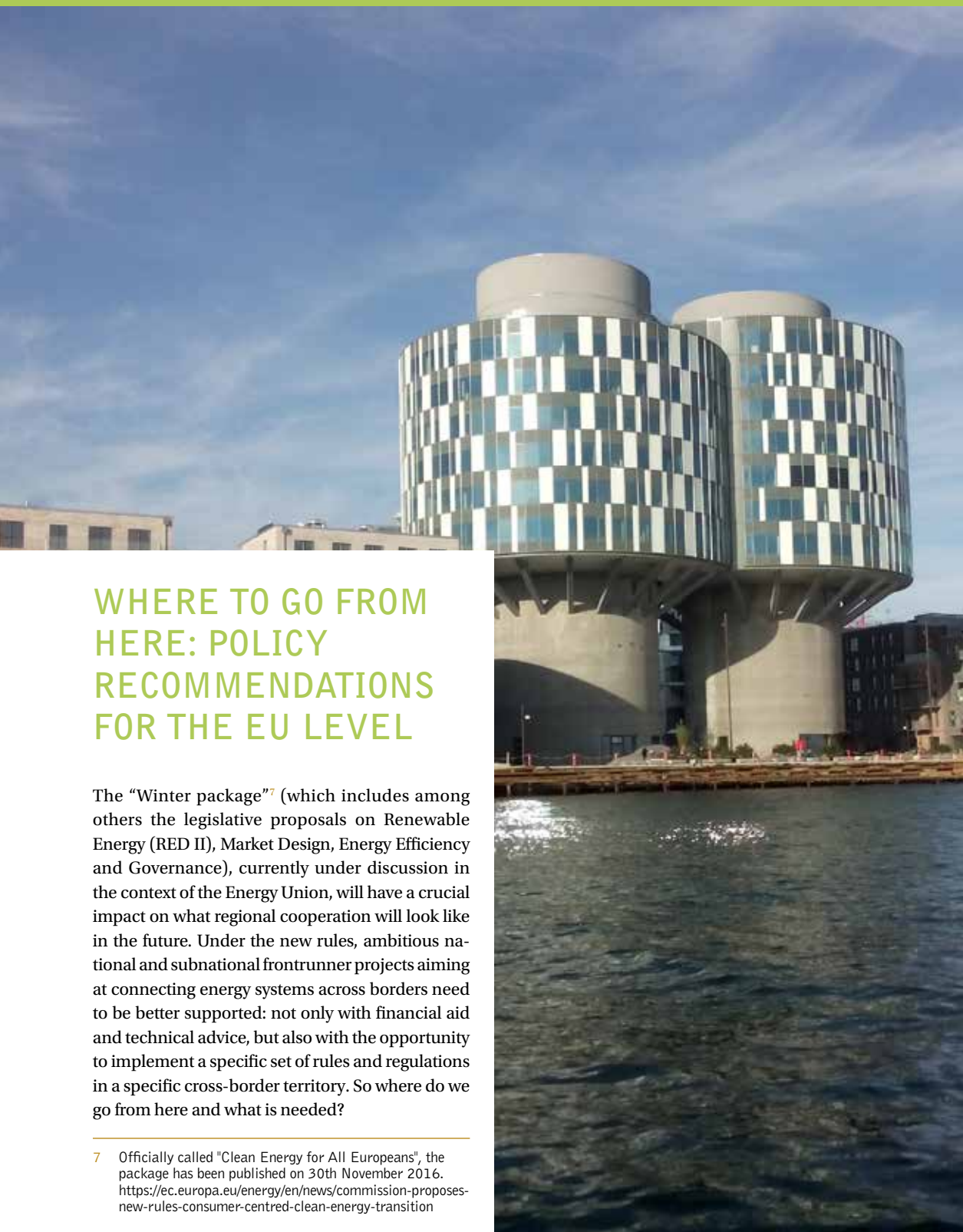
"Regional cross-border cooperation is often a connected issue between regional development and research. European funding programmes should reflect more on this cross-sectoral approach."

Anna Leidreiter I World Future Council

"My main learning from here is: It's humans that drive change, not structures. So I'm still wondering: How can make it happen, that humans put the right structures in place – even for those places where the humans are not there."

Sebastian Rohe I World Future Council/ Heinrich-Böll-Stiftung European Union

"The tour showed that sustainable development is already a business mod-el and the technologies are all there – it just needs to be done. I think the next step is to show people the good examples that are already out there so that they are moti-vated to take action. And maybe, what is needed a little more from the higher levels – the national governments especially – is that they are not afraid to hand over resources and responsibilities to the people on the ground and just let them try and see what comes out."



WHERE TO GO FROM HERE: POLICY RECOMMENDATIONS FOR THE EU LEVEL

The "Winter package"[7] (which includes among others the legislative proposals on Renewable Energy (RED II), Market Design, Energy Efficiency and Governance), currently under discussion in the context of the Energy Union, will have a crucial impact on what regional cooperation will look like in the future. Under the new rules, ambitious national and subnational frontrunner projects aiming at connecting energy systems across borders need to be better supported: not only with financial aid and technical advice, but also with the opportunity to implement a specific set of rules and regulations in a specific cross-border territory. So where do we go from here and what is needed?

7 Officially called "Clean Energy for All Europeans", the package has been published on 30th November 2016. https://ec.europa.eu/energy/en/news/commission-proposes-new-rules-consumer-centred-clean-energy-transition

1 / DEFINE REGIONAL COOPERATION

While the concept of "regional cooperation" has become one of the beacons of hope to realise the Energy Union, it is still poorly and partially defined. The study tour revealed different forms of regional cooperation: In fact, the concept can mean cross-border interconnections, cross-border investments, macro-regional strategy development or transnational knowledge exchange. Depending on the form, it may include different stakeholders such as national, regional and/or local authorities, TSO´s and/or DSO´s. The terminology must be clarified in the upcoming EU energy legislation, in particular the Governance Paper, the Renewable Energy Directive II and the Market Design Directive. The different forms of regional cooperation must be articulated in order to strengthen micro-regional initiatives and to unveil this potential to boost renewable energy deployment. With the right legislative tools and clearly defined responsibilities of actors existing barriers can be overcome.

2 / STRENGTHEN TERRITORIAL COHESION THROUGH SPECIFIC REGULATORY PROVISIONS

Ambitious subnational projects aiming at connecting energy systems across borders need to be supported, not only with financial aid and technical advice, but also with the opportunity to implement a specific set of rules and regulations. Legislations such as for example the Market Design Directive must address the role of DSO´s, complementing TSO´s activities in this context. The Renewable Energy Directive must address this in the effects of joint projects between Member States as well as in the opening of support schemes for renewable electricity to the participation of installations located in other Member States. As regional cooperation plays a crucial role for achieving one of the core principles of the EU: economic, social and territorial cohesion, it is important that the regulatory provisions facilitate this and ensure mutual beneficial processes for all involved stakeholders, avoiding a permanent flow of support from one Member State to another without returning development benefits.

Indeed, the Luxemburg EU presidency 2015 proposed a legal tool[8] "for the attribution and appli-cation of specific provisions for the improvement of cross-border cooperation". The idea behind is that the EU would set up a "Regulation on a European Cross-Border Convention on specific provisions in cross-border regions". This determines the application and implementation of all sorts of rules in cross-border regions, incl. existing laws and regulations, technical standards, as well as different sorts of soft legislation. This tool would give the entities on both sides of the border the possibility to negotiate a specific regional legislative agreement which allows ambitious regions to move forward while respecting the national and European frameworks. The legislative entities could function as laboratories, test new solutions and possibly scale them up afterwards. It would complement the European Regulation on the EGTC (European Grouping of Territorial Cooperation) which already allows EU Member States and/or their public authorities to create cross-border legal entities. However, the EGTC does not address the existing legal framework. After undertaking a study, an intergovernmental working group[9] is currently discussing this topic in more detail and aims at launching a legislative process at EU-level in 2017.[10] By this legal amendment, one could overcome legal and regulatory obstacles in cross-border cooperation that local authorities currently face.

