



# SUSTAINABILITY REPORT

— 2020 —

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# 5-YEAR ANNIVERSARY FOR OUR SUSTAINABILITY REPORT

The COVID-19 pandemic has indeed made 2020 an exceptional and challenging year. Safety for colleagues, customers, partners and family members have been given first priority.

Still – for the fifth year in a row, we are measuring progress towards achieving the SDGs across all our projects in Denmark and internationally, with thirty defined indicators in our online SDG reporting system. This year's contribution to the SDGs described on page 5 shows our customers and our employees the real, positive, difference their work makes in communities around the world.

We actually **measure what can be measured** – it is not just storytelling making reference to SDGs – but real and documented facts on **impact** project by project!

In 2021 we will assess the current incorporation of the SDGs into our current business strategy which is based on 4 SDGs and 30 indicators. We will assess if we should expand the level of impact measurement i.e. taking into account the projects we provide within climate adaption or within development of green business plans. Still, our motivation for incorporating these goals into our business strategy is supported by our belief that “what gets measured, gets done”.

In addition to our work in 2020 for Statistics Denmark on developing methods and implementation models for coupling, measuring and reporting on Denmark's contribution to the SDGs – resulting in 197 Danish indicators – has encouraged us to further develop our internal impact measurement system.

The SDGs – and now also the Danish indicators – will continue to provide DEM with a vision and a focus on the sustainable impact of our domestic and international projects and a clear way to evaluate our internal company sustainability.



*Our consultant services spread across a wide range of industries.*

*On page 26 you can see which sectors we have helped including the SDGs in their businesses in a tangible way.*

Yours sincerely

Jørn Lykou  
CEO



## DEM's COMPANY IMPACT MEASUREMENT

Since 2016, we have been using our online SDG reporting system to measure sustainable impact and progress towards SDG 7, 11, 13 and 17 across all projects based on 30 specific indicators. Each relevant SDG, action-oriented SDG target, and company specific indicator is connected to our financial system so that impact can be measured both in terms of monetary value, and in terms of hours worked.

Advisory services on how to implement the SDGs constitute an increasing market for us. This means, that in addition to the four SDGs below we are contributing to the uptake of all of the SDGs in general.

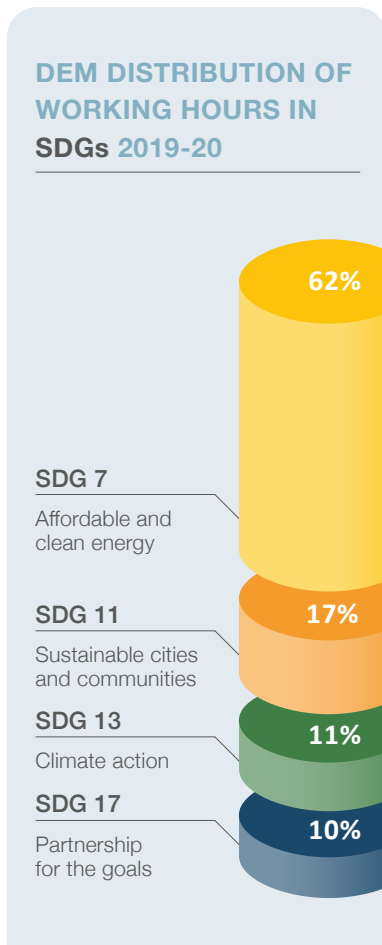
### DEM MARKET AREAS CONTRIBUTING TO THE GLOBAL GOALS

- **Energy & Climate**
- **Sustainable Buildings & Cities**
- **Monitoring & Evaluation**
- **Sustainability (SDG) & Energy Management**
- **ESCO & Energy Performance Contracting (EPC)**
- **Client Consultancy**



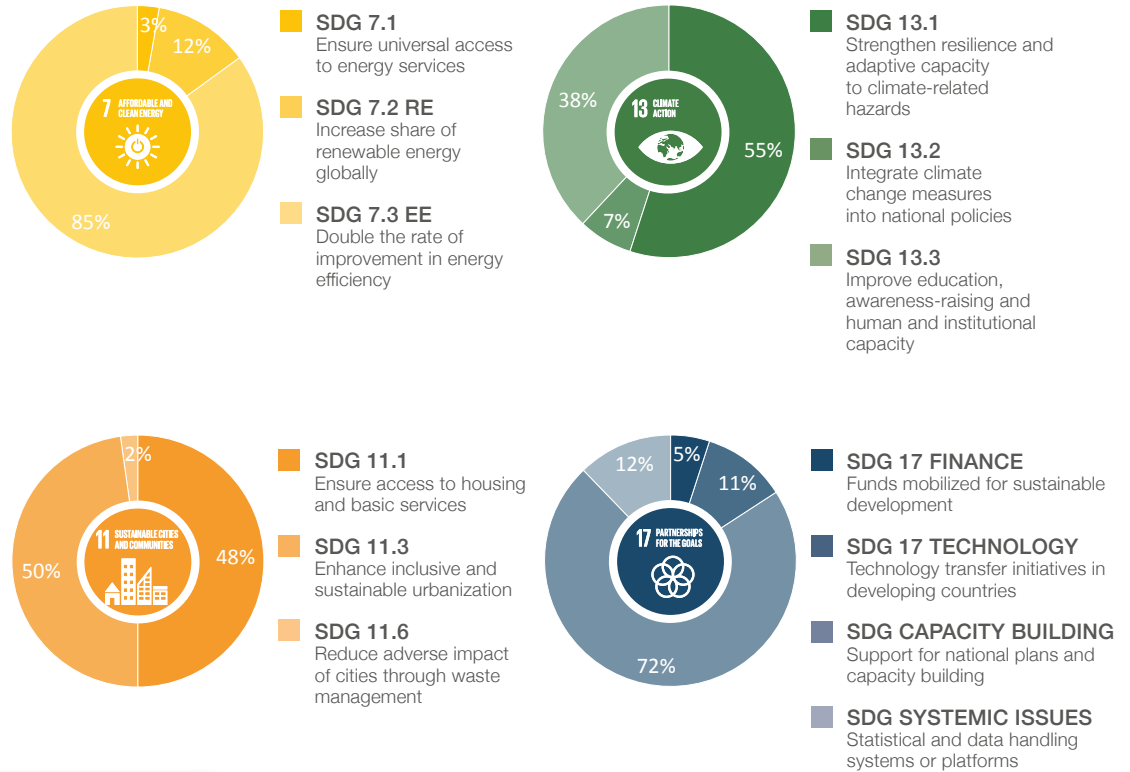
# ACCUMULATED PROJECT SDG AND TARGET IMPACT

For each of the SDGs and SDG targets that we work with directly, we measure progress towards sustainable development and also provide performance metrics that complement official data. Here is a visual representation of employee working hours, as they relate to our primary sustainable development goals and SDG targets.



