




THE GLOBAL GOALS AND OPPORTUNITIES FOR BUSINESS

Sustainable Danish solutions within food and agriculture,
water and sanitation, energy and cities





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FOREWORD

The 17 Global Goals for sustainable development present numerous opportunities for businesses. Not least in developing countries, where millions of people lack access to healthy food, water, sanitation and energy.

Danish companies have years of experience in offering sustainable solutions. Globally, the companies are known for long-term high-quality solutions. These are bio-ingredients that reduce food waste and technology that improves productivity for farmers and food producers. Other solutions are Danish water systems that offer clean water and green innovative products that reduce CO₂ emissions – to highlight just a few of them.

To seize the opportunities, we need action from the government as well as commitment from the private sector. It is important to improve the regulatory framework and financial instruments for companies. When the politicians provide the best possible conditions for the Danish companies, they can contribute to reaching the goals successfully by 2030.

This publication focuses on the challenges and opportunities related to four of the 17 Global Goals. These are goal 2 Zero Hunger, goal 6 Clean Water and Sanitation, goal 7 Affordable and Clean Energy and goal 11 Sustainable Cities and Communities. Many of the Danish companies have deep insight and can provide innovative solutions within areas represented by these goals. Case-stories in this publication presents a few of them.

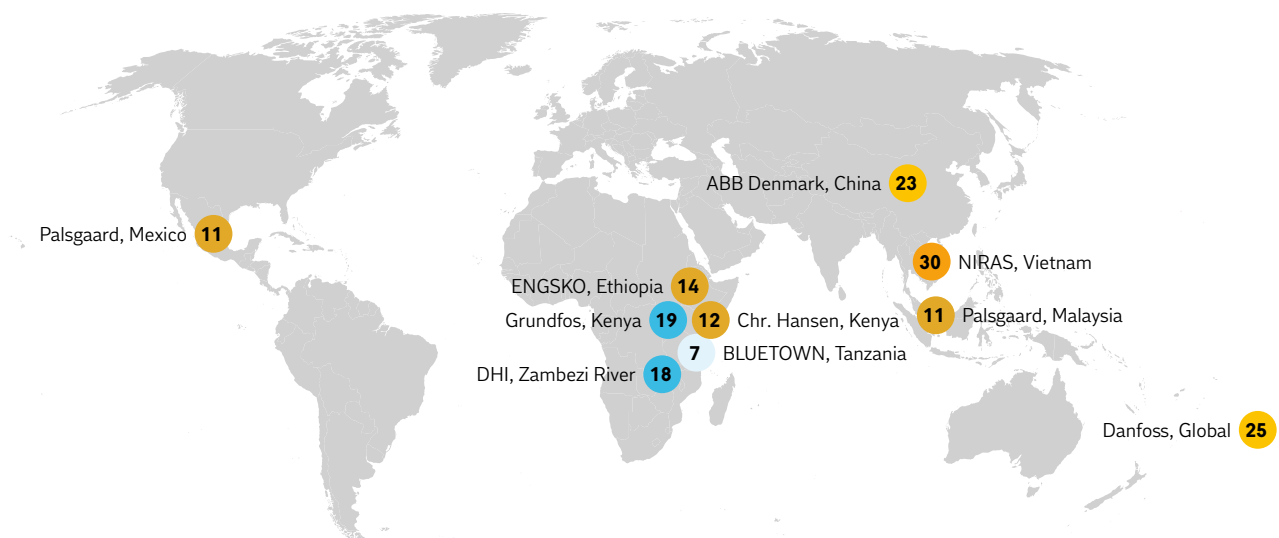
March 2016

Thomas Bustrup
Deputy Director General, Confederation of Danish Industry (DI)

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EXECUTIVE SUMMARY

The 17 Global Goals represent numerous challenges – especially faced by developing countries in Asia and Africa. More than 750 million people lack access to healthy food. Around 2.3 billion people do not have access to sanitation facilities and millions do not have clean water in their homes. Electricity is another area, where one billion people lack access.

Global Goals to target numerous of global challenges

Furthermore, the rapid urbanisation creates challenges such as harmful air pollution and loads of tonnes of urban waste. By 2050, the world population in cities will reach more than six billion people.

Danish companies within food, water and energy already offer solutions for developing countries. These solutions include ingredients, agriculture and food technology, water technology and renewable and energy efficient technologies. In coming years, Danish companies' exports of sustainable products and knowledge are likely to increase with millions of euros, as the global demand for sustainable solutions rises.

Danish companies contribute with sustainable solutions

Furthermore, an innovative business approach high on technology and low in cost will enable companies to provide sustainable solutions for people with little money. The approach enables smart farming and smart cities by making use of digitalisation to provide affordable solutions for sustainable development.

Digitalisation and innovation needed to provide affordable solutions

THE GLOBAL GOALS, BUSINESSES AND DEVELOPING COUNTRIES

September last year, 193 countries adopted the UN-agenda: *Transforming our world: The 2030 agenda for sustainable development*. This agenda covers 17 Global Goals for sustainable development and 169 targets.

The Global Goals take over from the Millennium Development Goals (MDGs) adopted in 2000. Several areas within the MDGs were reached successfully. Today, more girls get an education, child mortality is reduced and the fight against diseases, such as HIV/AIDS and malaria, has brought strong results.

The new Global Goals are different from the MDGs due to the importance of the private sector. Governments, businesses and civil society developed the goals together. The role of business is vital to success in reaching the goals by 2030.

“Now is the time to mobilize the global business community as never before. The case is clear. Realizing the Sustainable Development Goals will improve the environment for doing business and building markets. Trillions of dollars in public and private funds are to be redirected towards the SDGs, creating huge opportunities for responsible companies to deliver solutions.”

UN Secretary-General Ban Ki-moon, September 2015

BUSINESSES ARE READY

A large number of businesses are ready for the Global Goals. Out of all almost 1,000 global businesses, 71

per cent declared that they are already planning how to engage with the Global Goals, according to a survey by PricewaterhouseCoopers. At the same time, 41 per cent will embed the goals into the way they do business within five years.

Danish companies have strong competences in number of areas. Especially within food, water and energy we can see the strong development of new solutions with substantial potential. We have therefore chosen to take a closer look at the opportunities and solutions offered.

In this publication we focus on solutions within goal 2 concerning Zero Hunger, goal 6 for Clean Water and Sanitation, goal 7 for Affordable and Clean Energy and goal 11 for Sustainable Cities and Communities.

URGENT NEED FOR JOBS

Danish companies are also active within areas related to other goals, such as the creation of decent jobs (goal 8) and gender equality (goal 5). In the developing countries overall¹, Danish companies employ almost half a million people. These jobs are important, since one of the most pressing risks is the fear of wasting a generation as a consequence of unemployment. In 2015, the number of unemployed people reached 197 million. The International Labour Organisation (ILO) estimates that 3.4 million more people will be unemployed in the next few years.

On the other hand, we also see the positive trends in many developing countries. High economic growth and an improved business environment are a couple of trends worth mentioning. These trends, together with the Global Goals, are good arguments for Danish companies to increase trade and investments in developing countries, thereby contributing to future sustainable development.

¹ In this publication developing countries are defined by the OECD's Development Assistance Committee as Official Development Assistance Recipients.

The 17 Global Goals

 <p>1 NO POVERTY</p>	End poverty in all its forms everywhere	 <p>10 REDUCED INEQUALITIES</p>	Reduce inequality within and among countries
 <p>2 ZERO HUNGER</p>	End hunger, achieve food security and improved nutrition and promote sustainable agriculture	 <p>11 SUSTAINABLE CITIES AND COMMUNITIES</p>	Make cities and human settlements inclusive, safe, resilient and sustainable
 <p>3 GOOD HEALTH AND WELL-BEING</p>	Ensure healthy lives and promote well-being for all at all ages	 <p>12 RESPONSIBLE CONSUMPTION AND PRODUCTION</p>	Ensure sustainable consumption and production patterns
 <p>4 QUALITY EDUCATION</p>	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	 <p>13 CLIMATE ACTION</p>	Take urgent action to combat climate change and its impacts
 <p>5 GENDER EQUALITY</p>	Achieve gender equality and empower all women and girls	 <p>14 LIFE BELOW WATER</p>	Conserve and sustainably use the oceans, seas and marine resources for sustainable development
 <p>6 CLEAN WATER AND SANITATION</p>	Ensure availability and sustainable management of water and sanitation for all	 <p>15 LIFE ON LAND</p>	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
 <p>7 AFFORDABLE AND CLEAN ENERGY</p>	Ensure access to affordable, reliable, sustainable and modern energy for all	 <p>16 PEACE AND JUSTICE STRONG INSTITUTIONS</p>	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
 <p>8 DECENT WORK AND ECONOMIC GROWTH</p>	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	 <p>17 PARTNERSHIPS FOR THE GOALS</p>	Strengthen the means of implementation and revitalize the global partnership for sustainable development
 <p>9 INDUSTRY, INNOVATION AND INFRASTRUCTURE</p>	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation		

High-tech low-cost solutions: business as unusual

The Global Goals are ambitious and may even be unrealistic if today's products and services are used as a reference point. The good news is that companies around the world are pushing the boundaries of business as usual and designing new ways to address global challenges with affordable solutions.