8 http://www.dat.public.lu/eu-presidency/Events/Informal-Ministerial-Meetings-on-Territorial-Cohesion-and-Urban-Policy-_26-27-November-2015_-Luxembourg-City_/Material/IMM-Territorial-_LU-Presidency_---Input-Paper-Action-3.pdf
9 http://www.espaces-transfrontaliers.org/en/activites-ue/obstacles-intergovernmental-group/
10 http://www.espaces-transfrontaliers.org/en/news/news/news/show/lancement-du-groupe-intergouvernemental-sur-les-solutions-innovantes-aux-obstacles-transfrontaliers/

3 / INTEGRATE CROSS-SECTORIAL COOPERATION INTO REGIONAL COOPERATION

Regional cooperation projects in the energy sector often concern different sectors (e.g. electricity and heat); hence authorities face administrative barriers in developing comprehensive strategies. Meanwhile, European Commission Vice President Maroš Šefčovič pointed out in February 2016[11] that "linking up energy, transport, water, waste, and ICT will create environmental and social impacts through resource efficiency, better air quality, better waste management, development of new skills in the population or local job creation." Cross-sectorial cooperation as an integrated element of regional cooperation is therefore crucial for boosting local production of renewable energy, and for enabling local stakeholders to cope with technological changes (smart networks, smart meters, etc.) and with new modes of production and consumption (e.g. electric vehicles). This also needs to be reflected in the Market Design Directive.

Cross-sectorial cooperation is an integrated element of regional cooperation.

4 / ENGAGE LOCAL AND REGIONAL AUTHORITIES IN DEVELOPMENT OF NATIONAL ENERGY AND CLIMATE PLANS

As the study tour has shown, local and regional governments are already at the forefront of the energy transition. Local authorities ensure that energy is saved and remaining needs are covered by local renewable sources, by planning for and investing in energy efficiency, renewable energy and sustainable transport. Apart from that, they also facilitate and encourage civil society and private sector initiatives, which support fulfilling their goals. This fruitful cooperation scheme should be used more extensively by the national governments, in order to bring energy and climate planning practices closer together, to increase coherence and effectiveness. This needs to be particularly included in the Governance Paper of the Energy Union. In times, when a Member State's implementation of European targets is to be steered though an iterative governance process, robust national plans also require cooperation between the different actors and in particular between the different governance levels. This can only be done when having a proper understanding of the actions taken at local and regional levels. Local governments must be considered as new players in their own rights that have a significant influence on the renewables agenda, not least through their Covenant Sustainable Energy and Action Plans.

5 / ENABLE MICRO-LEVEL REGIONAL COOPERATION

Building on the recommendation to define regional cooperation and unveil different forms of that, particularly micro-level cooperation must be included in all legislative proposals of the "winter package". This is crucial to enable neighbouring communities to develop efficient and smart regional infrastructure across national borders. The move away from generation in large central power plants towards decentralised production from renewable energy sources requires an adaptation of the current rules of electricity trading and changes the existing market roles. The strong monopolistic position of the national TSOs is a bottleneck in the effective implementation of cross-border energy projects. TSOs need to cooperate stronger with each other, but also with DSOs. Providing DSOs with the possibility to cooperate and transport energy across borders should be tested. The new RED II as well as the legislation on the Market Design need to strengthen tools of joint implementation while ensuring that there are strong frameworks and incentives for participation of citizens and cooperatives.

11 http://europa.eu/rapid/press-release_SPEECH-16-424_en.htm

6 / AMPLIFY LOCAL VOICES IN EUROPEAN POLITICS

The energy system, energy markets and the national and European discussions about their regulations are rapidly changing. Cities and regions also need to cooperate in occupying these political debate arenas. The Committee of Regions[12] and initiatives like the Covenant of Mayors[13] must be further strengthened, through obligatory consultation and representation in the decision-making process. Local governments must be considered as new players in their own rights, on an equal footing with Member States as they contribute significantly to implementing the renewables agenda, not least through their Covenant Sustainable Energy and Action Plans. Collectively, their voices carry weight. At the same time, the European Commission should consider a stronger presence on the local and regional level. The programme Europe Direct[14] could be developed into or complemented with truly "European Embassies", especially in peripheral and cross-border regions, that could be a powerful tool to bring Europe closer to the people. These embassies could function as a direct channel between people working locally on innovative and EU-funded projects and the European Commission, while providing services and practical advice to the people and on the ground. A similar solution is proposed on the global level: National Urban Policy Commissions[15] as cross-ministerial and cross-governmental bodies, co-led by national, regional and local governments which would help to bridge incompatibilities between local and national legislations and hence help the effective and consistent implementation of national programs within the local context.

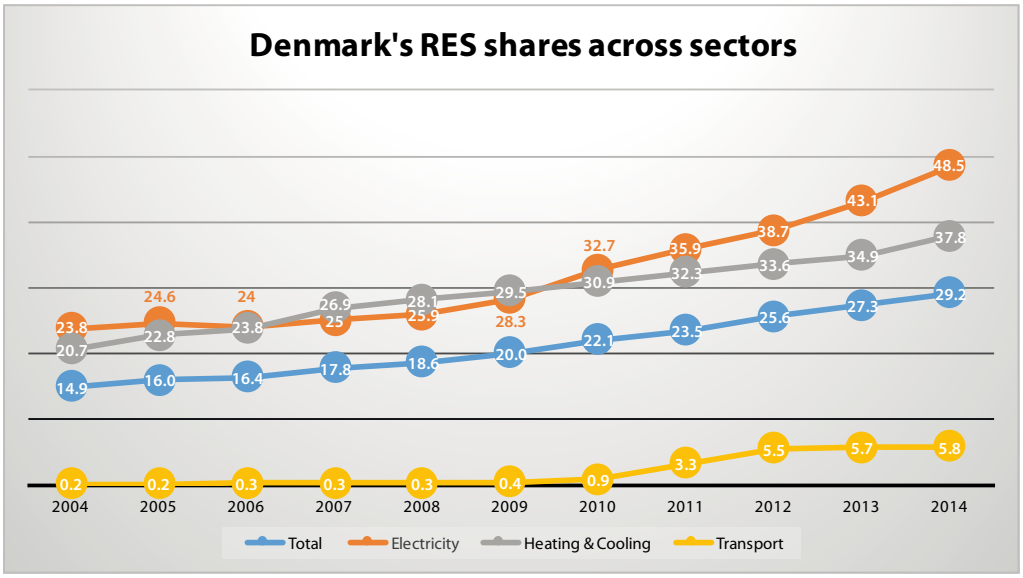
12 http://cor.europa.eu/Pages/welcome.html
13 http://www.covenantofmayors.eu/index_en.html
14 https://europa.eu/european-union/contact_en
15 https://www.worldfuturecouncil.org/wp-content/uploads/2016/06/WFC_2016_Towards-National-Urban-Policy-Commissions.pdf

PROJECTS VISITED AT THE STUDY TOUR

DENMARK'S AND GERMANY'S JOINT PV-TENDERS

In July 2016, Denmark and Germany signed a co-operation agreement[16] to start a mutually opened cross-border auction for solar PV. Although the use of this form of common cooperation is made possible under the EU Renewable Energy Directive – 2009/28/EC[17] (articles 5 to 11) – and encouraged by the Commission, this joint tender is actually the first of its kind. In Copenhagen, the group of the study tour met with a representative from the Danish Energy Agency to learn about some of the insights of this pilot project: How did the cooperation actually start and what are its challenges and possible benefits?