OUR EMPLOYEE WORKING HOURS HAVE INCREASED ON SDG 11 AND 17, ALTHOUGH WE STILL SPEND MOST OF OUR TIME ON SDG 7

### DEM DISTRIBUTION OF WORKING HOURS IN SDG TARGETS 2019-20



# DEM

# SDG STATUS 2015-2020



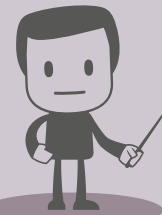
## 2015

1. DEM attended the United Nations Sustainable Development Summit in New York. This was the beginning of our commitment towards working with the goals.

**SUSTAINABLE DEVELOPMENT GOALS**

### Ten principles for the SDGs

- Limited in number and globally harmonized indicators
- Simple, single-variable indicators, with straightforward policy implications
- Allow for high frequency monitoring
- Consensus based, in line with international standards and system-based information
- Constructed from well-established data sources
- Disaggregated
- Universal
- Mainly outcome-focused
- Science-based and forward-looking
- A proxy for broader issues and conditions



2. We support the Global Compact's 10 principles. Our annual Communication on Progress (COP) report ensure that our company is transparent and open about our work with responsibility and sustainability.



*DEM makes sustainability and SDGs tangible and understandable to everyone. Adapting to the goals helps sharpen focus on your future business strategies.*

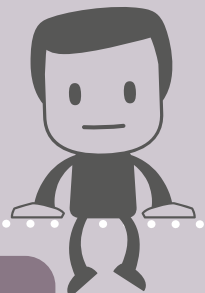
## 2020



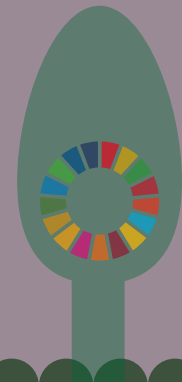
8. We are increasing our support to Danish organizations to align with the new national sustainability goals. We are promoting the circular economy agenda in our strategy and services in Denmark and abroad.



7. We now help our clients to identify new business opportunities, anticipate new legislation and standards and better satisfy their employees' and customers' needs.



We want to build a better world – together with our clients and partners in Denmark and abroad. Building a better future can start today! We work in a company where in fact our work may constitute the major difference.



3. We identified the SDGs, targets and indicators that are closely related to our market areas, enabling us to integrate these goals across our business in a holistic way.

## INTERNAL FOCUS



2017: We published our first sustainability report.



“ You recognize that responsible businesses have enormous power to create decent jobs, open access to education and basic services, unlock energy solutions and end discrimination. I count on you to drive global progress.

Ban Ki-moon, Former UN Secretary-General

4. We developed and launched our SDG reporting system, for measuring sustainable efforts for all projects. Thirty indicators to our 4 goals are defined.



## EXTERNAL FOCUS

6. We were among the winners of the SMV COP 2019! Our third sustainability report was recognized as a thorough reporting of climate and environment impacts as well as for the linkage to the UN Global Goals.



5. To obtain a greater impact for scarce energy resources, and strengthen climate efforts, we continuously develop innovative consulting approaches, methods and tools that improve sustainability for our clients.









# OUR FOOTPRINT



# HUMAN AND LABOR RIGHTS



COVID-19 has had a massive influence globally, putting many of our activities on hold and cancelling others. DEM is grateful for the support and flexibility our employees have shown in this situation.

## HUMAN RIGHTS

DEM is committed to ensuring equal opportunities. We respect cultural differences and see these differences as a strength allowing us to achieve our vision and tailor our consultancy services to the needs and requirements of our clients and partners. Working in partnerships, we respect and protect all internationally proclaimed human rights and strive to prevent any form of discrimination.

## LABOR STANDARDS

**DEM respects all international declarations adopted by the International Labor Organization.**

- Fair wages reflect the qualifications of employees and the local average wage level.
- We do not accept any form of forced labor and/or child labor under any circumstances and include this as a parameter when choosing sub-suppliers and sub-contractors.
- We respect the freedom of association and the right to collective bargaining.
- We have developed and implemented structured plans for continued education for all groups of our employees and we support employee initiatives to upgrade their qualifications.
- We provide private health insurance promoting early treatment and well-being.
- We endeavor to ensure a healthy balance between work and family through a designated sustainable working culture group.

## EMPLOYEE FOCUS ON SUSTAINABLE WORKING CULTURE

DEM has an internal work group that takes initiatives to prevent work related stress and support a sustainable working culture.

Employees are introduced to exercises that are designed to relieve mental tension and promote physical activity and well-being. The exercises are also combined with

presentations that include topics such as sleep and mental capacity.

The sustainable working culture group is continually promoting issues related to the well-being of employees.

## A CULTURE OF WORKING SUSTAINABLY

At DEM, a sustainable working culture is in many ways something that has always existed in the company and many of our standing traditions also promote a work culture filled with participatory activities that bring employees together.





# METAL



At a community recycling centre in Copenhagen it is visualized where the various types of waste go.



# ENVIRONMENTAL CARBON FOOTPRINT REPORT

# ORGANIZATIONAL AND OPERATIONAL BOUNDARIES AND BASE YEAR

This carbon footprint report estimates the GHG-emissions caused by DEM activities in the reporting year 2020 (May 1, 2019-April 30, 2020). The operational boundary covers scope 1, scope 2, and part of scope 3 (business travel).

Figures provided follow the Green House Gas (GHG) protocol, and the GHG calculation tool provided by the World Resources Institute.

DEM offices included in the 2020 reporting year are: • Aarhus • Copenhagen

To calculate results, emissions are categorized as either direct (Scope 1) or indirect (Scope 2 & Scope 3). Direct, Scope 1, emissions are those that are directly caused by a source that the company owns or controls. Indirect, Scope 2 and Scope 3, emissions are derived from the company's consumption of energy products and services, where the company does not own or control the emissions source.