Conventionally, we think of high technology as expensive and reserved for the wealthy markets. However, in the years ahead, a range of very advanced technologies is likely to fall dramatically in price and to spread rapidly to even the least developed parts of the world. Using advanced technology does not contradict providing affordable solutions for the poorest people. On the contrary, it may be a precondition for achieving the Global Goals.

Consider Biomechatronics at MIT in Boston, which 3D-print advanced prosthetics and thereby circumvent previous price and distribution challenges. Or the Kenyan company M-PESA, which has linked poorer people across the country to the financial infrastructure via mobile banking services.

THE IMPORTANCE OF DIGITALISATION

Although it is impossible to predict the exact applications that will emerge, some general technology trends are remarkably predictable. Digital devices and networks are rapidly becoming much more powerful, widespread and cheap. Technologies such as bio-technology, 3D printing, robots, drones, artificial intelligence and even solar energy will become more important and shape our future opportunities.

These technologies break the conventional link between cost and functionality. As we move forward to 2030, many technologies that are currently considered to be cutting edge will become inexpensive and widely available.

Danish companies can rarely compete on price alone in emerging markets. To remain competitive, it is necessary to build on what we are good at, but also to challenge how and to whom these products and services are sold. Developing well-designed, affordable solutions is part of the historical DNA of many Danish companies. For these companies, accessible technology can help drive the next generations of solutions and secure future markets.

Advanced technology is likely to fall in price

Bio-technology, 3D printing, drones and solar energy will shape future opportunities

Danish experience in developing well-designed, affordable solutions

A “NEED-TO-HAVE” APPROACH

Solutions for developing countries and low-priced market segments are often described as “frugal”. This implies a “need-to-have” approach that delivers affordable and adequate solutions to the many; rather than “nice-to-have” features for consumers whose basic needs are already met.

Interestingly, “frugal” solutions do not necessarily require us to compromise on quality, nor do frugal solutions have to be simple and low-tech. In fact, some of the most advanced digital services in the world, such as Google Search, Skype or GPS navigation, cost little or nothing if you have a smartphone and access to the Internet.

Billions of people have that access and the demand is growing. BLUE-TOWN is a Danish company that is capturing this business opportunity.

Frugal solutions increase the value to the customer ...

... while decreasing the cost of the product or service

Access to the Internet is crucial

CASE

CONNECTING REMOTE VILLAGES IN TANZANIA

BLUETOWN is a Danish company that develops affordable and sustainable solutions which are connecting rural areas of the world to the Internet. The heart of the solution is a base station which is operated 100 per cent by solar energy, with batteries as a back-up. The base station establishes a Wi-Fi hotspot that is connected to the Internet via the existing infrastructure or by satellite, bringing connectivity to even the most secluded areas of the world.

More than half of the world’s population are not connected. Research shows that access to reliable communication, providing easy access to medical care, smart farming, and educational and commercial activities, is a self-enforcing enabler for the creation of wealth and an overall higher standard of living. In two villages in the Dodoma region in Tanzania, BLUETOWN has deployed two base stations so that the Internet is now available in both villages. The local staff have been trained in the overall technical set-up, including field set-up, deployment and testing.



End hunger, achieve food security and improved nutrition and promote sustainable agriculture

2 **ZERO
HUNGER**



FOOD AND AGRICULTURAL PRODUCTIVITY

Global Goal 2 is to *End hunger, achieve food security and improved nutrition and promote sustainable agriculture*. In more concrete terms, the goal is to end hunger by ensuring access to healthy food, and to end malnutrition, double the agricultural productivity and income of small-scale food producers, ensure sustainable production of food and maintain the genetic diversity of seeds.

Goal dedicated to food and agriculture

Danish companies can contribute business solutions to some of these areas. Below, the focus will be on undernourishment and agricultural productivity in developing countries.

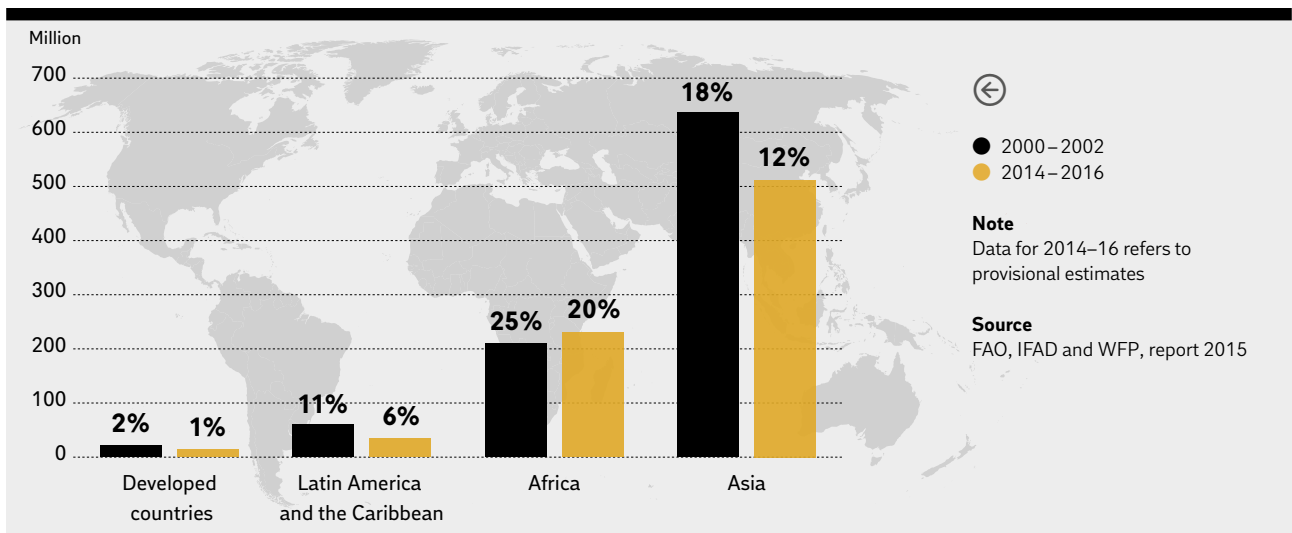
THE CHALLENGE OF UNDERNOURISHMENT

Today, more than 750 million people are undernourished. Most of them live in Asia and Sub-Saharan Africa. However, there has been positive development. The global undernourishment ratio was 15 per cent in 2000, while the ratio today is 11 per cent. In total, 137 million people have escaped food insecurity. China alone accounts for 57 per cent of the decrease.

11 per cent of the world's population lacks food

750 million people still lack healthy food

Number of undernourished (million) and prevalence of undernourishment (per cent)



Nonetheless, nutrition levels have declined in some African countries. Two examples are Uganda and Tanzania. Due to population growth during the past decades, the total number of people lacking healthy food has increased. In the meantime, the undernourished ratio of the population has decreased.

Number of people lacking food increases in Africa

Globally, we need to address different solutions to secure enough healthy food. Inclusive economic growth is a key factor. Social protection systems with access to better nutrition, healthcare and education will contribute to reducing hunger and malnutrition, following the key message of the Food and Agricultural Organization of the UN (FAO).

The Danish ingredients industry is an example of how companies work within the area of healthy nutrition while being resource-efficient and maintaining sustainable food production.

Solutions within healthy food and resource-efficient production

DANISH SOLUTIONS: INGREDIENTS

The ingredients industry in Denmark is strong in terms of research and development, as well as exports and reaching new markets. The industry mainly produces bio-ingredients and proteins.