16 https://ens.dk/en/our-services/current-tenders/pilot-tender-price-premium-electricity-solar-pv
17 http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32009L0028



In 2014,[18] around 14% of Germany's gross final energy consumption came from renewable energy. In Denmark, the RES share even reached 29% in that year. Both countries have mainly used a system of feed-in tariffs and premiums to drive up RES in the electricity sector. The Nordic country is especially strong with wind energy – 40% of the electricity is generated by wind on- and off-shore.[19] In Germany, wind is also the most important RES, providing 12,3% of the electricity in 2015[20] and for this year, wind turbines are expected to produce more electricity than nuclear power plants. With a share of 6%, PV is also a considerable source of electricity in Germany, while the share is three times smaller[21] in Denmark. While it seems a logical next step for these two neighbouring frontrunners of the energy transition, with their – at first glance – similar support schemes and high RES-shares to cooperate, the decision was not completely voluntary. The European Commission voiced concerns regarding state aid for Danish off-shore wind farms and other forms of subsidies for renewables, because it found that producers outside the country were discriminated. It ruled that[22] the joint tender would remedy

Denmark: Energy in Numbers

RES-Share (Gross Final Consumption in 2014)	
Total:	29,2%
Electricity:	48,5%
Heating & Cooling:	37,8%
Transport:	5,8%
GHG Reduction (1990-2014):	27,6%
Energy self-sufficiency (2014):	85,7%
Households connected to district heating & cooling system:	60%

18 http://ec.europa.eu/eurostat/statistics-explained/index.php/Energy_from_renewable_sources
19 https://www.agora-energiewende.de/fileadmin/Projekte/2015/integration-variabler-erneuerbarer-energien-daenemark/Agora_Snapshot_of_the_Danish_Energy_Transition_WEB.pdf
20 https://www.unendlich-viel-energie.de/mediathek/grafiken/strommix-in-deutschland-2015
21 http://www.energinet.dk/EN/KLIMA-OG-MILJOE/Miljoerapportering/Elproduktion-i-Danmark/Sider/Elproduktion-i-Danmark.aspx
22 http://ec.europa.eu/competition/state_aid/cases/249516/249516_1634243_161_5.pdf

for the discrimination in 2015/2016. The case was somewhat similar for Germany: As part of the state aid approval[23] for Germany's Renewable Energy Sources Act 2014 (EEG 2014), the German government and the European Commission agreed that from 2017 onwards, 5 percent of the newly installed renewables capacity per year will be opened to installations from other EU Member States (partial opening[24]).

The results and learnings from this pilot project can motivate other Member States to start their own cross-border tenders.

As both countries felt a top-down pressure from the Commission to cooperate, they started negotiations in 2015 and finally landed an agreement in July 2016. As the deal has now been approved, the auction started in October 2016 and participants had 6 weeks to place their bids. Of the 20 MW solar energy that are tendered in Denmark, 2.4 MW can be placed in Germany. Germany will open up 50 MW, in which installations located in both countries may submit bids. The tenders are mutually open, but still separate, with individual tender designs and the application of the local rules and conditions. Even though the support schemes seem similar in both countries, there are still differences in detail: For instance, the premium is fixed in Denmark and floating in Germany; the country has a maximum price of 11,09 ct/kWh, while north of the border, there is no such thing. So it was decided[25] that regulative aspects including taxation rules and planning law will follow the project location, while the auction scheme including pricing rules, size limits and compensation types can be defined by the country paying the support. There is no quota system[26] to ensure that a certain share of successful bids goes to a certain country and there are no special site-restrictions for the German bidders in Denmark or vice versa. However, the possibility of physical exchange should be given. The tool of statistical transfers[27] will be used when counting the two countries' contributions through this project to the European 2020 RES targets. However, the tender does not allow for self-consumption and small-scale projects will likely not participate. Both countries did not include stakeholders such as regions, cities or cooperatives in the negotiations and did not incorporate specific provisions for these actors.

The outcome of the tender is highly anticipated. It will be insightful to see, what the final price for the PV electricity will be after the auctions and how significantly the overall costs will decrease by the joint auctions. Not only will the level of irradiation at the sites, but also the costs of capital be crucial factors for the determination of the prices. The danger of capital outflow is regarded very sceptical, especially by the Danish side. It would be problematic, if money from Danish electricity customers is used to pay German companies installing PV-plants on Danish territory. However, these capital flows can end up being two-sided and Danish producers could also profit from their installations south of the border. Facilitating the participation of cooperatives in the tenders could also help to increase the acceptance of the joint tender.

Although it seems that the actual Danish government is not (yet) interested in the participation in more of these joint projects, Germany on the other hand is searching for more interested partners. The results and learnings from this pilot project can serve as a blue-print for the projects yet to come. If results are positive, they could motivate other Member States to start their own cross-border tenders (or similar undertakings). After all, intrinsically motivated projects are more likely to be successful than those imposed by a higher authority.

23 http://europa.eu/rapid/press-release_IP-14-867_en.htm
24 http://www.bmwi.de/EN/Topics/Energy/Renewable-Energy/opening-up-pilot-auctions-european-member-states.html
25 http://www.auresproject.eu/publications/cross-border-auctions-solar-pv-the-first-of-a-kind
26 https://www.bundesnetzagentur.de/cln_1411/EN/Areas/Energy/Companies/RenewableEnergy/Cross-borderAuctions/PV_Danmark_23112016/23112016_PV_Danmark_node.html
27 http://ec.europa.eu/energy/en/topics/renewable-energy/renewable-energy-directive/cooperation-mechanisms

COPENHAGEN

Across the world, Copenhagen is known as a showcase example for a sustainable urban development and now many different visitors from across the world want to learn about the development in the Danish capital: Amongst them, the participants of the study tour. The frontrunner position did not come naturally to the city though. In the 1950s, around 750,000 people lived in the prospering city; but the port industry declined, around 50,000 jobs were lost and in 2000, less than 500,000 inhabitants[28] were left. "Nobody believed in the city back then. But then the city government decided to collaborate with neighbouring cities such as Malmö," remembers Rita Justesen, the head of the planning and architecture department of Copenhagen's developing company *By & Havn*[29] (City & Port). "In fact, as a region we were stronger than as a city alone."

The airport expanded and the Øresund Bridge was opened up to connect Copenhagen with the Swedish neighbour Malmö. By & Havn, owned by the Copenhagen municipality (95%) and the Danish state (5%), was in charge of developing the old harbour areas. The profits from selling the land is used to expand the public transportation system in Copenhagen.

Rita Justesen, Head of the Planning and Architecture Department, City of Copenhagen

The investments have paid off and in 2025, more than 700,000 inhabitants are expected to live in Copenhagen – in the same year, the city wants to become carbon neutral. Reusing the large old port areas makes it possible to manage the growth and create new concentrated, dense and sustainable urban districts. Nordhavn[30] is one of these districts: 40,000 people are supposed to live in this former industrial area by 2050. At the beginning of the transition, more than 400 citizens participated in workshops and discussed what they needed from the new quarter and what sustainability should actually incorporate. To make sure that many people can profit from the developments, a certain share of the housing has to be for low-income residents. The first neighbourhood of Nordhavn is now almost completed. The roofs of the buildings are equipped with solar panels or green roofs and high energy

28 https://www.citypopulation.de/php/denmark-copenhagen.php
29 http://www.byoghavn.dk/english/about/about2-uk.aspx
30 http://www.byoghavn.dk/english/development/districts-uk/district-nordhavnen-uk.aspx

efficiency standards apply. There is a large parking building in the district; from here, biking is the easiest way to go around. While for every 200 m² living space there have to be eight parking spaces for bikes, only one is required for cars. On top of the parking building, there is a large playground and the best view on the windmills just off-shore. The project EnergyLab Nordhavn is carried out in addition to the development. It integrates research, development and demonstration and focuses on a cost-effective future smart energy system integrating multiple energy infrastructures (electricity, thermal, transportation) and providing an intelligent control of subsystems and components.