## FOLLOWING THE GHG PROTOCOL CORPORATE STANDARD, THE DIRECT AND INDIRECT EMISSIONS ARE DIVIDED INTO THREE SCOPES:

**SCOPE 1:** All direct emissions caused by the company, e.g. emissions from company owned cars, or combustion of fossil fuels such as natural gas in company-owned equipment

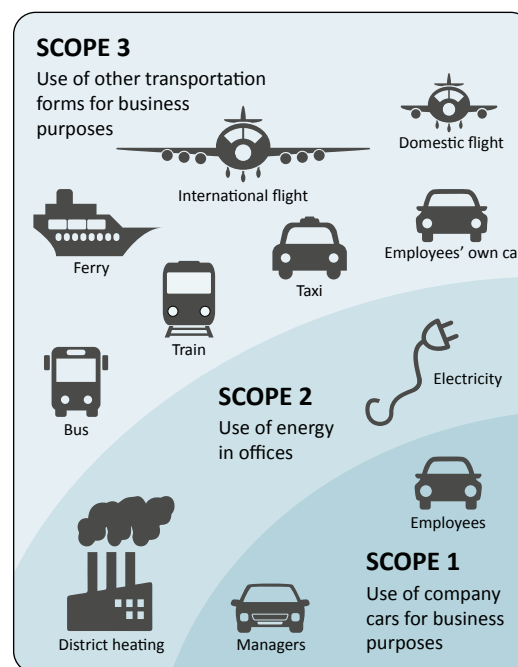
- Use of company cars for business purposes – managers
- Use of company cars for business purposes – employees

**SCOPE 2:** All indirect emissions caused by the company's purchase of energy

- Electricity use in offices
- District heating used in offices

**SCOPE 3:** Other indirect emissions caused by consumption of products and services

- Use of employee cars for business purposes (car allowance)
- Transportation by train
- Transportation by bus
- Transportation by ferry
- Transportation by taxi
- Domestic air transport
- International air transport





## TOTAL CO<sub>2</sub>-EMISSIONS IN THE 2019-2020 REPORTING YEAR

ACTIVITIES	DISTANCE (km)	ENERGY CONSUMPTION/ PRODUCTION (kWh)	CO <sub>2</sub> -EMISSIONS (tCO <sub>2</sub> )	% CO <sub>2</sub> -EMISSIONS DISTRIBUTED BY SCOPE
<b>SCOPE 1</b>				<p><b>% CO<sub>2</sub>-EMISSIONS DISTRIBUTED BY SCOPE</b></p>
Use of company cars for business purposes – managers	26,891		5.78	
Use of company cars for business purposes – employees	50,656		5.85	
<b>SCOPE 2</b>				
Electricity use in offices		68,426*	14.53*	
District heating use in offices		75,166*	8.57*	
<b>SCOPE 3</b>				
Use of employee cars for business purposes	45,593		8.1	
Transportation by train	37,057		1.9	
Transportation by bus	2,938		0.3	
Transportation by ferry	12,597		1.6	
Transportation by taxi	7,008		1.1	
Domestic air transport	**		1.8	
International air transport	**		101.2	
<b>Total</b>	<b>182,741</b>	<b>143,592</b>	<b>150.67</b>	
<b>OFFSETS</b>				<p><b>ENERGY USED BY DEM IS EQUIVALENT TO 10% OF THE RENEWABLE ENERGY GENERATED BY OFFSETS</b></p>
Middelgrunden offshore wind farm		317,762	67.49	
Hvidebæk biomass district heating plant/ solar thermal		11,954,000	1,362.46	
<b>Total</b>		<b>12,271,762</b>	<b>1,430.00</b>	

\* Our office in Copenhagen moved location in February 2020. Electricity and district heating consumption February-April 2020 is estimated.

\*\* Number of kilometers flown is not provided because our calculation methodology takes point of departure in take-off and landing destinations.

At DEM, there are no boilers etc. in buildings that could contribute to own oil/gas use. For this reason, our Scope 1 consists of “use of company cars for business purposes – managers” and “use of company cars for business purposes – employees.” The company cars used by managers as their personal car only register the kilometers driven to and from work, and to and from clients for business purposes.





## CO<sub>2</sub>-EMISSIONS OVER TIME

This is DEM's fifth sustainability report and we have used the occasion to throw a glance at how our company's CO<sub>2</sub>-emissions have developed over time. Our CO<sub>2</sub>-emissions have been compared to the annual turnover of the company to understand the underlying trend.

Our total CO<sub>2</sub>-emissions fluctuate from year to year because of the impact CO<sub>2</sub>-emissions from international air travel has on the overall carbon footprint. An increasing share of international assignments is the reason for a general trend of increasing CO<sub>2</sub>-emissions compared to company turnover. In the next reporting period (2020-2021) we expect these emissions to be close to zero because of the effect COVID-19 has on the requirements for international assignments.

The CO<sub>2</sub>-emissions from domestic transportation have been slightly increasing during the last five years due to longer travel distances even though we are emitting less CO<sub>2</sub> per travelled km. On the other hand, CO<sub>2</sub>-emissions from our offices are decreasing as a result of two factors: 1) Improved energy efficiency in our office buildings, 2) reduced CO<sub>2</sub>-emission in the Danish energy sector in general. We expect the CO<sub>2</sub>-emissions from domestic transportation will decrease in the future as our fleet of vehicles becomes more electrically powered.



An older windmill at the Danish Museum for Energy.

# LIVING BY OUR VALUES

Since 2015 DEM has been guided by 4 SDGs and their 30 internationally adapted indicators measuring the actual impact from our services: SDG 7 – Clean Energy, SDG 11 – Sustainable Cities, SDG 13 – Climate Action and SDG 17 – Partnerships.

This year we assisted Statistics Denmark to transform the international SDG indicators into 197 Danish indicators (Vores Mål – de 197 danske målepunkter) which will feed into the upcoming National Danish SDG Action Plan from the Government.











If the COVID-19 Pandemic allows it we will in 2021 review our SDGs and indicators. We will assess the current incorporation of the SDGs into our current business strategy. We will assess if we should expand the level of impact measurement taking account of e.g., projects we provide within climate adaption or within development of green business plans but essentially also review the 30 indicators and compare them with adequate Danish indicators. Our motivation for incorporating these goals into our business strategy is supported by our belief that “what gets measured, gets done”.

The core of measurement will although still follow the core of our services i.e. to provide sustainable energy services when and where they are needed, increasing energy efficiency and the share of renewable energy in the global energy mix. This is accompanied by our commitment to improve people’s living conditions and contributing to the creation of sustainable cities and communities emphasizing our ability to be creative and adaptable, combating climate change and meeting customer needs with innovative solutions. Last but not least entering into partnerships is important to us, demonstrating our willingness and desire to foster cooperation and mutual trust within all of our partnerships, maintaining a high standard of social responsibility and business ethics in a transparent manner.

In practice all of our partners, employees, clients, and investors can place confidence in our company’s performance, with a clear understanding of what we are doing and why we are doing it. ‘Living by our values’ means that each individual at DEM holds themselves to the highest ethical standards and can clearly communicate this through their work and behavior.












