

How one of the world's largest countries and one of the smallest join forces to create a new era of just, green transition

India and Denmark – a strategic green partnership with global potential

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400 years of collaboration

In 2020, India and Denmark celebrated 400 years of trade and exchange based on support and cooperation. The cooperation began in Tharangambadi, or Tranquebar, on India's Coromandel Coast.



More than four centuries ago on India's Coromandel Coast, the Danish Admiral Ove Gjedde signed a lease agreement with the local ruler, the Nayak of Tanjore, now Thanjavur. The agreement allowed Denmark to establish Fort Dansborg and several other buildings that continue to remain in the city of Tharangambadi, formerly Tranquebar, to this day. In exchange for a yearly rent, the Danes set up a trading post on behalf of King Christian the 4th.

The recently signed India-Denmark Green Strategic Partnership is yet a momentous opportunity to strengthen the ties and deliver green innovation and sustainable development to global societies.

Building upon a foundation laid over four centuries ago, India and Denmark can use the Green Strategic Partnership to create a greener and more prosperous world for citizens and societies all over the world.

Denmark has the skills, India has the scale

What does a country with five million citizens have in common with the soon-to-be most populous country in the world?

India and Denmark are both committed to accelerating the green transition with ambitious national targets. To this, the India-Denmark Green Strategic Partnership, signed in 2020, underlines both countries' huge commitment and sets out a joint roadmap for climate action.

With the Green Strategic Partnership, India and Denmark have chosen each other as preferred partners in the journey toward green transition. Initiatives are already being instituted within renewable energy, water, waste, agriculture, shipping and more.

“Denmark has the skills, India has the scale, and the world has the need for new technologies,” as Prime Minister Modi said at the announcement. By combining Danish skills and India's scale with speed, scope, and political will, we can launch a new era of just, green transformation.

To truly leverage the strong partnership and establish a platform where solutions to water management, energy transition, and sustainable growth are implemented, sustained commitment of businesses from both countries is needed. Efforts are already underway.

Since 2018, Denmark and India have cooperated on energy. Initially, the cooperation was focused on offshore wind through a Strategic Sector Cooperation. In 2020, the collaboration was expanded to include long-term energy planning and scenarios as well as flexibility and integration of renewable energy. The IEA estimates that India will be one of the world's largest markets for renewable energy in the coming years and electricity consumption is expected to triple by 2040. This corresponds to more than EU's total electricity consumption today.

Offering inspiration and examples of how to aid the green transformation through existing green initiatives, this publication seeks to inspire and instil sustainable Indo-Danish business partnerships.

**“Denmark has the skills,
India has the scale, and the
world has the need for new
technologies”**

Strong Indo-Danish energy cooperation paves the way for India's climate targets and green jobs creation

The objective of the India-Denmark Energy Partnership is to create peer-to-peer exchange of knowledge between experts from Denmark and India focused on offshore wind, long-term energy planning and integration of renewable energy.

Danish experiences will serve as inspiration for Indian authorities in achieving green transition and growth in the renewable energy sector.

Since 2018, Denmark and India have cooperated on the energy transition. Initially, the cooperation was focused on offshore wind through a Strategic Sector Cooperation. In

2020, the collaboration was expanded to include long-term energy planning and scenarios as well as flexibility and integration of renewable energy.

The IEA estimates that India will be one of the world's largest markets for renewable energy in the coming years, and electricity consumption is expected to triple by 2040. This corresponds to more than EU's total electricity consumption today. Therefore, the ambition in India is to integrate large amounts of renewable energy to support the growing energy demand.

Today, the India-Denmark Energy Partnership (INDEP) marks the centrepiece of the government-to-government cooperation on energy between India and Denmark. INDEP is a 5-year programme running from 2020-2024. The program is implemented in collaboration between Denmark and India's Ministry of New and Renewable Energy, the Ministry of Power as well as relevant institutions across India.

FACTS

The Green Strategic Partnership

- Denmark and India started their cooperation on energy in 2018, focusing on offshore wind. In 2020, the collaboration was expanded to include long-term energy planning and scenarios as well as flexibility and integration of renewable energy.
- The energy cooperation with India is financed by the Ministry of Foreign Affairs through the Danish Climate Envelope from 2020-2024.
- The programme is implemented in collaboration with India's Ministry of New and Renewable Energy, the Ministry of Power as well as relevant institutions in India.
- In September 2020, Denmark and India launched a green strategic partnership. The partnership sets the framework for a collaboration on the green transition in several areas where energy collaboration is central.



The Indian think tank CEEW estimates that the green transition can generate 1.3 million jobs in India.

INDEP is a 5-year program that constitutes a key element in the government-to-government cooperation on energy. It is based on technical knowledge sharing within three main areas:

1 Offshore wind

Together, the Indian Ministry of New and Renewable Energy and the Danish Energy Agency have established the Centre of Excellence for Offshore Wind and Renewable Energy. It will support the development of offshore wind in a planned and structured process so the wind power expansion can be carried out with less risk for investors and thus more cost-efficient. The Centre of Excellence will gather expertise on offshore wind and use it in India and regionally. India can benefit from unique Danish experiences such as the Danish one-stop-shop concept for permits for offshore wind, which streamlines crucial processes in the development of offshore wind projects.