But also in Copenhagen, some challenges remain.[31] In the bicycle capital of the world – around 50% of the traffic comes from bikes – there is a controversial debate whether parking space for cars is limited too harshly. Also, the developers of Nordhavn tried to build more off-shore wind farms on the shores, but protests from the neighbouring municipality have stopped the plans. Furthermore, finding affordable housing is increasingly challenging for low-income families. While these examples show, that the debate about a future sustainable development is still ongoing in the region, Copenhagen is also putting effort into influencing the international debate. The city works on promoting itself as an international showcase for smart green solutions – because they do have indeed a convincing business case. This is done by establishing showcase platforms, membership in international city networks (such as C40, Eurocities) or a sister city agreement with Beijing. On the regional level, Copenhagen cooperates closely with the neighbouring[32] regions in order to create an attractive business region.

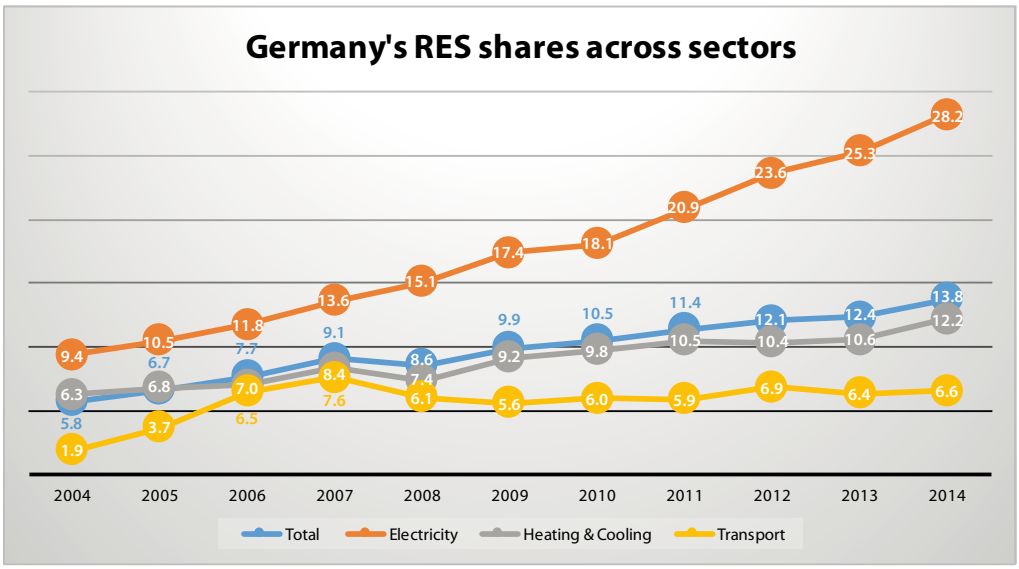
31 https://www.citypopulation.de/php/denmark-copenhagen.php
32 https://stad.gent/ghent-international/city-policy-and-structure/ghent-climate-plans

SØNDERBORG & FLENSBURG

Flensburg (around 90,000 inhabitants) and Sønderborg (around 75,000 inhabitants) are the two largest cities on the Danish-German border. "This region already has a strong feeling of a joined identity", says Lars Kaiser from the *Industrie- und Handelskammer* (IHK, Chamber of Industry and Commerce) in Flensburg. In this city for instance, about 25% of the inhabitants belong to the Danish minority. The two cities also both have a relatively high share of renewables and ambitious goals to become CO_2-neutral. While the Sønderborg regions want to achieve this by 2029, Flensburg aims at 2050.

Back in 2007, the City of Sønderborg decided on their 2029 carbon-free target and started the ProjectZero[33] initiative, led by a public-private partnership company consisting of the municipality and companies and research facilities from the region. "But really it was the citizens first that had the idea and spread it. They were the ones convincing the city council", says the deputy mayor (and former mayor) of Sønderborg, Aase Nyegaard. Between 2007 and 2015, the city already achieved a CO_2-reduction of 35%. More than 800 new green jobs in construction, district heating or energy consulting were created in this time period. In the Masterplan 2029, all the necessary steps for the transformation are collected. "To make things happen, you need clear targets", explains Peter Rathje, the managing director of the ProjectZero company, "what is also needed is a holistic approach that is involving the policy-makers, the companies providing solutions and the society in an equal manner."

Danfoss is an example on the company side. This residential company is a specialist for products that save energy and has a successful business case with it, turning over around € 1 billion and employing 5,000 people. "We are not lacking technologies to save energy. It is all there," says the Danfoss manager Oddgeir Gudmundssons, "But policy-makers need to know about these technological opportunities". One example: In the ProjectZero context, Danfoss refurbished a supermarket[34] in the area. The excess heat from cooling down the food products is now fed into



33 http://www.projectzero.dk
34 http://www.danfoss.dk/newsstories/cf/borgerne-holder-varmen-med-superbrugsens-kølesystem/?ref=17179906934#/

the district heating system. In only one year, this innovation saved around € 25.000 and 34% of CO_2-emissions. Danfoss' business model matches the approach of ProjectZero, as Peter Rathje says: "Our number one priority is to be energy efficient, because the energy we do not use is the one we don't need to produce." The ProjectZero has also been proven to be a successful business case for the city. Sønderborg entered into a partnership agreement[35] with the Chinese city of Haiyan in the context of the EU-China Urbanisation Partnership[36] and now companies from the region sell their knowledge and solutions to Haiyan, for instance the ZEROhouse and ZEROcarbon street concept that have been developed in Sønderborg.

The ProjectZero has also been proven to be a successful business case for the city.

Aase Nyegaard, Deputy Mayor at Sønderborg Kommune

Involving the people in Sønderborg is the other big part of the ProjectZero. In the ZEROfamily learning programme, more than 100 families learned how to save water and energy by picking low-hanging fruits. By raising awareness and introducing easy changes such as changing light-bulbs, average families saved 25% in energy and 45% in water consumption. The spin-off programme ZEROhome focuses on assisting the 18,600 private house owners in Sønderborg to find the best solutions for energy retrofit of their – on average 65 years old – homes. There is also a programme at schools, aiming to integrate topics of energy and sustainability in the curriculum, from Kindergarten to University. "These educational programmes are an important channel for reaching out to low-income families. They hear about the activities via their kids and can participate", underlines Aase Nyegaard.

"Different cities might choose different strategies or instruments; but in general, becoming carbon free is nothing special. You can do it everywhere, you just need to do it", concludes the deputy major, "We took the leaders role and did something for ourselves. As a result, we have gained independence from the central government and the ProjectZero is now a basis for the businesses, the culture and the education in Sønderborg."