# TARGETS AND ACHIEVEMENTS

Progress:  Achieved  In progress  Delayed

OBJECTIVE	INITIATIVE	DESCRIPTION	TIME FRAME	STATUS
CO <sub>2</sub> reduction and contributing to achievement of 2030 objectives	Hybrid or electric car	For offices in Denmark, replace company cars with electric or hybrid cars. The Copenhagen office has a hybrid car	1 year	
Environmental sustainability and contributing to achievement of 2030 objectives	Become an active member in the Global Compact	DEM is an active member in the Global Compact network	Achieved	
CO <sub>2</sub> reduction and employee health and well-being	"We Bike To Work" initiative	Starting May 1st of each year, employees create teams and compete to see which team has biked the most kilometers during the month	Achieved	
CO <sub>2</sub> reduction and contributing to achievement of 2030 objectives	Paper and glass recycling	Paper and glass are being separated from general waste in the Aarhus office. After moving to new premises, the Copenhagen office is not currently separating waste as before	1-2 years	
Environmental sustainability	Organic fruit and milk	Organic fruit and milk are delivered on a regular basis every week	Achieved	
Environmental sustainability and energy savings	Lighting	LED lighting in the offices and motion sensors. This was achieved in the Copenhagen office, but after moving premises, this is not currently installed. Delayed implementation in Aarhus	1-2 years	
Environmental sustainability and energy savings	Optimized temperature regulation	Intelligent thermostats for temperature control and optimization were installed in the Copenhagen office, but after moving premises, this is not currently the case. Delayed implementation in Aarhus	1-2 years	
Environmental sustainability and employee health and safety	Ventilation	Regulation of the existing ventilation and installation where it is needed, improving energy savings and employee health. IC-Meters were installed at the Copenhagen office to measure and improve indoor climate	2-3 years	
Environmental sustainability and contribution to achievement of 2030 objectives	Water saving	Water saving taps, dishwashers, etc	Achieved	
Employee well-being and positive work environment	Employee association	Association that arranges activities like fishing, game nights, etc. for employees. Financed and managed by the employees themselves. DEM supports the association financially	Achieved	

# TARGETS AND ACHIEVEMENTS

Progress:  Achieved  In progress  Delayed

OBJECTIVE	INITIATIVE	DESCRIPTION	TIME FRAME	STATUS
Employee well-being and positive work environment	Knowledge sharing	A project in connection with the Danish Innovation Fund was completed in 2019. DEM is following the knowledge sharing initiatives developed in the project	Achieved	
Employee health, safety and well-being	Workplace risk assessment (APV)	Screening to evaluate work environment and improvement areas. Last evaluation conducted in August 2018. Next evaluation scheduled in 2021	Achieved	
Employee health and well-being	Private health insurance	Promoting good health by contributing to access to medicines and vaccination, and early detection of diseases	Achieved	
Employee health and well-being	Incorporate the 6th vacation week	The 6th vacation week was fully rolled out by 2019	Achieved	
Employee well-being	Pension	Pre-existing pension is being incrementally improved, and was fully rolled out in September 2020	Achieved	
Employee health and well-being	Access to employee shower facilities	Shower facilities established at Aarhus office in 2019. The Copenhagen office also has shower facilities in their new premises	Achieved	
Employee health and well-being	Sustainable working culture group	Group established with a focus on work/ life balance and working with sustainable projects, teams and processes. Company-wide initiatives are continually being initiated	Achieved	
Environmental sustainability and energy savings	Shutting down of servers	In this period, no additional servers have been shut down. Server shut down of the currently 16 running servers are scheduled in 2021	In progress	
Employee well-being	Update of employee handbook	New initiatives like the Sustainable Working Culture, 6th vacation week, private health insurance etc. are included in the employee handbook. Recent initiatives, like default membership of the employee association, are in progress	In progress	
Employee health and well-being	Flexible working hours to accommodate private appointments	"Freedom with responsibility" – a long-standing company tradition at DEM	Achieved	
Knowledge sharing and positive work environment	Implementing new document handling systems	DEM is now using a cloud based, administrator driven file structure and accompanying information sharing platforms	Achieved	



Turn on the Tesla-coil! The Danish Museum for Energy is a new partner for DEM in 2020.



# OUR IMPACT

## SUSTAINABILITY MANAGEMENT SERVICES

**As a leading consultancy working with the UN Sustainable Development Goals (SDG) we assist private companies and public institutions in Denmark and abroad in translating the Sustainable Development Goals into new business opportunities, measurements and documentation.**

*This year we assisted Statistics Denmark to transform the international SDG indicators into 197 Danish indicators (Vores Mål – de 197 danske målepunkter) which will feed into the upcoming National Danish SDG Action Plan from the Government.*

### CLIENT SDG SERVICES PROVIDED ACROSS SECTORS:

More and more companies and organizations are asking for our assistance to implement the SDGs in business strategies and ESG reporting to be able to document their sustainability efforts.

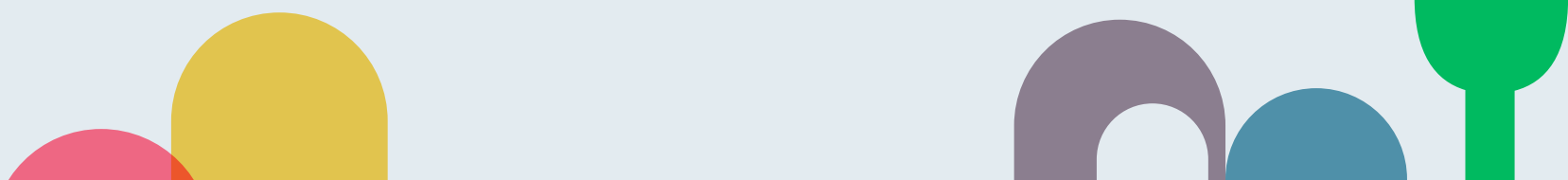
We are proud to say that we have included the following sectors in our portfolio:

**CLEANTECH INDUSTRIES | INFORMATION TECHNOLOGY | PENSION FUNDS | THE FINANCIAL SECTOR | HIGHER EDUCATION | GOVERNMENT AGENCIES | REAL ESTATE DEVELOPMENT | THE FURNITURE INDUSTRY | SCIENCE AND AMUSEMENT PARKS | FASHION AND TEXTILE | AGRICULTURE AND FOOD SERVICES | STATE, MUNICIPALITIES AND REGIONS**

Based upon our experience up until now, we are very convinced that the new National SDG Action Plan will – once it is published – set tangible targets for private businesses, public institutions and civil society. Procurement policies at public institutions, the building and construction sector, tourism and sub suppliers' documentation are areas we predict will be impacted by the new SDG Action Plan.

**In this perspective the SDGs and the 197 Danish indicators should be considered a driving force to opening-up new “business” opportunities to meet the growing sustainability demand of consumers and our planet.**

They will help identifying current and future business risks & opportunities; make contributions toward global sustainability tangible for employees and stakeholders and maintain visibility for sustainability internally and in the wider community. Just as the generation of key performance metrics can complement official data and statistics, it will enhance the opportunity to measure sustainable impact easily and transparently over time.



# THE FIRST GLOBAL GOAL DEVELOPMENT PROJECT IN THE WORLD FACILITATED THROUGH A NATIONWIDE PUBLIC HEARING

Sustainable development of society concerns us all and requires significant changes in our society.