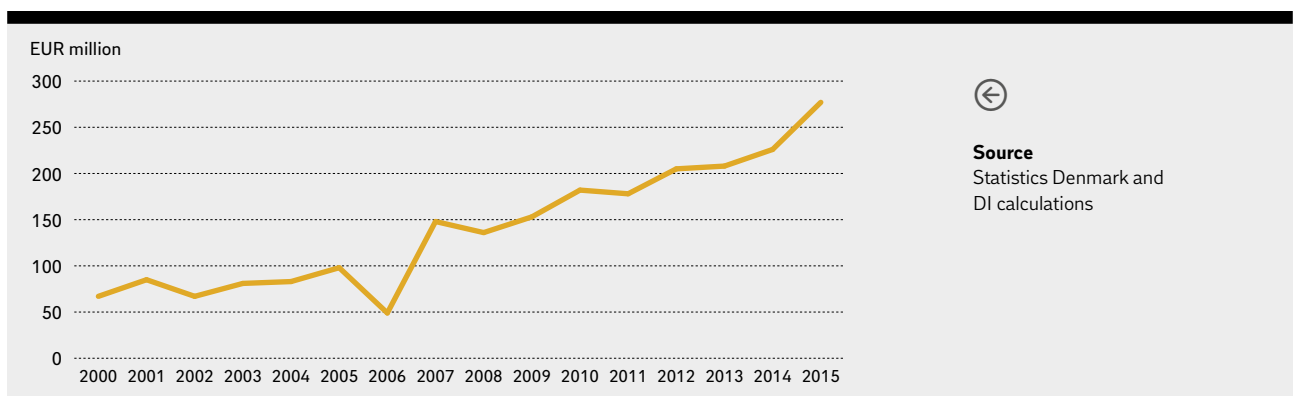
Bio-ingredients are natural enzymes and cultures, vitamins and antioxidants. These ingredients can improve food nutrition and the shelf-life of food products. As an example, enzymes can make waste food products edible. Others can make food last longer without being dependent on electrical cooling systems.

Ingredients to improve nutrition and shelf-life

Roughly, 30 per cent of all food is wasted, globally. Ingredients can be one of the solutions to reduce waste and improve food security in developing countries.

More Danish ingredients to developing countries

Danish exports of ingredients to developing countries, EUR million (current prices)



Source
 Statistics Denmark and
 DI calculations

CASE

SUSTAINABLE PALM OIL STRENGTHENS RAIN FORESTS AND EMPLOYEES

Palsgaard has more than 100 years' experience from manufacturing emulsifiers for a large variety of food industries. The company has activities in over 100 countries, with factories in Denmark, the Netherlands, Mexico and Malaysia.

Responsibility is an integral component of Palsgaard's corporate DNA. The company uses palm oil in its production and is a member of the Roundtable on Sustainable Palm Oil (RSPO), and also the chair of the Confederation of Danish Industry's "Corporate initiative for sustainable palm oil". The goal of these bodies is to promote the sustainable production of palm oil. Purchasing sustainable palm oil not only contributes to safeguarding the world's rain forests, but also promotes jobs and better working conditions for the many people employed in the palm oil industry. Palsgaard also sees this approach as a viable business model, since the company's customers showcase a growing demand for ingredients based on sustainable palm oil.

In 2015, Palsgaard achieved its goal of exclusively using sustainable RSPO-certified palm oil in its production. Palsgaard's products thus guarantee the use of sustainable palm oil throughout the supply chain – from plantation to the final Palsgaard product.

Danish ingredients companies have a market share of 28 per cent of the EU28 exports of ingredients to developing countries. Danish companies are thus already active with sustainable business approaches. One example is the Danish company Palsgaard, which has activities in Mexico and Malaysia.

Danish market share of 28 per cent of EU exports

INGREDIENTS EXPORTS TO REACH EUR 550 MILLION

In numbers, Danish companies exported ingredients for EUR 277 million to developing countries in 2015. The top five importers of Danish ingredients are China, Turkey, Brazil, Mexico and Egypt. Exports to developing countries have increased by an annual average of 22 per cent since 2005.

Export growth of 22 per cent to developing countries

If this growth rate is maintained, exports of ingredients to developing countries are likely to reach EUR 550 million by 2030, and this would be a conservative estimate. If global stakeholders invest in eradicating hunger and malnutrition, the potential for Danish companies will be even greater. Goal 2 is proof of willingness to invest and contribute to a sustainable solution.

Huge potentials for sustainable ingredients exports

There is thus huge export potential for Danish companies to contribute to better nutrition and food security for the world's most vulnerable people. Chr. Hansen is an example of a Danish company that is already doing this.



CASE

FROM WASTE TO NUTRITIOUS CAMEL CHEESE

Chr. Hansen is a global bioscience company that develops solutions for the food, nutritional, pharmaceutical and agricultural industries. The company employs more than 2,600 people across 30 countries.

In a recent initiative, Chr. Hansen sought to realise the vast potential of camel cheese in Northern Africa. The region is plagued by hunger and malnutrition, yet up to 50 per cent of the annual production of camel milk in Kenya and Ethiopia goes to waste. In collaboration with the Kenyan company Oleleshwa Enterprises, Chr. Hansen has combined modern technology with local traditional methods to develop several simple camel cheese recipes. The production of camel cheese ensures much better preservation of camel milk, which is rich in protein, calcium and vitamin C, and low in fat. Recipe books have been distributed free of charge throughout the region, enabling better nutrition, reducing food waste and creating opportunities for sustainable camel dairy industries in the region’s rural communities.

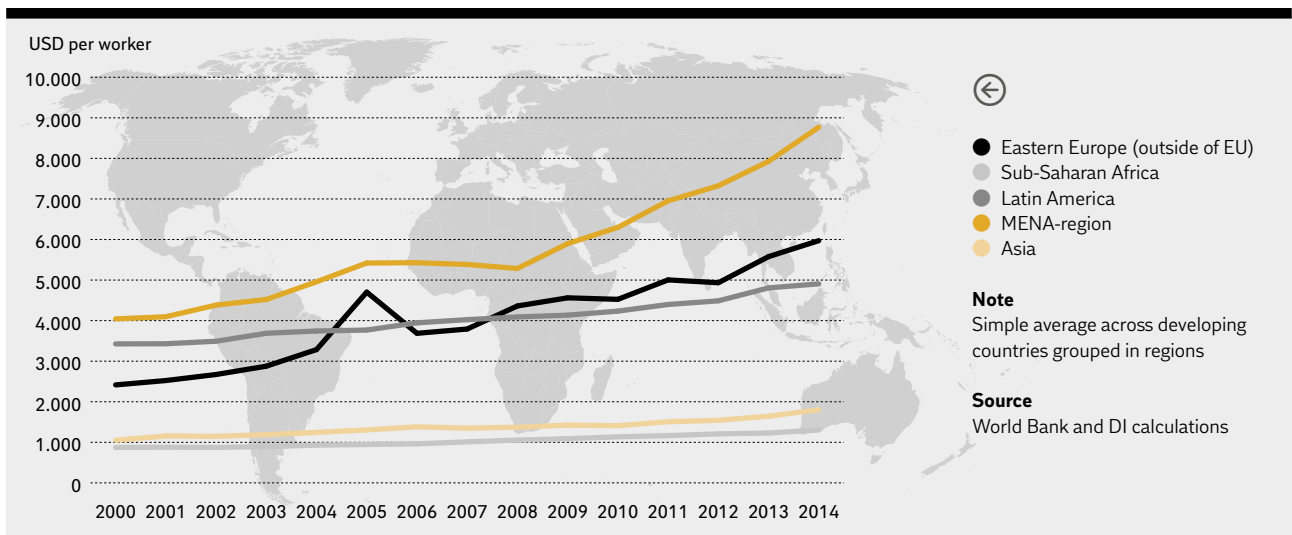
THE CHALLENGE OF POOR AGRICULTURAL PRODUCTIVITY

Another area within goal 2 is to improve the agricultural productivity and income of small-scale food producers. Promoting rural economic integration through well-functioning markets is essential to achieving this goal.

Looking at the data, agricultural productivity has improved in most regions. However, the average improvements in Asia and Sub-Saharan Africa are modest. The agricultural value added per worker was around USD 1,800 in Asia and USD 1,300 in Sub-Saharan Africa in 2014. For comparison, productivity reached USD 8,800 per worker in the MENA region in the same year. In the EU, the figure was USD 36,000 per worker in 2014.

Low productivity in Asia and Africa

Agricultural value added per worker by regions, USD (constant 2005-prices)



Small-scale food producers can increase productivity by addressing different practices and techniques. According to FAO, some examples are sustainable land management, soil conservation, and improved water management, seed varieties and mineral fertilisers.

Important to address agricultural practices and techniques to increase productivity

For farmers and food producers to be able to increase productivity and processing, they need modern equipment and technologies. The agriculture and food technology industry in Denmark has strong competences in providing quality equipment.