35 http://brightgreenbusiness.com/en-GB/News/Archive/2015/Sonderborg-and-Haiyan-show-the-way.aspx
36 http://eeas.europa.eu/archives/delegations/china/eu_china/sustainable_urbanisation/sustainable_urbanisation.htm

The neighbouring German city Flensburg has also put its mind towards becoming carbon neutral and put plans in motion for achieving this goal. Similar to Sønderborg, the initiative is the result of engaged citizens, putting the transition on the agenda and founding the Klimapakt[37] in 2008. The project is organized as an association, including 20 partners – universities, social facilities, providers of energy and mobility and other companies, as well as the chamber of commerce and the city itself. In addition companies, as well as private citizens joined as supporting members. They all commit themselves to the overall goal of the Klimapakt, which is a complete emission neutrality of the whole Flensburg region by 2050. The Klimapakt and its members support the city with the adoption of an integrated climate protection concept in 2011. They also carry out their own mitigation and efficiency measures within their own businesses, for example in the areas of mobility, buildings or energy production. Additionally, the Klimapakt as a whole implements a range of projects in the city. Energy savings challenges between companies, campaigns to increase the share of commuters on bikes or the promotion of a regional and seasonal diet are examples. "We also convinced a system operator for car-sharing to expand to Flensburg. Usually, a city like Flensburg is too small for them to run operations economically, but because the members of the Klimapakt committed to participation, it made Flensburg the most successful city where the car-sharing was ever started", says Martin Beer from the city of Flensburg. Inspired by its Danish neighbours, the city is also the district heating champion in Germany, with over 98% of the households connected to the system. This makes the consumption of heat more efficient per se. However, most of the heat is provided by coal power plants, so Flensburg still has some work to do by providing heat from renewable sources.

Martin Beer, Klimapakt, City of Flensburg.

Flensburg[38] is also taking part in the project "Masterplan 100% Klimaschutz"[39] of the national climate mitigation initiative[40] from the German Federal Ministry for the Environment. In this project, 19 leading municipalities in the countries are being supported to continue with their frontrunner position. The initiative offers a platform for the cities to connect with and learn from each other. In the second round of the initiative, Flensburg is now paired up with the city of Kiel to transfer its learnings, on top of the constant exchange with Sønderborg, the frontrunner on the other side of the border. The climate protection managers meet regularly to discuss their activities, there is a recurrent "Tour de Flens"[41] between the two cities to showcase electromobility and joint educational "Olympics" between students from both cities.

The INTERREG V A project "FURGY CLEAN Innovation"[42] is another example of direct cooperation between the border regions of Schleswig-Holstein, Syddanmark and Sjælland. The aim of the project is to foster the development of innovation activities in the field of clean energy (innovation, efficiency, storage and intelligent use), using the tool of cross-border cluster management. The network includes small and medium-sized enterprises in the region that both

37 http://klimapakt-flensburg.de
38 http://www.klimaschutz.de/de/zielgruppen/kommunen/praxisbeispiele/project-des-monats/liste/klimaschutz-flensburg-eine-ganze-stadt-auf-kurs
39 https://www.klimaschutz.de/de/programm/masterplan-100-klimaschutz
40 https://www.klimaschutz.de
41 http://www.artefact.de/tour-de-flens/home/index.html
42 http://www.furgyclean.eu/de/

produce and consume energy or that are active in the fields of system integration and smart energy solutions. As the project region is quite large, events rotate between different locations and webinars are offered to make it possible for all network partners to participate. The project has a running time of four years to create a long-lasting and sustainable network.

SMART ENERGY REGION EMMEN-HAREN (SEREH)

The Smart Energy Region Emmen-Haren (SEREH) project is a collaboration between the German city of Haren (Ems), which has about 25,000 inhabitants, a high capacity for renewable energy and – at average – produces 147% of its local demand, and the neighbouring Dutch city Emmen, with a population of 110.000 and a RES share of less than 10%. Both cities aim at becoming free of greenhouse gas (GHG) emissions by 2050. "The cooperation started 4-5 years ago, when we went to visit our colleagues in Haren to learn more about their achievements in developing RES projects. We also visited the local kindergarden linked to a smart grid system. It was a very nice meeting and there was a great sympathy between us. After all this time working together now, there is a lot of trust between us and the German project partners", says Melinda Loonstra-Buzogány from the city of Emmen. The two communities represent the specifics of the two countries' energy system: Germany has a relatively high share of renewables already and faces the challenge of balancing out phases with peak-load or low production. The Netherlands deploy very little RES so far but use a lot of gas, a fossil fuel with relatively little emissions that is suited to provide base load electricity supply. So in theory, the cooperation between the two cities (and countries) with complementary needs makes sense. Currently, additional funding from INTERREG and Horizon2020 funds has been applied for in order to put this theoretical argument on a more profound basis and kick-off implementation of the project.

One of the solutions for this problem could be a cross-border electricity transport through the medium voltage grid.

In practice, things look different: For the time being, in times of peak load production in Haren, the excess electricity is fed into the German national high voltage grid, regulated by the transmission system operators (TSOs). This big amount of electricity sometimes risks overcharging the grid, consequently making it necessary to either shut down power plants or to dump electricity for a negative price on the market. One of the solutions for this problem could be a cross-border electricity transport through the medium voltage grid. The TSOs hold a monopoly on cross-border electricity trade. Over this detour, the electricity from Haren might reach Emmen in the end. The fluctuating inflow of RES into the transmission grids is a reason for rising electricity costs in Germany. One aim of SEREH[43] is to develop and implement a (smart) grid medium voltage interconnection between the two cities, in order to avoid loop flows and have a connected and self-sufficient RES region – the "SEREH land". This would require for the TSOs to give up some of their privileges and for the DSOs on both sides

43 http://www.rtvdrenthe.nl/nieuws/111095/Emmer-windmolens-gaan-bedrijfsleven-miljoenen-opleveren

of the border to cooperate further. The SEREH project wants to use European funds for a research and innovation project to learn how to connect the systems and planning tools of DSO's in both countries. Secondly, it aims at finding out how to best comply with national and European TSO protocols in order to make recommendations for adapting energy regulations to regional and local needs.

A second aim is to hold the benefit of the locally produced energy in the region, for example by setting up a joint wind park on both sides of the border. This could be partly owned by prosumers and energy cooperatives and could be connected to both the Dutch and German medium voltage grid. The Emmen-Haren region can thus serve as a living lab. "Windmills are controversial in the Netherlands. We hope to create a positive example with this cross-border and cooperative wind farm, so that acceptance for renewables will increase", says Rudi Gengler from the city of Emmen. By producing and using their own local renewable energy, the region wants to profit economically.

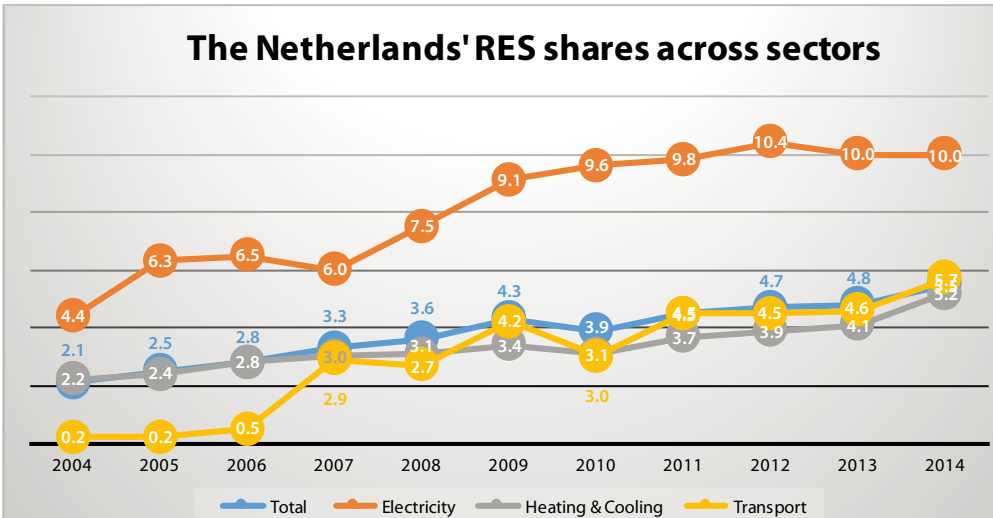
In order to bring stability to the medium voltage grid when large quantities of windpower are fed in, the companies in Emmen would have to absorb excess power from the grid in Haren. Experiments with cross-border demand-side responses in industrial processes are needed for this. "We also need a regional merit order and real time price regulation on a regional scale. Luckily this has been done before. We could look into a project of EnergieAvantgarde Anhalt in Germany or the Ireland/Northern Ireland cross-border energy market. Of course more research and learning is needed to translate this to the Emmen-Haren situation", explains the project manager Siegbert van der Velde and identifies the crucial points for the pioneering project to succeed: "We need living lab conditions: The governments of both Germany and the Netherlands have to create room for experimentation in the Emmen-Haren area, especially with regard to national energy regulation. The European institutions can help create pressure on the national governments and the DSO's and TSO's to get this done."