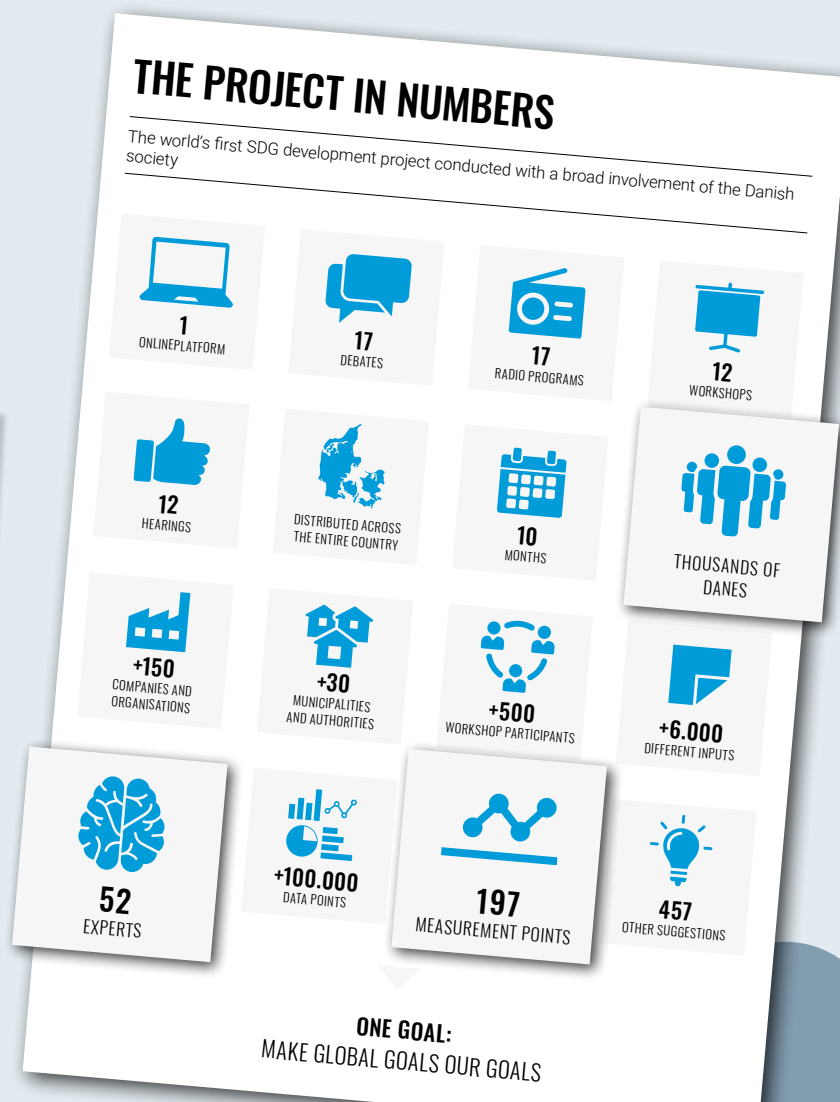
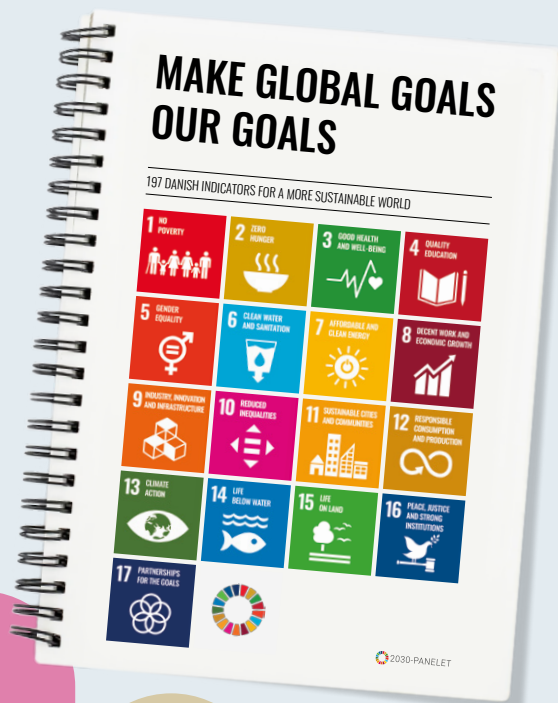
“Vores Mål” (Our Goals) has been an innovative project, which aim was to add more national measurement points and a baseline in order to establish the foundation for measuring sustainable development in Denmark.



We have been involved in the entire process – both as writer of one of the sub-reports, workshop facilitators and we have contributed with our expert knowledge within energy, climate and sustainable cities and buildings.

The Our Goal project has set a high standard for Danish municipalities, regions and private companies and organizations that seek to implement the SDGs in their activities and management.

DEM experiences an increasingly high demand for services on this topic.





A community recycling centre in Copenhagen, Denmark.

# CASE STUDIES

## Services provided

- Development of broadly based Danish indicators for all 17 SDGs – supplementary to the 232 existing indicators. DEM was the main responsible partner in the consortium for the SDGs under the theme “Partnerships and Prosperity” (SDG 8, 9, 10, 11 and 17).

- Involvement of community stakeholders; including citizens, authorities, municipalities, civil society and business. DEM contributed as facilitator of workshop discussions.



**6,000** concrete inputs from citizens, companies, interest organizations, authorities in the state, region, and municipalities



Sub-reports in consultation



Co-storyteller concept for all partners



**197**  
Danish measuring points

Campaign materials



**June 2020**

Final report handed over to the Danish Government June 2019

*“Make Global Goals Our Goals”*



**August 2019**

Start-up – Danish baseline for the Global Goals



The Our Goals-project has been funded by the Danish Industries Foundation, the Lundbeck Foundation, the Nordea Foundation, Realdania and the Spar Nord Foundation and has been implemented by Statistics Denmark in collaboration with Deloitte, Geelmuyden Kiese, Danish Energy Management, Sweco, Kraka Advisory, Roskilde University and Aalborg University.

# OUR GOALS

## Development of national Danish measuring points



The 17 Sustainable Development Goals were adopted by world leaders at the UN General Assembly in 2015 to ensure a development towards a far more sustainable world by 2030. 'Think globally, act locally' was for a time a central motto on sustainability.

The purpose of the Our Goals project has been to contribute to a more efficient implementation of the world goals in Denmark by developing national, Danish measuring points as a clarification of and a supplement to the global goals and the 231 indicators formulated by the UN.

Our Goals was created in a collaboration between the 2030-panel and Statistics Denmark. From an early stage, Statistics Denmark has played a central role in Denmark's work on the Sustainable Development Goals by engaging in the 2030-agenda already during the negotiations at the UN as one of the first national statistical bureaus in the world.