AGRICULTURE AND FOOD TECHNOLOGY FOR DEVELOPMENT

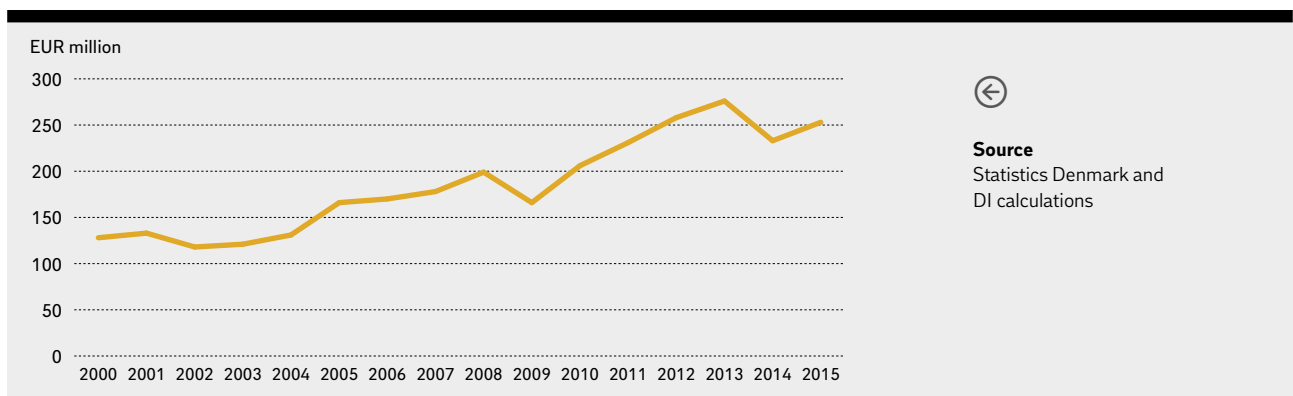
There are many Danish companies that produce equipment and technology for the agricultural and food industry. Examples are technologies for harvesting, cultivation, planting seeds, dairy, fish, the bakery industry, as well as analysis equipment for the food sector.

Technologies to increase value addition in developing countries

To increase the incomes of food producers in developing countries, Danish technology for the food industry will have a contribution to make. Danish technology is well-known for high standards of food safety, which is in strong demand, especially in China.

Danish technology for developing agriculture and food industry

Danish exports of equipment and technology for the agriculture and the food industry to developing countries, EUR million (current prices)



In 2015, Danish companies' exports of technology for the agriculture and the food industry in developing countries totalled EUR 253 million. The top-five importing developing countries are China, Brazil, Ukraine, Chile and Turkey.

Danish export of EUR 253 million in 2015

An example of a Danish company that has already improved agricultural productivity in several African countries is ENGSKO, which produces millstones in Ethiopia.

EXPORTS OF TECHNOLOGY TO REACH EUR 380 MILLION

Since 2005, the exports of the Danish agricultural and food technology industry to developing countries have increased by 5 per cent annually. If this growth continues, exports are very likely to reach EUR 380 million by 2030.

Export potentials for Danish technology

Investing in agricultural technology for development is key to solving the challenge of low productivity and income. Danish companies achieving exports for a value of EUR 380 million is a conservative estimate. To reach the Global Goals and improve agricultural productivity, huge investments will have to be made by nations, organisations and businesses – and Danish exports might be even higher than estimated by 2030.

Huge investments are required to improve nutrition and productivity

CASE

MILLSTONE FACTORY CREATES JOBS IN ETHIOPIA

With more than 100 years' experience in producing millstones, the Danish company ENGSKO has established itself as a global leader in the field. Millstones of high quality are essential agricultural tools in many parts of the world. This is a tool that is widely used throughout the African continent for the production of flour from a large variety of crops, including highly nutritious grains such as teff, quinoa, millet and amaranth.

ENGSKO's main operation in Africa is the company's millstone factory in Addis Ababa, the capital of Ethiopia. The factory is jointly-owned with local partners, and it currently employs 55 local workers directly and a similar number indirectly. ENGSKO exports its products to over 42 countries, with Ethiopia and other African countries as the main markets. As efficient millstones are crucial instruments for increased agricultural productivity in many developing countries, ENGSKO's Ethiopian subsidiary strengthens local growth and employment.



Can small-scale farming be smart?

The development of digital technology drives advances in most other fields of technology – and not only in computer-related fields. Food and agriculture is an area in which new technologies give both small- and large-scale farmers new and more precise tools to produce more with less, and thereby increase agricultural productivity.

Digital technology to increase agricultural productivity

For small-scale farmers, the advantages can also include improved access to new customers, real-time information about market prices and demand, better weather forecasts, and the ability to generate detailed documentation of how products are grown and treated. One example is iCow, a mobile-based service which helps farmers to improve their productivity by providing access to best-practice knowledge and information.

Access to information

The expected market size of digital-based farming services will be USD 4.6 billion in 2020, according to the Global Opportunity Report 2016.

CULTURED MEAT

As incomes rise, families increase their intake of proteins globally, adding to the existing burden on natural resources. While the above examples build on traditional practices, future food solutions might start in a different place. Consider the prospects for producing artificial, cultured meat. Although the concept may seem like science fiction, scientists are making rapid progress in lowering the price of growing meat cells. If this became commercially viable, it would save energy, water and land.

Innovation in meat production



Ensure availability and sustainable management of water and sanitation for all

6 **CLEAN WATER
AND SANITATION**



WATER AND SANITATION

Global Goal 6 is to *Ensure availability and sustainable management of water and sanitation for all*. This means achieving universal access to drinking water and sanitation, improving water quality, increasing water-use efficiency, integrating water resource management, and protecting and restoring water-related ecosystems.

Goal to target water management and availability

Providing water and sanitation facilities for all is the focus of this chapter, together with possible Danish contributions to solving the challenges.

THE CHALLENGES OF A LACK OF WATER AND ACCESS TO SANITATION

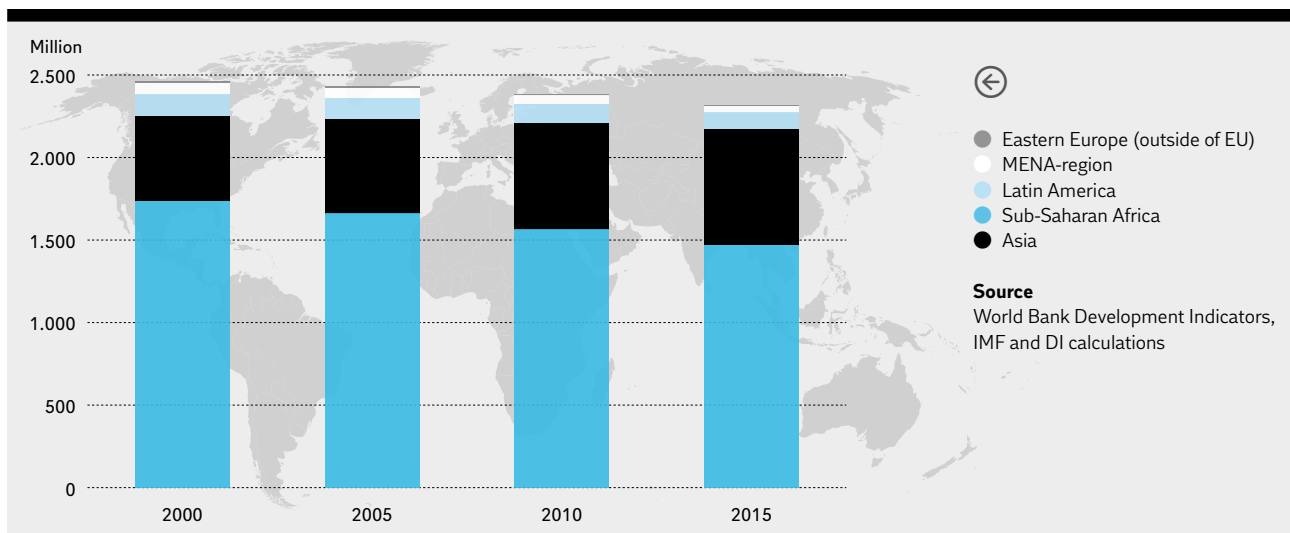
Today, 640 million people lack access to drinking water in developing countries. Almost half live in Sub-Saharan Africa and 40 per cent live in Asia. More people have gained access, and especially in China and India, 315 million people have gained access to drinking water since 2000. However, the goal is to provide universal access, and there is still a long way to go.

640 million people still without access to water

The number of people without access to sanitation facilities has decreased by only five per cent since 2000. In 2000, 2.5 billion people lived without access to improved sanitation facilities. By 2015, the number was 2.3 billion.