"Windmills are controversial in the Netherlands. We hope to create a positive example with this cross-border and cooperative wind farm, so that acceptance for renewables will increase".

THE NORTHERN NETHERLANDS

On the third and fourth day of the study tour, the group visited projects in the Northern Netherlands, which is made up by the three provinces Groningen, Drenthe and Fryslân. This region has a population of about 1.7 million people and is situated between the German state of Lower-Saxony and the North Sea. The area is also the Netherland's and even Europe's centre for natural gas extraction. The gas field close to Groningen is amongst the world's top 10. As a result, with about 40% the Netherlands have a very high share of natural gas in their energy consumption, while renewables only contribute about 6%. But even in Europe's fossil gas hub, things are changing. "The gas extraction causes an increasing number of earthquakes in the region", explains Nienke Homan, the regional minister for the energy transition in Groningen, "These dangers motivate us to change our energy system. With the aim of having 21% renewables by 2020, Groningen has become a leading province in the Netherlands." But even though earth-quakes threaten the houses of the population, resistance against on-shore wind farms is high. "We want to learn from the German neighbours how they have convinced the population of wind farms", says Homan, "and we need to strengthen the local governments because they are closest to the people and are most likely to succeed in the task." National Coordinator Gert-Jan Swaving adds: "There are still € 150 billion buried in our gas fields, so the interests to keep exploiting them is high. But we have to remind people that only 8% of the € 250 billion that were extracted so far have been reinvested in the Groningen area. With renewables, the profits are more likely to stay in the region."

Nienke Homan, Regional Minister Energy Transition, Groningen



At the Energy Barn at the EnTranCe in Groningen, the participants of the Study tour played an interactive energy game, that was developed by researcher Frank Pierie of Hanze University. The four players in the game – Balance, Nature, People & Profits – had to gain a certain amount of individual and over-all points. The points could be won by placing renewable power plants – such as biomass or wind – and other innovations like storage or efficiency on a map. But a wind turbine, while providing profits and being good for the nature, provokes at the same time resistance from some people and can affect balance in the grid negatively. As the space on the map in the game was limited, the players had to discuss and negotiate their overall strategy to overcome their sometimes diverging interests.

The game proved an excellent tool for facilitating the debate in a creative manner and it provided a key insight: Sustainability is about communication and about people. The targets for renewable energy can only be reached when the different groups in a society come together and openly discuss and decide as a group. The game also highlighted the important spatial aspect of RES installation and the need (and opportunity) for rural communities to build up their renewables capacity and provide cities with the excess energy.

Strengthening research and innovation is one component of a successful energy transition. In Groningen, the Energy Transition Centre (EnTranCe) is providing students, researchers and companies with opportunities, facilities, technologies and a network to develop their plans into energy products and services for the market. The project started off with providing only a few container-offices and quickly those were rented out, leading EnTranCe to growth. There is an existing grid for heating and electricity, where new innovative product can be linked to and their function can be simulated and tested under real conditions. Good ideas are immediately translated into successful product-market combinations.

The activities of EnTranCe focus on the development of a reliable, sustainable and affordable energy future. The three main themes in which the various projects are implemented are "decentralized balancing", "BioEnergy" and "Sustainable Traffic Systems".

After the stop in Groningen, the next step in the study tour was the TT-Circuit in Assen. A surprise at first glance: What does a motorsport race track have to do with renewable energy? "The TT-Circuit is a place where fossil fuels meet renewables", says Jesse Siegers of the City of Assen. Right next to the race track, large PV collectors were installed; with about 6 MW capacity, they are one of the biggest installations in the Netherlands. Underneath the PV-modules, there is parking space for about 12,000 motorbikes.[44] "Because of this double function, we can use the area more efficiently", says Siegers, "this new kind of parking lot has also sparked interest from the community. People ask, and maybe it will be an inspiration for some of them to take a closer look into PV-energy. There is also a special product that allows the citizens of Assen to buy electricity from the PV farm."

The aim of "E-ntelligence Assen" to reduce energy consumption by 20% is mainly tackled by change in behavioural patterns.

44 http://www.ttcircuit.com/en/track/weetjes/

After the visit to the PV-field, some more projects in Assen were introduced to the study tour group. In the programme E-ntelligence Assen, the aim is to reduce energy consumption by 20%. This should not only be done by technical innovations, but mainly by change in behavioural patterns. To alter these behaviours, local stakeholders, such as schools and community centres, are involved in the programme. Sensor City Assen is another project that will help in the local energy transition. By collecting data and by analysing it holistically, the city hopes to save energy in the transport or sewage sectors, for instance.

After the visit in Assen, the study tour group returned to the North Sea shore and visited the dike connection *De Nieuwe Afsluitdijk*. The old *Afsluitdijk* was built in 1932; the dike has a length of 32 km and separates the Ijsselmeer (and its fresh water) from the open salty sea. Over the course of 5 years, € 800 million are now being invested to make the structure fit for the future. "This project is a collaboration between the central government and the regional governments. This is strange, because we are used to every level doing their own thing. But it works out very well so far", explains Tjalling Dijkstra from the Fryslân province, "The new *Afsluitdijk* is a showcase example for combining climate mitigation, climate adaptation and issues of regional development into one project". The dike is not only strengthened to withstand a rising sea level, but it will also be transformed into an energy dam by 2021.

De Nieuwe Afsluitdijk is a collaboration between the central and the regional government.

By then, the structure will be producing about 7 MW solar energy, 2.5 MW tidal energy and 1 MW osmotic energy. The dike will be used as a testing site for these new blue energy technologies. "We do not want to make the same mistake as with wind energy. There, the Netherlands played an important part in developing the technology, but was too late for big investments to enter the market", says Dijkstra. "We cooperate with Scotland in the development of this blue technology and we think this technology could be a great solution especially for islands, but also for adding value to certain industrial processes."

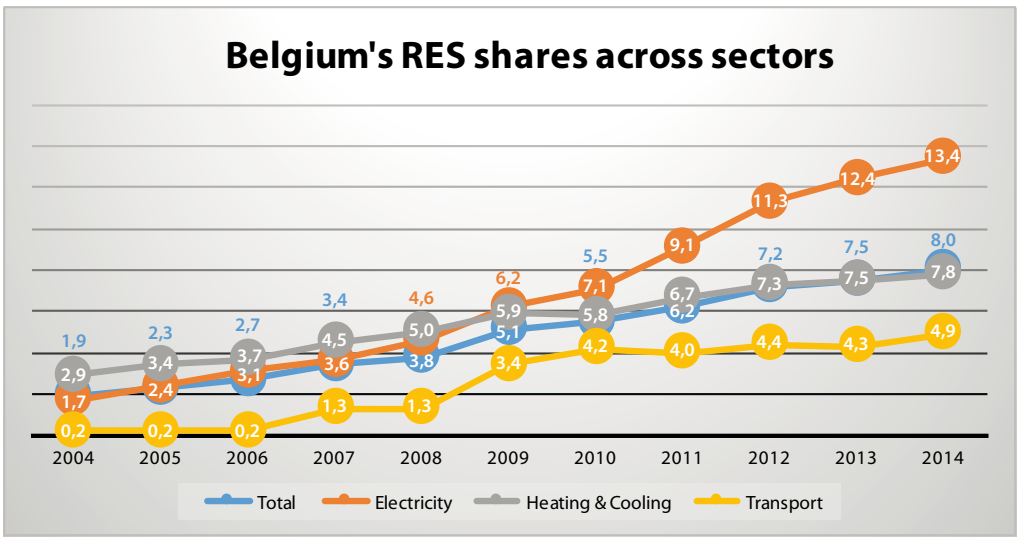
THE CITY OF GHENT

With a population of 255,000, Ghent is the largest city of the East Flanders and also its capital. The city also marked the last stop on the study tour on Wednesday afternoon, before the group took off towards its final destination in Brussels the next day. In Ghent, Deputy Mayor Tine Heyse, whose portfolio includes the climate and energy policies of the city, welcomed the group at the city hall, where several of the ambitious projects in the city were presented.