The 2030-panel was set up in 2017 by the Danish Parliament to support the parliament's political work with the Sustainable Development Goals (SDG).

The Our Goals project is the world's first open SDG project, and the Danish measuring points have been determined on the basis of more than 6,000 concrete inputs from citizens, companies, interest organizations, authorities in the state, region, and municipalities as well as knowledge institutions that have represented more than 90 percent of Danish workplaces and hundreds of thousands of members.

Inputs have been provided through an online platform ([www.voresmaal.dk](http://www.voresmaal.dk)), 29 events, workshops and debates spread across the country as well as an extensive consultation process. Inputs have been revised by more than 52 experts from the country's research institutions and Statistics Denmark to ensure that all measure points were of high relevance and methodologically viable and meaningful resulting in 197 Danish measuring points.

Only half out of the 197 Danish measuring points had a positive development from 2015-2020. 31 percent have not developed, while 22 percent have had a negative development. This can be seen in the measuring points in relation to minor inequality (Goal 10), life on land (Goal 15) and peace, justice and strong institutions (Goal 16), where only five of the measuring points have had a positive development since 2015.



**Client:**  
Statistics Denmark



**Product delivered:**  
Thematic report: Partnership and prosperity and final report



**Knowledge sharing:**  
Active participation in events, online portal and project communication



**Timeframe:**  
August 2019-  
June 2020

7.3



## ENERGY EFFICIENCY

Pay back time: **1-2 years**



A doubling of the energy saving potential identified and implemented\*\*



“No Cost” savings

**+200,000**

DKK  
per year\*

### Services provided

- Active use of IoT-sensors for digital energy auditing
- Improve quality of energy efficient solutions

7 AFFORDABLE AND CLEAN ENERGY

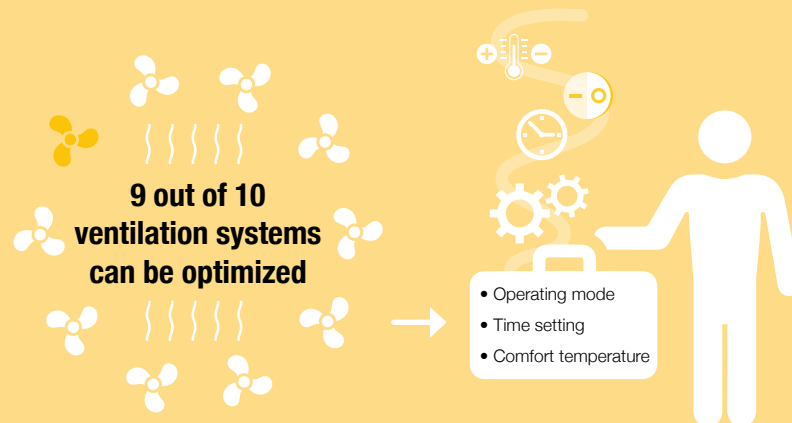


7 AFFORDABLE AND CLEAN ENERGY



## ENERGY EFFICIENCY

7.3



### Services provided

- System optimization to reduce energy consumption
- Double the energy saving potential by using data insights

11 SUSTAINABLE CITIES AND COMMUNITIES



13 CLIMATE ACTION

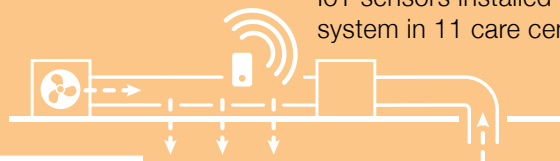


11.6



## SUSTAINABLE URBAN DEVELOPMENT

IoT sensors installed on ventilation system in 11 care centers



**Improved indoor climate for the benefit of residents**



IoT-sensor + artificial intelligence =

Ongoing deviations in the energy consumption are captured and minimized

### Services provided

- Improvement of indoor climate by optimizing system operation
- Continuous surveillance preventing breakdown in technical equipment

## CLIMATE ACTION

13.1



**CO<sub>2</sub>**

CO<sub>2</sub>-emissions decrease as the monitoring of the building becomes more data-supported.



### Services provided

- Increasing the number of energy efficiency projects that will reduce the CO<sub>2</sub>-emissions



The use of IoT (Internet of Things) has found its way into construction and the technology has many benefits. In the Municipality of Kolding, we have installed IoT sensors in 11 of their care centers' ventilation systems. The project used data-driven energy optimization to reduce energy consumption and improve the indoor climate.

The main purpose of the project was to investigate the technical quality of existing air handling systems in order to assess and quantify the indoor climate in the service areas, for ensuring optimal operation and reducing energy consumption. The digital information also showed improvement and optimization opportunities that reduced energy consumption. The project used IoT sensors to analyze and assess the quality of the new installations. Data from the IoT sensors were then analyzed by combining different data sets and converting them into real energy savings.

The IoT sensors were fixed to selected technical installations to be able to adjust more easily the operating hours and a demand driven heat supply.

As a joint project together with DTU, Aarhus University and ReMoni, DEM has developed the analysis method for the Danish Energy Agency.

The energy saving potential in the care centers has been doubled compared to a traditional energy audit. Furthermore, so-called "No Cost" savings of more than DKK 200,000 per year have been found.

The method is an example of how the SDGs and digitization can be implemented in buildings. In particular, Goal no. 7 "Sustainable Energy" and Goal no. 13 "Climate Action" can be linked to the project, as Kolding Municipality streamlines energy and contributes to a more sustainable energy and resource consumption, by using digitization and new technology to accelerate and improve energy efficiency.



**Client:**  
Municipality of Kolding



**Properties:**  
11



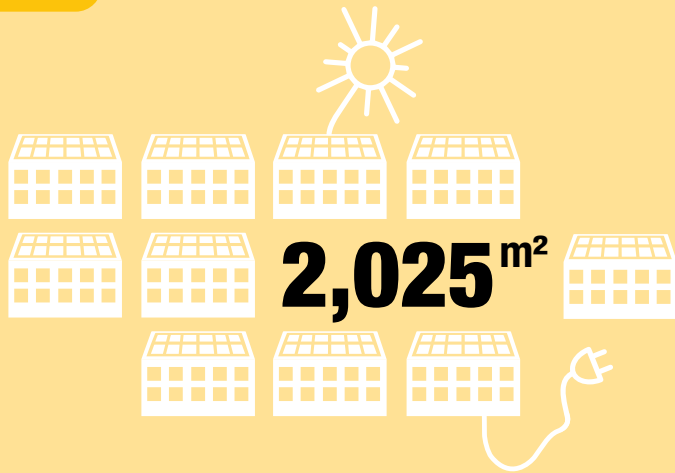
**Installations:**  
29 ventilation systems



**Timeframe:**  
2019-

7.2

## RENEWABLE ENERGY



### Services provided

- Roof-integrated solar cells
- Using solar panels to cover energy usage from ventilation, heat pumps and lighting