Still 2.3 billion people without sanitation facilities

Population without access to improved sanitation facilities, million



Technologies for providing water and sanitation are pumps, pipes, filters, valves and smart water management systems that make it possible to provide water to both rural and urban areas with a minimum loss.

Solutions are within efficient water technology

PART OF THE SOLUTION IS DANISH WATER TECHNOLOGY

A long-term solution includes investing in high-quality water technology. Danish companies working with water technology already have solutions in use in many developing countries.

The Danish water technology sector has strong expertise in providing long-lasting high-quality solutions. An example is the Danish company DHI, which provides technology and experience in a project on the Zambezi River. Another example is the company Grundfos, which has developed automated water kiosks together with Nairobi City Water & Sewerage Company.

The sector is export driven and accounts for around 2.5 per cent of total Danish exports. This is the second largest share in the EU, and only Italy has a larger share. Danish exports of water technology have increased by 16 per cent on average to developing countries since 2006.

Exports of Danish water technologies increased by 16 per cent to developing countries

CASE

SHARING THE WATER OF THE ZAMBEZI RIVER

Located in the southern part of Africa, the Zambezi River runs through Angola, Botswana, Malawi, Mozambique, Namibia, Tanzania, Zambia and Zimbabwe. In addition to serving the basic needs of more than 40 million people and facilitating economic development in the region, the river is vital to the conservation of the diversified natural ecosystem. Given the expected population growth and climate change, careful water management is needed.

DHI was commissioned by DANIDA to provide technical assistance to the newly established Zambezi Watercourse Commission (ZAMCOM). The project runs from July 2014 to July 2016 and the objective is to establish the Zambezi Water Resource Information System and provide training to the users at national level, as well as to the ZAMCOM Secretariat.

The system is based on DHI's technologies and project experience from numerous similar assignments worldwide, not least the important transboundary Nile River Basin, and thus constitutes a proven solution adopted for a wide range of water resources applications throughout the world.

CASE

SUSTAINABLE WATER FOR NAIROBI

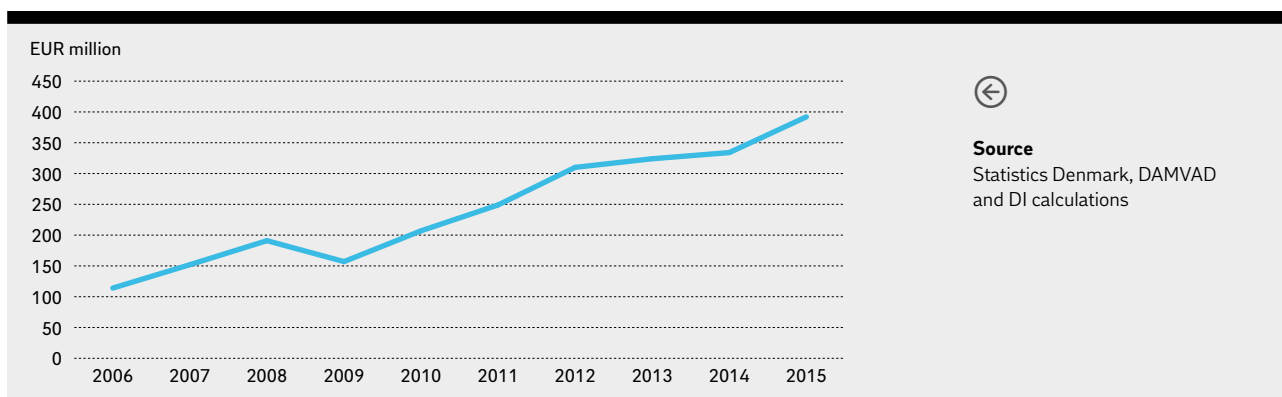
Grundfos is a Danish-based clean technology company that produces energy efficient and advanced pumps and solutions for transportation and treatment of water and other liquids. The company operates out of 56 countries around the world and sustainability is a key part of the business philosophy.

Through a close collaboration with Nairobi City Water & Sewerage Company, four automated water kiosks from Grundfos provide reliable access to drinking water for citizens of the urban settlement, Mathare. Among other things, the Grundfos AQtap water dispensers excel by using a unique payment method with pre-paid WaterCards. They are used at the kiosks in a way similar to transactions on an ATM. The users get safe and affordable access to the water, they need, the utility gets a stable revenue, which makes it easier and more sustainable to run the water kiosks.

Nairobi is a growing city. Today, it is home of 4 million people - in 2025 this number is expected to rise to 6 million. Smoothly running water infrastructure is decisive for local development. There is business potential in the fact that there are around 4,000 water kiosks in Nairobi - with a possibility of adding more to that total - which can all be equipped with AQtap water dispensers.

Water technology for EUR 400 million

Danish exports of water technology to developing countries, EUR million (current prices)



OPPORTUNITIES FOR EUR 860 MILLION IN WATER TECHNOLOGY

If exports of water technology to developing countries continue to increase, Danish exports of water technology are likely to reach EUR 860 million by 2030.

UN Water estimates that investments of USD 50 billion annually are a must, to be able to provide water, sanitation and hygiene for all by 2030. Based on these investments, Danish exports may reach a higher figure than EUR 860 million.

Investments of USD 50 billion annually in the water sector

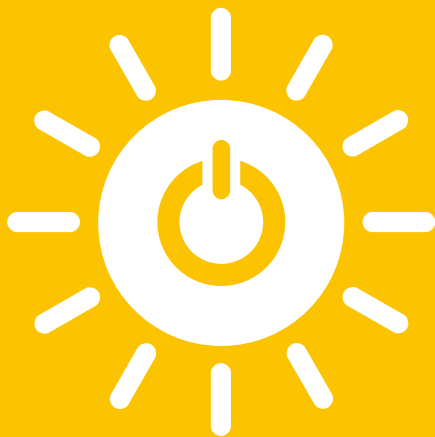
Danish companies have the opportunity to get a fair share of future investments and contribute to improving the lives of the many millions of people who live without access to water and sanitation. Investments in providing access will result in a huge positive economic return, in global terms.





Ensure access to affordable, reliable, sustainable and modern energy for all

7 AFFORDABLE AND CLEAN ENERGY



SUSTAINABLE ENERGY SUPPLY

Global Goal 7 is to *Ensure access to affordable, reliable, sustainable and modern energy for all*. This is defined as universal access to affordable, reliable and modern energy services, increasing the global share of renewable energy and doubling the rate of improvement in energy efficiency.

Goal on sustainable energy supply

Below, the focus is on access to electricity, renewable energy and energy efficiency, together with Danish expertise within this area.

THE CHALLENGE OF UNIVERSAL ACCESS TO ENERGY

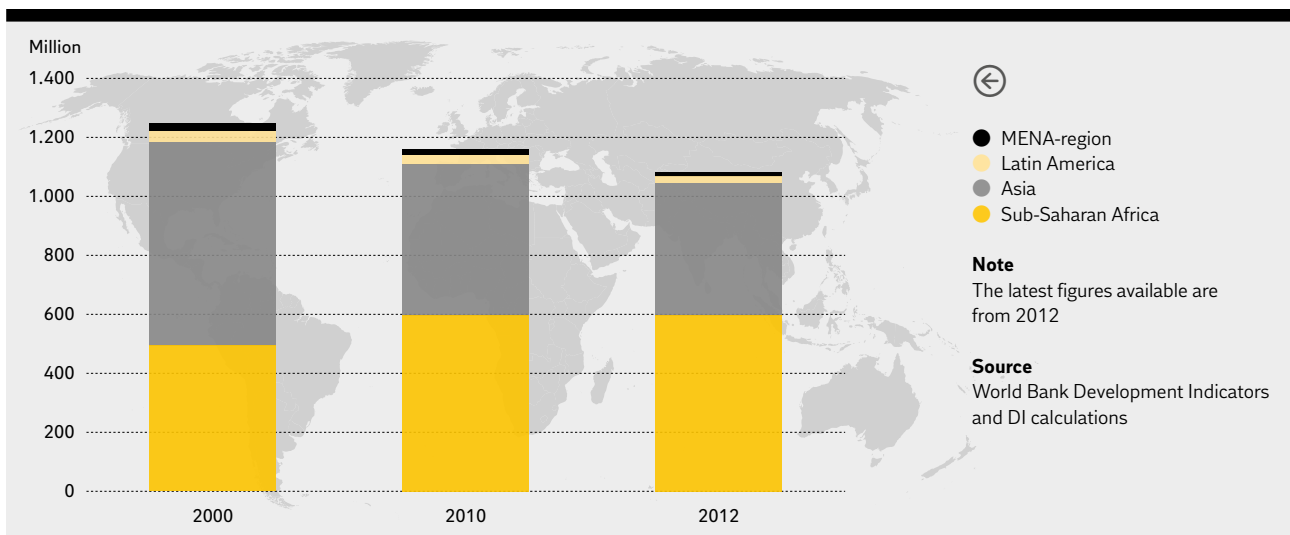
Around one billion people in developing countries live without access to electricity. The number has decreased by 14 per cent since 2000, when the total number was 1.25 billion people.