As the first Flemish city, Ghent signed the Covenant of Mayors[45] in 2009 and released its first climate plan in 2011, pushing for climate neutrality in 2050 and aiming at emission reductions by 20% (baseline 2007). This first climate plan was designed to generally express a political will, to collect the necessary data and information for the local energy transition and to start a participatory process. In 2015, the city council approved a second climate plan[46] with concrete measures to reach the target for 2019 and a commitment to invest an amount of € 105 million in actions that directly concern GHG-emissions reduction.

The social dimension of the energy transition is especially important to the city: This includes specialized programmes to ensure the involvement of low-income households. Energy poverty is a particular challenge to this group and the city governance wants to tackle this by specific measures to support underprivileged families in their efforts regarding energy-efficient living and refurbishing. These measures include premiums for refurbishments proportional to income, zero-interest loans, energy scans, and extensive guidance by the non-profit association REGent.[47] In addition, the city administration also wants social housing refurbishments to be more energy efficient. This is why the City of Ghent provides financial support for energy refurbishments of social housing by the social housing companies operating within its territory.

Involving citizens and local stakeholders and offering them a chance to participate in the projects is also a part of the social dimension. The project *Buurzame Stroom* ("Sustainable Neighbourhood Electricity") for instance aims at increasing the RES share in a specific city district by installing technical solutions and



45 http://www.covenantofmayors.eu/index_en.html
46 https://stad.gent/ghent-international/city-policy-and-structure/ghent-climate-plans
47 http://www.vzwregent.be

coaching people to save energy. "We also want to facilitate connections.", adds Alex Polfliet from Zero Emissions Solutions.[48] "By bringing people owning suitable roofs for PV but have no investment appetite together with people search for such roofs and want to invest, we can facilitate the deployment of RES in the city and increase the share of locally owned and produced electricity." Buurzame Stroom combined elements and in-spirations from preexisting projects in Germany, the Netherlands, Sweden, the UK and the USA. By increasing the amount of local PV-electricity, the city plans to reach its political target of doubling the share of locally produced renewable energy from 7.5% in 2011 to 15% in 2019. In another project implemented in Ghent, transparency and involvement in the planning process of two wind farms was enhanced. By creating this open dialogue, facilitated by the neutral moderatorEnergielandschap Oost-Vlaanderen,[49] resistance against the windfarms was lowered and led to an actual higher approved capacity in the end. An environmental fund was set up in one case to use some of the profits to compensate for the environmental impact and new citizen-cooperatives were founded in the process. These kinds of projects serve as inspiration for Ghent and beyond.

Buurzame Stroom combined elements and inspirations from preexisting projects in Germany, the Netherlands, Sweden, the UK and the USA.

With its ambitious and broad projects, the city of Ghent is already a frontrunner of the energy transition in Belgium. But some support from the higher governance-levels could help facilitate the development. Even for Antwerp and Ghent, there are big methodological differences in the collection and depiction of data on emissions and energy and for setting a political target ac-cordingly. A similar methodology at least for all of Flanders would help to increase comparability and facilitate the exchange of information. The higher level should also permit the cities more competences in the spatial planning process. As a front-runner, Ghent also needs to harvest higher hanging fruits in terms of emission reductions, which requires additional effort: "So far, the front running cities in Belgium have to help themselves. There are many cities wanting to visit us and learn from us, but we also need the capacity for ourselves to figure out the next steps", says Veerle Dossche from the city government. "So it was very interesting to learn about the national support programme for front-running cities in Germany. We need that in Belgium as well. I will look closer in the German case and work on establishing this programme in my country."

Tine Heyse, Deputy Mayor for Climate, Energy, Environment

48 http://www.zeroemissionsolutions.com
49 http://www.energielandschap.be/wind

THE NORTH SEA AS THE POWER HOUSE OF EUROPE

Five days of traveling the adjacent regions to the North Sea have shown that the region has a lot of innovative regional and cross-border projects to offer. When it comes to the sea itself, the spirit of cooperation is also visible already.

The deep sea port of Eemshaven[50] is a good starting point to look into this kind of cooperation. "We understand our port as a European energy port and an energy roundabout for the whole region", says Robert van Tuijnen. Just in October 2016, the construction of the COBRA-Cable[51] started, which will connect Eemshaven to Esbjerg and thereby the Dutch and Danish electricity markets. The cable is scheduled to be finished in 2019. With a capacity of 700 MW, it is supposed to help integrated wind energy from Denmark and the North Sea into the electricity system of central Europe. An optical fibre cable is integrated into this interconnector, to transport data along with the energy across the North Sea. Combining the two functions into one cable saves a great deal of the costs. NorNed[52] is another high-voltage direct current submarine power cable landing in Eemshaven, connecting the Norwegian and the Dutch electricity systems. The interconnector is mostly used to transfer Norwegian hydroelectricity to the Netherlands.

In Eemshaven, they see themselves as an industrial area with a port. Google for instance, is running a large datacentre at the site. The close-by windfarms deliver (virtual) green energy to this datacentre. A cooperative of local farmers invested in one part of the windfarms on the shore. With the neighbouring German port in Emden, there is a cooperation on nautical issues already, and another one is planned for acquisition and corporate development. "It is strange to have a border – with different systems on each side – in between you, when you are so close together", remarks van Tuijnen.

The port in Eemshaven focusses also on off-shore wind energy. While there are not a lot of projects in the Dutch part of the North Sea yet, the port is doing business with some of the German off-shore sites. "We did a lot of pre-investments for the market and the closeness of our port-infrastructure to some of the German construction sites is another crucial market advantage to us", explains van Tuijnen, "But even though our port is closest to some of these German off-shore farms, they still have to be connected to the German grid. About half of the costs for the grid-infrastructure could be saved if the German wind farms would be allowed to connect to the Dutch shore. The second step would be joint off-shore projects between the Member States, but different feed-in systems make them unlikely to happen in the near future."

50 https://www.portofeemshaven.nl
51 http://www.tennet.eu/our-grid/international-connections/cobracable/
52 http://www.tennet.eu/our-grid/international-connections/norned/

Jude Kirton-Darling, Member of the European Parliament

At the European Parliament, these issues are high on the agenda: a group of 20 MEPs from 10 countries and 5 different political groups published the manifesto "Regional cooperation in the Energy Union: Northern Seas as the Power House of North-Western Europe"[53] in January 2016. The policy-makers called for strong political support and endorsement of the North Sea Off-shore Grid – using the work of the North Sea Countries' Off-shore Grid Initiative (NSCOGI) – as a solid foundation for further cooperation. Additionally, they called for a special finance vehicle, harmonizing spatial planning standards on health and safety, a more coherent regulatory framework to allow Member States to better co-ordinate their agendas around calls for tenders for off-shore wind energy and an outline of the technical and administrative requirements to install a Northern Seas electricity trading zone. "The Northern Seas – The North Sea and the Irish Sea – should be the vanguard of regional cooperation for renewable energy", says Jude Kirton-Darling, one of the MEPs behind the manifesto. "We need the political will on all levels to make this happen". Kirton-Darling is from the English North East, a region once exporting coal in large numbers. "With this initiative, we are showing the value of EU cooperation for people across the North East. We will be able to simultaneously maintain jobs in our battered off-shore supply chain, create thousands of new high quality jobs, reduce our carbon emissions and secure our long term energy needs. I firmly believe that the UK can remain a part of this process, even after the Brexit."