7 AFFORDABLE AND CLEAN ENERGY

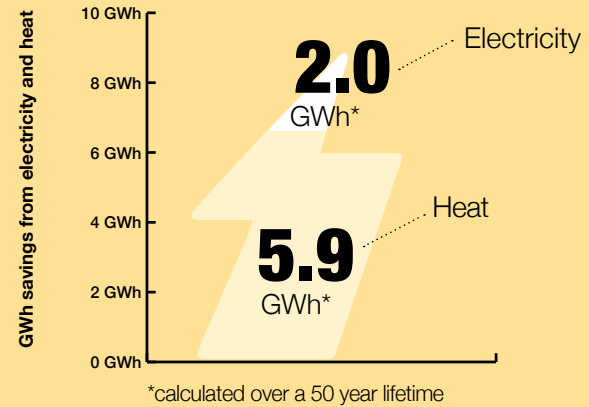


7 AFFORDABLE AND CLEAN ENERGY



## ENERGY EFFICIENCY

7.3

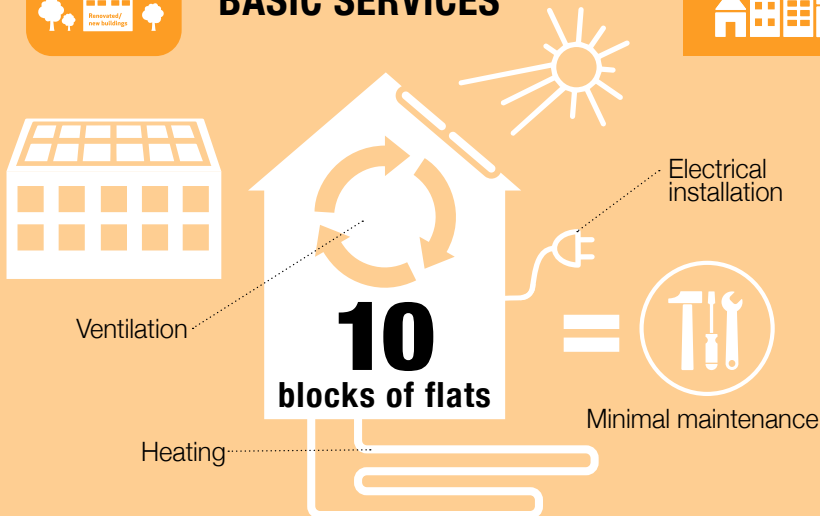


### Services provided

- Developing overall building energy concepts
- Applying Integrated Energy Design (IED)
- Securing optimized indoor environment and low energy consumption

11.1

## ACCESS TO BASIC SERVICES



### Services provided

- Prepared for electrical installations
- Energy efficient HVAC design
- Recommendations for materials with minimal maintenance

11 SUSTAINABLE CITIES AND COMMUNITIES

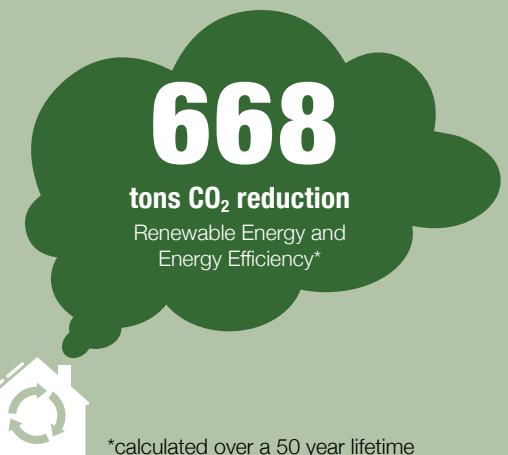


13 CLIMATE ACTION



## CLIMATE ACTION

13.1



### Services provided

- Applying energy effective technology in construction
- Applying solar panels to meet the requirements for the 2020 building standard

# SØNDERHAVEN IN BRÆDSTRUP

## Urban sustainable housing



Cheaper power while contributing to a greener and more sustainable world. It sounds almost too good to be true, but this is in fact the reality for residents in the new Sønderhaven in Brædstrup.

Centrally located by green surroundings, the area's 77 apartments are being built. The sizes vary between 60-105 m<sup>2</sup>.

In addition to economy and environment, sustainability is also about social quality. Improving the social quality has a high prioritization in Sønderhaven. 30 of the homes are in fact part of a housing association, for tenants who want to experience a family security and community where people know each other well.

In the middle of Sønderhaven, a communal house serves as a gathering facility for this micro community. Here you can meet for everyday dining and other social activities as well as use the house for more festive purposes.

An underground car park generates less car traffic and noise on ground and provides more green areas and oases to the benefit of the residents.

In addition to other sustainable solutions, discrete integrated solar cells have been installed into the roofs. This renewable energy source provides green and no-cost energy and lowers the electricity cost for for the residents in the building community.

The estimated consumption for electricity, water and heat is less than DKK 500 per month. Sønderhaven's solar cell plant is expected to produce 280,000 kWh annually, which corresponds to the electricity consumption of 80 households.

To ensure a connection between form, function and architecture, the integrated energy design (IED) approach has been applied throughout the work process.

By using IED, DEM has helped to ensure improved thermal, atmospheric and visual comfort just as the energy performance of the entire building is super optimized.



**Client:**  
PEJA Ejendomme



**Properties: 1**  
(10 blocks of flats,  
77 flats, 1 common house)



**m<sup>2</sup>:**  
7000



**Timeframe:**  
2019-

7.1



7.2



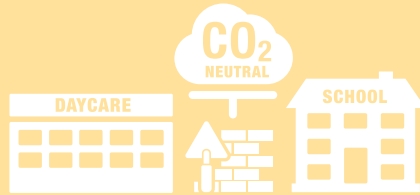
7.3



## AFFORDABLE AND CLEAN ENERGY

### Potential new project:

New demonstration buildings with zero carbon target



Analysis of investment gaps in municipalities



> **300,000**

inhabitants



### Services provided

- Analysis of project scheme and need for demonstration projects
- Identify the magnitude of investment needs and the investment gaps in municipalities with less than 300,000 inhabitants