2 Long-term planning and energy scenarios

The cooperation focuses on developing energy scenarios and long-term planning of the energy system, enabling political decision-making on a more informed basis. Through cooperation on improved energy scenarios and long-term planning, Indian decision makers can obtain a more accurate picture of the total costs and emissions associated with an expanding power generation, as well as how it is implemented cost-efficiently. The data basis for the calculations can be improved by involving several actors in the collection

of data. Thus, investment decisions can become more solid and at the same time increase the ownership of the decisions in the Indian society.

3 Flexibility of renewable energy

The cooperation focuses on developing the power system for the integration of variable renewable energy based on Danish experiences. Examples of this are the development of improved grid codes, expansion of the power market, enhanced flexibility in thermal powerplants, and forecasting of renewable energy production. Through this, the cooperation can contribute to integrate the planned 450 GW of renewable energy by 2030 in a cost-efficient way.

Want to know more about the Indo-Danish partnership?

Reach out to The Centre for Global Cooperation, part of the Danish Energy Agency.

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CASE 1 ØRSTED
TAG OFFSHORE WIND, RENEWABLES
LOCATION DENMARK

From black to green – a national oil company's green business transformation

Challenge

Increasingly companies all over the world are seeing the need to transform to a sustainable business model. They are faced with demands from customers, investors, policymakers, employees, and other stakeholders to become more sustainable, which is profoundly changing the business environment. In this context, most companies need to transform their business to continue to create value for their stakeholders and shareholders. →

FACTS

Ørsted's 7 key learnings on how to take on a leadership approach to transform your business:

1. Confront your reality in a changing landscape
2. Define a sustainable vision
3. Engage and align stakeholders
4. Mobilise behind your vision
5. Drive tangible action
6. Expect exponential change
7. Go the distance

In the late 2000s, Ørsted was one of the most coal intensive power generators in Europe with an expanding oil and gas production business. But Ørsted took a strategic decision to become a green energy company, because Ørsted was convinced it was the right approach strategically, financially and environmentally.

Solution

To drive its transformation, Ørsted invested heavily in renewable energy, particularly offshore wind; exited its fossil fuel businesses, and formulated its vision of creating a world that runs entirely on green energy. The business model transformation of the energy company which is majority owned by the Danish state, has been an interesting case study which may provide some inspiration and learnings that are relevant for other energy companies around the world.

Results

Ørsted is now one of the largest renewable energy companies by capacity globally and the leading offshore wind company. Since the beginning of the transformation, Ørsted has reduced its use of coal by 73 percent and more than halved its CO₂ emissions. Ørsted is in the process of converting its coal fired power stations in Denmark to sustainable biomass, and by 2023, Ørsted will be completely coal-free and will have reduced CO₂ emissions by 96 percent. In 2017, Ørsted divested its upstream oil and gas business, completing its transformation to become a leading pure play renewables company.



About Ørsted

The Ørsted vision is a world that runs entirely on green energy. Ørsted develops, constructs, and operates offshore and onshore wind farms, solar farms, energy storage facilities, renewable hydrogen and green fuels facilities, and bioenergy plants.



Read more: <https://stateofgreen.com/en/solution-providers/orsted-a-global-leader-within-green-energy/>

CASE 2 TOPSOE
TAG POWER-TO-AMMONIA, GREEN HYDROGEN
LOCATION SAUDI ARABIA

Decarbonising the hard-to- abate sectors: hydrogen to ammonia and back again

Challenge

The energy loss associated with producing and distributing green hydrogen challenges providers in creating a fully sustainable solution. As part of the world's largest green hydrogen project, NEOM in Saudi Arabia, Topsoe will convert hydrogen into ammonia to facilitate safe and reliable transport and storage of e-fuels. →

Power-to-ammonia technology developed by the Danish company Topsoe has been selected to provide the world's largest green hydrogen project with a solution.

Hydrogen is an important source for the green fuel that will power our future, but the energy loss associated with producing and distributing green hydrogen presents a clear challenge to the endeavour. In order to close the green solution loop, providers must innovate and create fully sustainable production model.

Power-to-ammonia technology developed by the Danish company Topsoe has been selected to provide the world's largest green hydrogen project with a solution.

1.2

the project will produce 1.2 million tonnes yearly for fuel cell busses, trucks and other heavy duty transport.

Solution

The NEOM project in Saudi Arabia will be one of the world's largest green hydrogen projects. It will use 4 GW of renewable power from solar and wind to produce 650 tonnes green hydrogen daily.

The power-to-ammonia technology from Topsoe then transforms the hydrogen into 3,500 tonnes of green ammonia, which can be stored and transported safely before being converted back to hydrogen at local hydrogen refuelling stations.

The technology is expected to be ready for industrial use by 2024, where the green end-product will be transported by Air Products, the exclusive off-taker of the NEOM project.