One billion without access to electricity

India accounts for the greatest improvement, with 128 million people gaining access since 2000. However, the country also has the largest number of people living without electricity, at 269 million.

More without electricity in Africa

People without access to electricity in developing countries grouped in regions, million



In Sub-Saharan Africa, 65 per cent live without access to electricity. The total number has increased by more than 100 million – or by around 20 per cent – from 2000 to 2012.

65 per cent live without electricity in Sub-Saharan Africa

To be able to provide universal access by 2030, investments of USD 45 billion are required, according to the SE4All (Sustainable Energy for All) global initiative, by the UN, the World Bank and other international stakeholders.

Investments of USD 45 billion to provide energy for all

GOAL TO IMPROVE SUSTAINABLE ENERGY SUPPLY

The total supply of renewable energy has increased by more than 40 per cent since 2000. Renewable energy as a ratio of the total supply of energy had risen to 13.8 per cent in 2013, from 13.0 per cent since 2000.

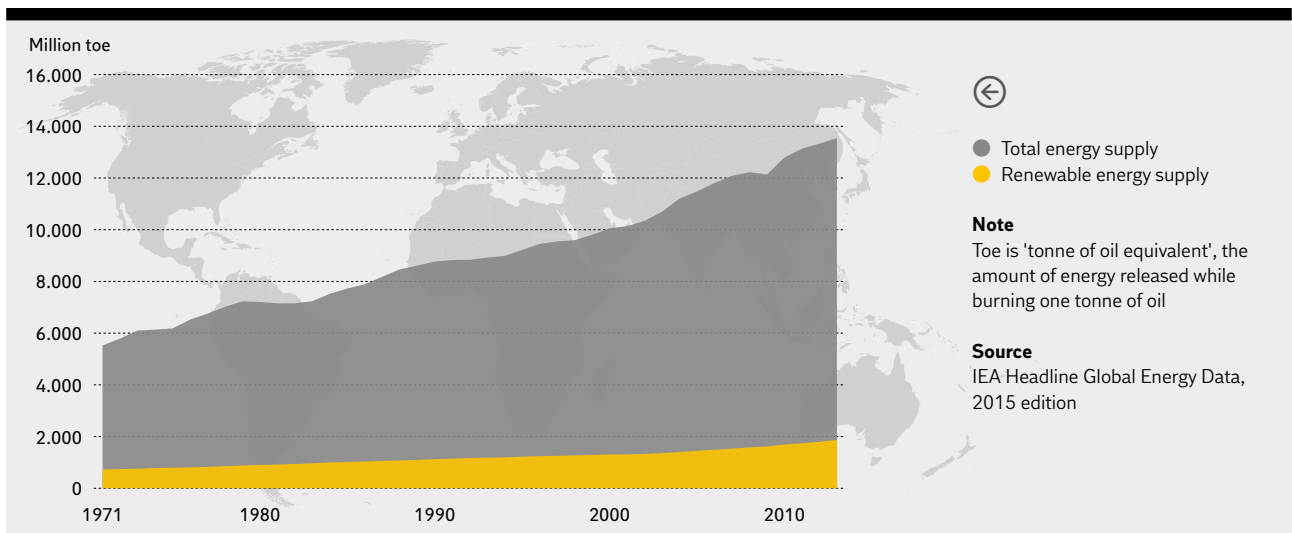
The aim is to increase substantially the ratio of renewable energy by 2030. SE4All estimates that annual investments of between USD 442-650 billion are needed in order to double the ratio of renewable energy in the global energy mix.

Furthermore, investments in energy efficiency are also required. The goal is to double the rate of improvement in energy efficiency, which SE4All estimates will require investment of USD 560 billion. The rate has been around 1.7 per cent annually from 2010 to 2012, according to SE4All.

Investments of USD 560 billion in energy efficiency

13.8 per cent of global energy is renewable

Global energy supply incl. renewable energy supply, 1971-2013, million toe



CASE

HEATING UP SHANGRI-LA IN CHINA WHILE REDUCING CO₂ EMISSIONS

ABB is a global technology company that provides power solutions to improve performance and reduce environmental impact. ABB Denmark is the Centre of Competence within the ABB Group with regard to district energy.

ABB's comprehensive new district heating project in Shangri-La, China, will reduce CO₂ emissions by 105,000 tonnes a year, while reducing dust generation by 460 tonnes a year. Currently, the city's primary heat source consists of highly-polluting fossil-fuel fired individual stoves. Replacing them with ABB's district heating system will improve Shangri-La's energy efficiency and enable better utilisation of clean electricity from hydropower. With this new project, the city's 50,000 residents will benefit from cleaner air, while simultaneously saving 17,000 tonnes of coal each year.

TECHNOLOGY SOLUTIONS FROM DANISH ENERGY COMPANIES

Universal energy access, increasing the ratio of renewable energy and improving energy efficiency are all relevant areas for the Danish energy industry.

Danish companies are leaders in providing renewable energy technologies and energy efficient technologies. These sustainable technologies include pumps, thermostats, insulation, pipes for district heating and wind turbines. The companies contribute sustainable solutions to the energy sector in many developing countries. An example is ABB Denmark, which provides district heating to reduce CO₂ emissions in China.

The Danish energy industry's exports to developing countries accounted for around EUR 1.4 billion in 2014. Renewable and energy efficient technologies accounted for 41 per cent, or EUR 570 million in total of that export. Since 2005, exports of these sustainable energy technologies have increased by an average of 27 per cent annually.

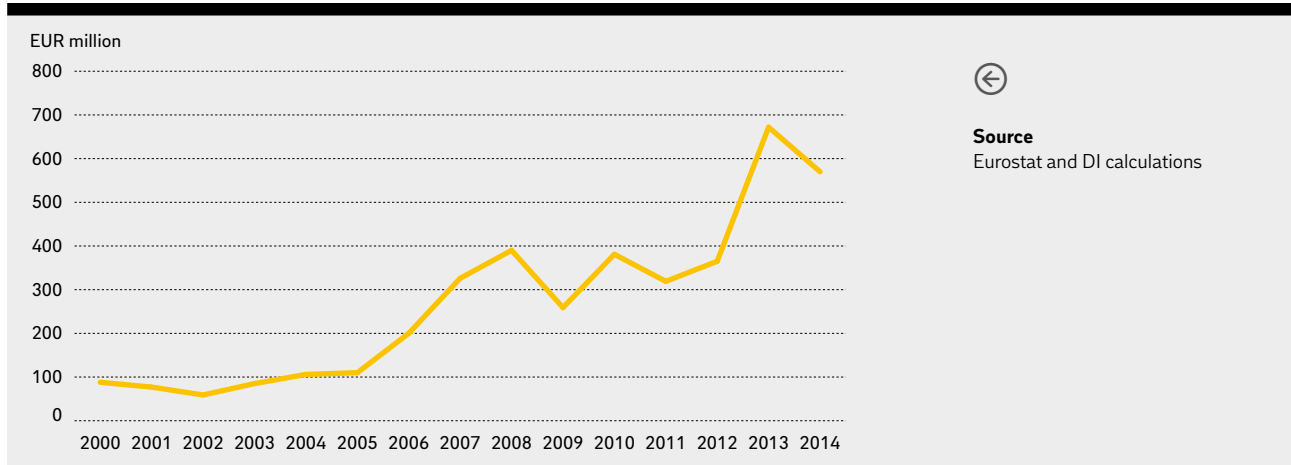
Technology needed to reach the goal

41 per cent of the Danish exports of energy technology to developing countries are renewable and energy efficient



High demand for Danish sustainable energy solutions

Exports of Danish renewable and energy efficient technologies to developing countries, EUR million (current prices)



DANISH SUSTAINABLE ENERGY SOLUTIONS FOR EUR 1.4 BILLION

All three aspects of Global Goal 7 create interesting opportunities for Danish companies with expertise within sustainable energy technologies. The global willingness to achieve this goal gives reason to believe in continued growth in exports of sustainable Danish energy products. The case of the Danish company Danfoss' partnering with UN organisations to implement goals 7 and 11 is an example which illustrates this willingness.