53 https://www.dropbox.com/s/ki8pqe9ybozo533/2016%2001%2011%20-%20MEPs%20Manifesto%20Northern%20Seas%20final%20for%20web.pdf?dl=0

In June 2016, the political momentum continued as Belgium, Denmark, France, Germany, Ireland, Luxembourg, the Netherlands, Norway and Sweden signed an agreement[54] to further strengthen their energy cooperation. Four support groups will identify and work on specific topics for harmonization and cooperation in the fields of maritime spatial planning, the development and regulation of off-shore grids and other off-shore infrastructure, support frameworks and finance for off-shore wind projects (including a possibility for opening up support schemes or undertaking joint tenders) and standards, technical rules and regulations in the off-shore wind sector. A high-level group will provide political guidance and support. The work programme is supposed to be completed by the summer of 2019.

The cooperation agreement also recognizes the need to have an open and transparent regional dialogue, with stakeholders, including the civil society and the lower political levels. The North Sea Commission[55] (NSC) could serve as one channel for this dialogue. Over 30[56] subnational regional authorities (cities, counties, regions, provinces or Länder) from 8 North Sea countries assemble in this forum to promote common interests, especially in relation to the institutions of the European Union, the national governments and other organisations dealing with issues which are relevant to the North Sea. One[57] of the five working groups puts a thematic focus on energy and climate change, including renewables and North Sea energy grid. The group also aims to transfer and exchange best practice examples and capitalize on results from relevant EU-projects, such as the 2014-2020 INTERREG North Sea Region Programme.[58] "In order to successfully tackle climate change and implement the Paris Agreement, regions must connect with each other", says Tjisse Stelpstra, regional minister from the province of Drenthe and Vice-Chair of the energy and climate change group, "Additionally, the INTERREG-programmes are of economic importance to the peripheral regions bordering the North Sea. Therefore, the EU budget after 2020 needs to strongly push for more cooperation across borders and finance it accordingly."

"The Northern Seas should be the vanguard of regional cooperation for renewable energy. We need the political will on all levels to make this happen."

54 https://ec.europa.eu/energy/en/news/north-seas-countries-agree-closer-energy-cooperation
55 http://www.northseacommission.info
56 http://www.northseacommission.info/index.php/about/member-regions
57 http://www.northseacommission.info/index.php/about/organization/thematic-working-groups/energy-and-climate-change-group
58 http://www.northsearegion.eu

PROGRAMME OF THE STUDY TOUR

SUNDAY, 25 SEPTEMBER 2016

13:00 **Get Together with brief introduction**

15:00 **Guided Tour in Nordhavn**[59] **by boat and foot** with ***Rita Justesen***, Head of the Planning and Architecture Department, City of Copenhagen

18:00 **Dinner Debate** with ***Rasmus Sørensen***, Danish Ministry of Climate, Energy and Building.

MONDAY, 26 SEPTEMBER 2016

10:00 Arrive in Sønderborg

10:15 Presentation by **Peter Rathje about ProjectZero in Sønderborg**[60]

11.30 Visit Danfoss, incl. presentation by Oddgeir Gudmundssons, Director Projects

13:30 **Political Debate** with ***Aase Nyegaard***, Deputy Mayor at Sønderborg Kommune, and ***Finn Märcher***, Head of Demonstratorium and Visitor Relations
Presentations by:
Birgitte B Petersen, Project manager House of Science; ***Torben Esbensen***, Consultant

15:30 Departure by bus to Flensburg, Germany

16:30 **Presentation at Chamber of Commerce**
1) Introduction by Lars Kaiser, IHK Flensburg
2) Flensburg`s Klimapakt by ***Martin Beer***, City of Flensburg

18:00 Travel to Hamburg

TUESDAY, 27 SEPTEMBER 2016

10:30 **Visit Off-Shore Wind Eemshaven**[61] **with *Robert van Tuinen***

14:30 **Groningen, EnTranCe:** Meetings with ***Nienke Homan,*** regional Minister for Energy Transition in Groningen province, ***Karel Bosma*****,** EnTranCe. Presentation on Power Matching City Groningen[62] and Energy Battle with ***Frank Pierie*****.**

19:00 **Assen/Zeegse: Dinner with politicians from the Northern Netherlands,** hosted by regional Minister ***Tjisse Stelpstra***.
Discussion with regional politicians, (deputy) mayors ***Marco Out*** **(Assen, NL),** ***Geert Vos*** (Hoogeveen, NL), ***Marcus Honnigfort*** (Haren, D), as well as representatives of Groningen and Assen.

59 http://www.nordhavnen.dk/english/uk-nh-transformation2/uk-nh-certification.aspx
60 http://brightgreenbusiness.com
61 http://www.energyport.eu
62 http://www.powermatchingcity.nl/site/pagina.php?id=41

WEDNESDAY, 28 SEPTEMBER 2016

8:30 **Visit to the TT-circuit in Assen.** Presentations on Green Deal Solar/Motorparking TT-circuit (***Jelle van der Heide***, Drenthe province, programme manager energy; ***Wiebren Bergsma***, Groenleven); E-ntelligence Assen (***Jesse Siegers***, City of Assen); Smart Energy Region Emmen Haren (***Siegbert van der Velde***, Emmen); Smart Mobility projects (***Geert Jaap Doedens***, commercial director Sensor City).

11:00 Travel to Nieuwe Afsluitdijk, Kornwerderzand

12:30 Lunch debate Nieuwe Afsluitdijk,[63] **Energy from Water, Tidal Energy Experiments** (***Tjalling Dijkstra***)

14:00 Travel to **Ghent, Belgium**

18:00 **City Hall Ghent: Climate plan objectives**[64] **and projects with cross-border implications. Discussions with *Tine Heyse***, Deputy Mayor for Climate, Energy, Environment; Project ZAWENT (***Wouter Demuynck***); Project Buurzame stroom (***Alex Polfliet***, Zero Emission Solutions); Wind energy in Flanders (***Moira Callens***, Provincie Oost-Vlaanderen)

THURSDAY, 29 SEPTEMBER 2016

9:00 **Oude Dokken, Ghent**[65] **(old harbour area), Project ZAWENT**

12:30 **Brussels Lunch Debate hosted by MEP *Jo Leinen*** with ***Klaus Linsenmeier*****,** hbs EU; ***Jude Kirton-Darling*****,** MEP; ***Brendan Devlin*****,** DG Energy; ***Brenda King*****,** President Sustainable Development Observatory, European Economic and Social Committee.

63 https://www.deafsluitdijk.nl
64 https://stad.gent/ghent-international/city-policy-and-structure/ghent-climate-plans
65 https://storify.com/destrandjutter/gemeenteraad-gent-28sep15-project-schipperskaai

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In five days in September 2016, 13 policy-makers and -shapers from 8 countries travelled 1,500 kilometers from Denmark via Germany and the Netherlands to Belgium. Their mission? Exploring what regional cooperation means in practice and how it can boost renewable energy in Europe. This report presents their key insights and learnings from the visited projects and summarises the main policy recommendations for decision-makers on local, national and European level.

As contribution to the discussions on the EU's "Clean Energy for All Europeans" package, the EU office of the Heinrich Böll Foundation and the World Future Council (co-organisers of the North Sea Study Tour) have drafted the present report.

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