7

AFFORDABLE AND CLEAN ENERGY



11

SUSTAINABLE CITIES AND COMMUNITIES

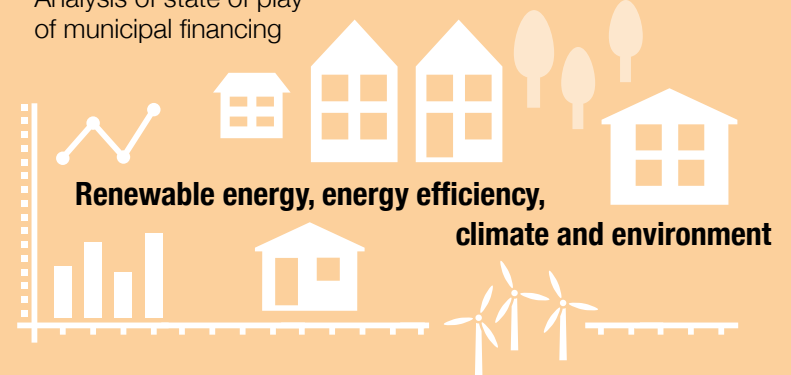


## ACCESS TO BASIC SERVICES

11.1



Analysis of state of play of municipal financing



### Services provided

- Analysis of state of play of municipal financing in all EaP countries

13.2



## CLIMATE ACTIONS

### Finance recommendations for new projects:



Floating or land-based PV panels



**50**  
projects



Biogas supply chains from non-forestry sources

### Services provided

- Analysis of more than 50 RE and EE projects in 6 different EaP countries
- Provide recommendations for financing new demonstration projects

13

CLIMATE ACTION



17

PARTNERSHIPS FOR THE GOALS



## CAPACITY BUILDING PARTNERSHIPS

17.CapB



### Services provided

- Webinar and explanatory brochure

# MUNICIPAL FINANCE STUDY

## on Energy, Climate and Environment Sectors in Eastern Partnership Countries (EAP)



The purpose of this study, awarded to DEM by the European Commission (DG Near), was for DEM's expert team to assess the gaps in municipal investments in the renewable energy, energy efficiency, climate, and environment sectors in EAP countries and present recommendations for future EU interventions, which would help to address this gap and contribute to better sustainability of municipal investments in these sectors. The Eastern Partnership (EaP) is a joint policy initiative which aims to deepen and strengthen relations between the European Union (EU), its Member States and its six Eastern neighbours: Armenia, Azerbaijan, Belarus, Georgia, the Republic of Moldova, and Ukraine.

As municipalities provide their citizens with several crucial services from access to clean drinking water, heat, education, health services, rubbish collection, housing, and urban transportation, they need significant financial resources to provide, expand, and improve these services. Furthermore, municipalities play an increasingly essential role in climate change mitigation and adaptation.

The EU offers many instruments to support municipalities, from technical assistance to grants and a combination of grants and inexpensive loans. To prepare for the new EU budget cycle, new instruments, and projects, and to reflect the new Green Deal, the EC requested this study including a set of future recommendations.

DEM has identified key EU documents and instruments and interviewed key EU executive agencies such as DG CLIMA, DG ENV and DG ENER to agree and further detail the scope of the project. DEM's experts conducted field visits to the EAP countries and interviewed relevant local EU Delegations, EU project implementing partners (UN, OECD, GIZ, WB, EIB, EBRD, KfW and NEFCO), and other key donors (USAID, EU MS agencies, ADB etc.) as well as selected local authorities – beneficiaries of EU finance and national and regional administrations, local financial institutions in each country and associations of local authorities and civil society representatives.

Data collection resulted in a municipal investment gap analysis, recommendations per country, and assessment of different financing options.

A dissemination of the results was held at a webinar with more than 100 participants from the 6 countries, DGs and IFIs with simultaneous translation – a webinar that at the same time contributed to reduced CO2 and fulfilment of a main purpose with this project – improved sustainability. Finally, DEM prepared a brochure summarizing the outcomes of the study.



*Nutshells to be used for heating of a kindergarden in Georgia.*



**Client:**  
The European Commission  
(DG Near)



**Product delivered:**  
Municipal Finance Study



**Knowledge sharing:**  
Webinar and brochure



**Timeframe:**  
2019-2020

7.3



## ENERGY EFFICIENCY

IoT sensors



= energy data insight

### Services provided

- Creation of energy data insight via IoT sensors
- Analysis of flexible energy measure via data insight

7 AFFORDABLE AND CLEAN ENERGY



7 AFFORDABLE AND CLEAN ENERGY



## ENERGY EFFICIENCY

7.3



Energy investment

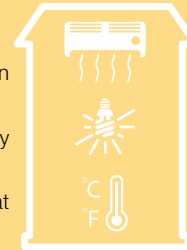
# 167

 mio DKK


Ventilation

Electricity

Heat



Energy savings

# 15,718

 MWh/year\*


### Services provided

- Total energy investment for 1 billion DKK (DEM is responsible for 167 million DKK)
- Energy efficient heating, cooling and ventilation systems

\*In the project lifetime

11.1



## ACCESS TO BASIC SERVICES

11 SUSTAINABLE CITIES AND COMMUNITIES



13 CLIMATE ACTION



## CLIMATE ACTION

13.1



# 15

 properties

# 133

 buildings

Total area  
**500,000**  
m<sup>2</sup>

# 33,694

 tons CO<sub>2</sub> reduction\*


\*Calculated over a 25 year lifetime

### Services provided

- Four hospitals and nine psychiatric centers are energy optimized

### Services provided

- Reduction of unnecessary energy consumption
- Identification of faulting technical installations
- Electrical installation and HVAC systems

# CAPITAL REGION OF DENMARK

## ESCO Energy Efficiency for the Capital Region of Denmark



The project for the Capital Region of Denmark is the largest energy efficiency project in Denmark with a total budget of DKK 1 billion.

DEM is a full-service consultant for energy efficiency for a property pool of more than 500,000 m<sup>2</sup> spread over four hospitals, nine psychiatric centers, offices and the Capital Region Pharmacy in Herlev.

In the project, DEM is carrying out energy mapping, analysis and programming of selected energy efficiency measures. The programming will form the basis for an early turnkey tender, where DEM in close collaboration with the turnkey contractor will make detailed project design of the selected energy solutions.

Digital tools are widely used for project management, including the Podio platform for handling processed data, a digital facility management platform for description and handling of building assets and a digital and dynamic time planning. DEM also uses IoT (Internet of Things) to create detailed data insights in order to increase energy savings.

DEM has furthermore analyzed the possibilities of implementing initiatives that utilize the flexible energy supply system of the future to use as much renewable energy as possible.

In addition to the specific focus on the HVAC systems and electrical installations, DEM identified other areas to be optimized. Furthermore, DEM advised the Capital Region of Denmark on sustainable material choices in the implementation phase based on circular principles and our services also covered the monitoring of the new technical systems in the operational phase via data from primarily IoT sensors.

Across the property pools and between project partners, there is an ongoing knowledge sharing to optimize the profit for the Capital Region of Denmark and ensure a high quality of the work performed.



**Client:**  
Capital Region, Denmark



**Properties:**  
15, 133 buildings



**m<sup>2</sup>:**  
500,000



**Timeframe:**  
2019-



FOR SUSTAINABLE IMPACT



[www.dem.dk](http://www.dem.dk)



February 2021