Global willingness and partnerships are ways to reach the goal

Danish companies are likely to increase their exports of sustainable energy technology to EUR 1.4 billion by 2030, if the growth in demand from developing countries continues. If the investments that are needed to achieve this goal are actually made, Danish exports to developing countries are likely to be even higher by 2030.

Two international agreements furthermore indicate that Danish exports of sustainable energy technology will increase: the Paris Agreement from December 2015 and the Environmental Goods Agreement (EGA).

In brief, 195 countries adopted the Paris Agreement, which is a universal, legally binding, global climate deal on reducing emissions, among other aims. EGA is a free trade agreement to remove barriers to trade in environmental goods that are crucial for environmental protection and mitigation of climate change. The EGA is expected to be concluded by 2016. Both agreements encourage countries to invest in renewable energy and energy efficiency.

International agreements to increase demand for sustainable energy solutions

CASE

DANFOSS IMPLEMENTS GOALS 7 AND 11 WITH SE4ALL

Danfoss' products and services are used in such areas as refrigeration, air conditioning, heating, motor control and mobile machinery. The company is also active in the field of renewable energy, as well as district heating infrastructures for cities and urban communities.

To deliver on goal 7, specifically the sub-goal on energy efficiency, and goal 11 on sustainable cities, Danfoss works together with the SE4ALL initiative and the United Nations Environment Programme (UNEP). The initiative helps cities to focus on urban efficiency and to scale up, modernise, and implement district energy projects. UNEP has compiled 45 case studies and more than 20 cities have committed to partner, either by sharing or implementing solutions.

The International Energy Agency (IEA) predicts that district energy projects could contribute as much as 58 per cent of the reduction of CO₂ emissions required by 2050 to keep the global temperature increase to within 2-3°C. Danfoss works with partners in Eastern Europe, India and China to build the capacity of local governments to develop district energy projects, which will ensure that the initiative has long-lasting results that can be scaled up.



Make cities and human settlements inclusive, safe, resilient and sustainable

11 SUSTAINABLE CITIES AND COMMUNITIES



URBANISATION AND CITIES

Global Goal 11 is to *Make cities and human settlements inclusive, safe, resilient and sustainable*. In more concrete terms, this concerns ensuring housing for all and access to sustainable transport, enhancing inclusive urbanisation, protecting cultural and natural heritage, reducing deaths and losses from disasters, reducing the environmental impacts of cities and providing access to green belts and public spaces.

Goal dedicated to city planning

Urbanisation and pollution, focusing on air and solid waste, will be in focus together with perspectives for possible Danish business solutions.

GLOBAL URBANISATION IS SPEEDING UP

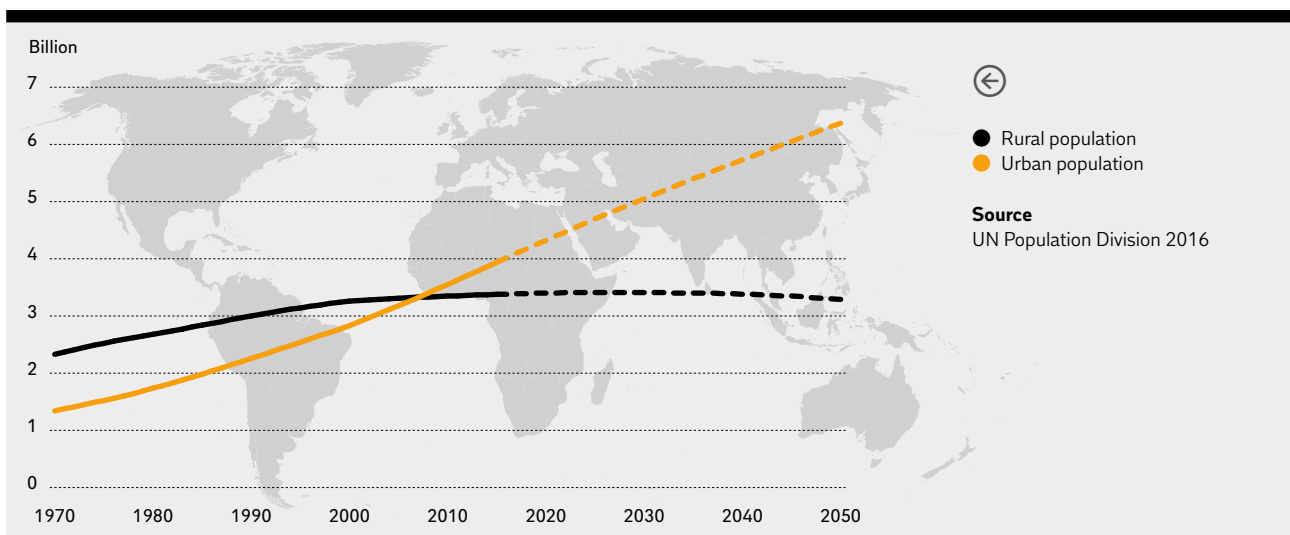
In 2008, the urban population exceeded the rural population. The UN Population Division expects that 6.4 billion people will live in cities by 2050.

By 2050, world population will reach 9.7 billion people

On reviewing data from 1970 until today, together with estimates up to 2050, two global trends catch the eye: the total world population is increasing and people are moving to cities. According to the data, the world population will reach 9.7 billion, with 66 per cent living in cities, by 2050.

Two thirds will live in cities by 2050

World urban and rural population and projections, 1970-2050, billion



Global urbanisation already exerts pressure on housing, transport and the environment in many developing countries. Slum areas are increasing and access to healthy food, water, sanitation and electricity is challenged. The negative impact from the growing cities adds to the pressure on the environment. Examples are air pollution and the treatment of waste.

CHALLENGE OF AIR POLLUTION

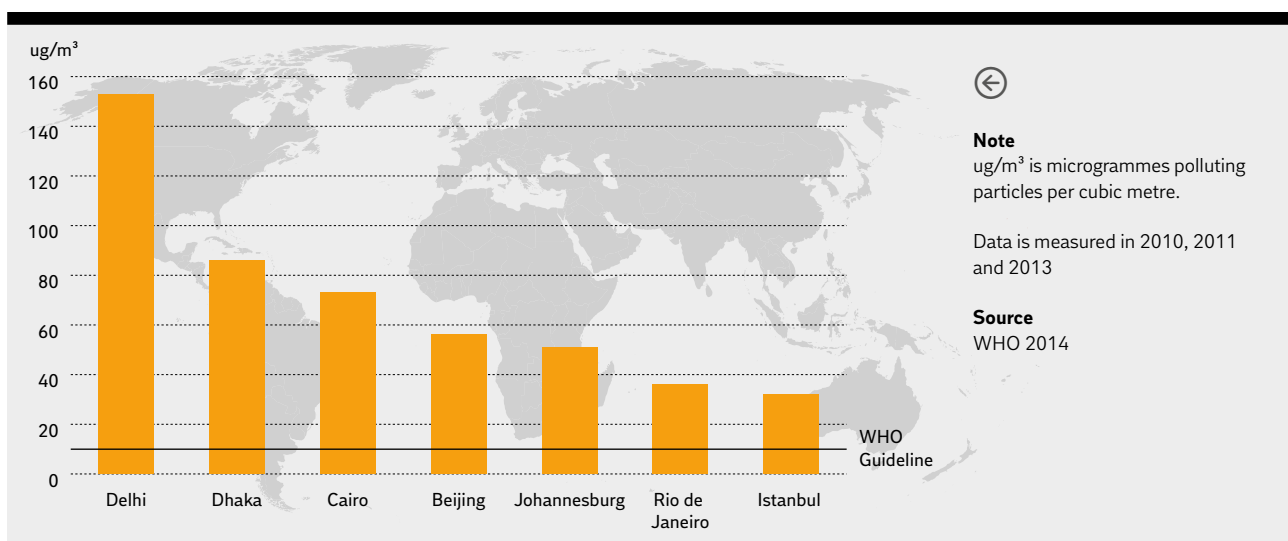
Air pollution is a serious issue in many large cities. The WHO estimates that 7 million people died as a result of exposure to air pollution in 2012. In other words, air pollution represents one eighth of total global deaths.

Air pollution results in millions of deaths

Major cities in the world's growing and developing countries exceed the WHO guidelines for the amount of polluting particles in the air. The WHO guideline advises no more than 10 microgrammes per cubic metre ($\mu\text{g}/\text{m}^3$). As an example, Cairo has a level of $73 \mu\text{g}/\text{m}^3$, while Delhi has the highest level, at $153 \mu\text{g}/\text{m}^3$.

Air pollution way above WHO guidelines

Annual means of PM 2.5 particles and the WHO guideline, $\mu\text{g}/\text{m}^3$



Cleaning up the air of developing countries' urban areas holds vast potential to prevent millions of premature deaths every year, and to improve the overall quality of life of billions of people. The WHO points to solutions that include more efficient fossil-fuel combustion by motor vehicles used for transport, cleaner power generation, and improved energy efficiency in homes, buildings and industries.

Solutions are energy efficient transport and housing

6.1 MILLION TONNES WASTE BY 2025

Solid waste is another major environmental and health issue throughout the world. Today, the amount of daily urban waste generated is 3.5 million tonnes. By 2025, the World Bank projects that the amount will almost double to 6.1 million tonnes per day.

3.5 million tonnes of urban waste is daily generated

The greatest increase is projected to concern developing countries. The total waste in these countries will increase by around 160 per cent within the next ten years. In the OECD countries, the increase is expected to be 11 per cent.

Generation of waste increases by 160 per cent in developing countries

As the world's generation of solid waste steadily rises, improvements in waste disposal will be crucially important. At present, many developing countries dispose the vast majority of their waste by dumping or landfilling, which is bad for both the environment and human health. It is therefore clear that proper waste disposal in developing and rapidly urbanising countries must be a prioritised area.

DANISH BUSINESS SOLUTIONS FOR CITIES

Many Danish companies have solutions for sustainable cities. These include solutions to increase the ratio of reduction and recycling in developing countries' waste disposal methods. Others are solutions for clean power generation from wind energy, to replace polluting coal-fired power plants. Furthermore, companies offer solutions for more efficient district heating systems, in order to replace inefficient and highly polluting individual stoves with energy efficient plants.

Solutions within reduction and recycling waste in developing countries

For example, the Danish consulting company NIRAS is working to reduce the pollution from Vietnamese cement production.

Danish consulting engineering companies in particular have experience in this field. Half of the companies are active in Asia and Africa work with environmental projects and 25 per cent with developing infrastructure, according to a recently published report from the Danish Association of Consulting Engineers.

Danish projects works with environment and developing infrastructure

CASE

SAVING COSTS AND CO₂ EMISSIONS IN VIETNAM

NIRAS is a Danish consultancy which specialises in sustainable and value-adding solutions. The company has international experience from Europe, Asia and Africa.

In Vietnam, NIRAS is currently controlling and coordinating a project to optimise the cement sector, while also reducing CO₂ emissions. It is one of the most ambitious CO₂-reducing projects worldwide. The task is to improve management of the production process and to mix the cement with waste products from other production lines. The CO₂ reduction is estimated at 10 per cent, corresponding to 138 million tonnes of CO₂. Production cost savings totaling USD 8-10 billion by 2030.

The project is part of the Nordic Partnership Initiative on Up-Scaled Mitigation Action (NPI). The purpose of the initiative is to assist developing countries in reducing their CO₂ emissions.

50 NEW LOCAL JOBS PER PROJECT

Many Danish companies, including consulting engineers, have solutions that can improve the living standards of millions of people in cities around the world. The companies can also help to create local jobs. Every fourth consulting engineering company creates more than 50 new local jobs for each project they undertake in developing countries, according to the Danish Association of Consulting Engineers.

Future projects are in the pipeline, since 70 per cent of all engineering companies expect medium-to-high growth in their activities in Africa. In Asia, 50 per cent of the companies expects medium-to-high growth.

70 per cent of the Danish engineering companies expect growth in activities in Africa

Smart and sustainable cities

Rapidly growing cities in developing countries call for new ways to manage and provide mobility, water and sanitation, and electricity. Developing "smart cities" is becoming an important part of the solution.

| "Smart" management of cities

As far more data is generated about all types of activity in the city, this can be used to manage traffic, to plan maintenance and construction and to improve the precision of energy and water supplies.

India has bold goals to roll out smart cities. The Indian Smart City Programme has the ambition to create 100 new smart cities around the country, to address the challenge of urbanisation. Solutions span all corners of a city, including green building technology, waste-to-energy solutions and e-governance. The Danish engineering, design and consulting company Rambøll is one of several companies that see a fit between Danish know-how and local needs.

| 100 new smart cities in India

WHAT IS IT TO BE "SMART"?

"Smart" is a key word for many high-tech, low-cost solutions. Any object, such a hospital bed, generator or water well, can become "smart", in the sense that they can be equipped with sensors and computing power, and be online. Smart devices are increasingly being combined in systems to manage traffic, public transport, energy, healthcare and manufacturing, etc. In other words, an Internet of Things.

THE GLOBAL GOALS AND THE WAY FORWARD

The 2030 Agenda for Sustainable Development, with the 17 Global Goals, is a platform for future international activities. By working together, we can solve global challenges while identifying business opportunities.

Global Goals a platform for international activities

By engaging in the 17 Global Goals, companies can create economic and social value. By meeting the needs of people in developing countries, companies will contribute to preventing a situation in which these people are left behind in the development race.

Creation of economic and social value

By identifying opportunities from the goals and turning these into concrete action, companies can work to meet the global challenges, while engaging in new markets and staying competitive by supplying solutions and increasing their market shares.

Companies work to meet global challenges

Where to start: tomorrow's solutions

A recent DI survey shows that many Danish companies expect market disruption to start outside Denmark. This does not necessarily have to be the case.

- Companies can link their products with enabling technologies. In other words, make their products "smart". An example is Grundfos Lifelink, which has linked a water solution for low-income communities with a smart payment system that brings down transaction costs and generates important data.
- Companies can re-think products or services which leverage technological platforms. The Danish start-up Audientes, for example, is rethinking hearing aid technology and business models, with the ambition to make hearing aids available in middle- and low-income markets.
- Companies can provide enabling technology for other companies. BLUETOWN, for example, see themselves as part of the puzzle for other companies. Norwegian Telenor has worked closely with customers in developing countries to provide communication solutions that can enable affordable business models.

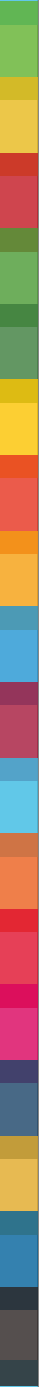
Technology is part of the solutions to achieve the Global Goals, but cannot stand alone. High-tech solutions solve problems, but also create new business challenges and development dilemmas. How is e-waste handled, how can illiterate consumers adapt to advanced technology, and how can small-scale farmers compete with artificial meat? The Global Goals can inspire new solutions and provide a checklist to ensure that solutions are sustainable.

Three types of high-tech
low-cost companies

Traditional company

Technology company

Enabler company



DI RECOMMENDS

Together with the private sector, the Danish government can take action to pave the way for Danish business solutions to the Global Goals for sustainable development.

DI recommends the following:

-
- A stronger focus on integrating the core competences of Danish companies in the Danish development policy.
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- A stronger focus on improving the enabling environment for doing business, i.e. fighting corruption, improving the conditions for trade with and between developing countries, building infrastructure and ensuring access to qualified labour.
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- Access to new financial institutions for Danish companies. There is a special need for risk sharing through guarantees and financial infrastructure for project development.
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About DI

Confederation of Danish Industry (DI) is the strong voice of corporate Denmark. On behalf of 10,000 member companies, DI works to provide the best conditions for Danish businesses in order to improve the opportunities for growth and overall competitiveness.

DI's international activities

DI has assisted more than 500 Danish companies within business development in a number of developing countries. Moreover, DI often arranges business delegations to countries around the world. Many DI members run a major part of their business outside Denmark and more and more companies are benefiting from the global market's many opportunities. DI assist members build sustainable and successful businesses, which meet local demands.

With offices around the world, DI has local presence in Russia, China, India, USA, Brazil, Tanzania, Mexico and in Brussels with an EU office.

☎ di.dk/international

DI Base of the Pyramid Learning Lab

The Learning Lab works together with companies and organizations to understand opportunities, pitfalls, and best practice targeting Base of the Pyramid markets (BoP). The Base of the Pyramid refers to people living at the base of the economic pyramid globally. While these customers have little money in their pockets, they collectively make up a strong and growing global market segment with distinct preferences and needs.

Since 2007, the Learning Lab has supported companies and organizations across many sectors and countries to identify and leverage opportunities and bring them from ideas to business models. The Learning Lab is hosted by DI and is part of a global network of Labs focusing on low-income markets and inclusive business models.

☎ boplearninglab.dk