Results

When implemented, the project will produce 1.2 million tonnes yearly for fuel cell busses, trucks and other heavy duty transport.

Impressively, the project model will avoid emissions of over three million tonnes of CO₂ per year – the equivalent of over 700,000 cars – providing an energy efficient, world-scale solution to producing green hydrogen that will fuel transportation around the globe.

Based on almost 80 years of experience in ammonia, Topsoe's industry-leading solution ensure reliable and safe operation with the lowest possible energy consumption and the lowest possible emissions.

FACT

3 million tonnes

The project model will avoid emissions of over 3 million tonnes of CO₂ per year – the equivalent of over 700,000 cars.

About Topsoe

Topsoe is a leading global developer and supplier of decarbonisation technology, catalysts, and solutions for the energy transition. Our mission is to combat climate change by helping our partners and customers achieve their decarbonisation and emission-reduction targets, including those in hard-to-abate sectors such as aviation, shipping, and the production of raw materials.



Read more: <https://stateofgreen.com/en/solution-providers/haldor-topsoe-is-committed-to-catalysis/>

CASE 3 COPENHAGEN INFRASTRUCTURE PARTNERS (CIP)
TAG RENEWABLES, FINANCING
LOCATION INDIA

Investing in one of the world's fastest-growing markets for renewable energy

Challenge

There is a large and growing need for new energy infrastructure outside of North America and Europe. It is estimated that India will be one of the world's largest markets for renewable energy in the coming years. Working towards carbon neutrality by 2070, India needs to incorporate enormous amounts of renewable energy to support its growing needs. →

India is the world's third-largest energy consumer and has committed to reducing emissions intensity by 33-35 percent by 2030, compared to 2005 levels. Emerging markets, like India, are tremendously important in terms of economic growth in carbon emissions. Populations and societies are demanding more energy, economies are advancing, and it is strategically important to CIP to be where the growth is ultimately going to be.

Solution

CIP's New Market Fund has been set into the world to pursue new growth opportunities by exploiting CIP's existing industrial skills, networks, and de-risking approach to create value investors – combining some of the industry's most experienced investors with CIP's proven ability to design, construct and commission world-class projects.

One of the investments that have come through the New Markets Fund, has been to support the growing renewable energy market in India.

33-35 %

India is the world's third-largest energy consumer and has committed to reducing emissions intensity by 33-35 percent by 2030, compared to 2005 levels

The so-called Unicus project, an investment agreement with the Indian power company Amp Energy has been signed to jointly spend over \$200 million USD in renewable energy projects in India, with the potential for future expansion.

The project is the fund's first in India and will be the largest since its establishment in 2019. CIP has committed \$100 million USD to the partnership.

Emerging markets such as India have a different dynamic than more established markets. As typical for emerging markets, Unicus projects are smaller than traditional CIP projects, and the governance and project delivery approach is scaled to reflect that. Equally, procurement construction and financing can also vary from what CIP is used to in established markets, so active collaboration is critical.

Results

Unicus, the first joint venture project with Amp India, was commissioned in March 2022. Two more are under construction and many more progressing rapidly.

The partnership with Amp India will develop and construct a portfolio of 1.7 GW initially, with the ambition to add additional projects over time. The portfolio comprises c. 900 MWp in late-stage projects (solar PV and hybrid wind/solar PV) and an additional c. 800 MWp of projects in earlier stages of development. The projects is set to provide power to both utilities and commercial and industrial customers.

FACTS

- Unicus – a partnership with Amp India on a ~ 1.7GW portfolio to unlock one of the fastest-growing renewable markets in the world.
- Amp India is the majority owner with 51% ownership.
- Total New Market Fund equity commitment: 1.7GW
- The portfolio comprises solar PV and hybrid wind/solar PV projects at various development stages.

About Copenhagen Infrastructure Partners (CIP)

Founded in 2012, CIP today is the world's largest dedicated fund manager within greenfield renewable energy investments and a global leader in offshore wind. The funds managed by CIP focus on investments in offshore- and onshore wind, solar PV, biomass and energy-from-waste, transmission and distribution, reserve capacity and storage, Power-to-X and advanced bioenergy.



Read more: <https://stateofgreen.com/en/solution-providers/copenhagen-infrastructure-partners-cip/>

CASE 4 NKT
TAG OFFSHORE WIND
LOCATION DENMARK

Connecting offshore wind farms to onshore grids

Challenge

Connecting offshore wind farms to onshore grids is essential to enable integration of more renewable energy and pave the way for a sustainable future. In turn, interconnecting grids create opportunities to strengthen energy markets, secure supply and share capacity. As the selected supplier of cable systems and installation work, NKT contributes to the unique Kriegers Flak development in the Baltic Sea. Two national electricity grids are being connected via offshore wind farms. →



The European power transmission system is evolving towards an infrastructure based on high-voltage cable systems. The Kriegers Flak connection and interconnection showcase this transformation and support the European Union's goal of reaching a minimum of 32 percent renewable energy by 2030.

Solution

NKT's solution consists of 220 kV (kilovolt) HVAC (high-voltage alternating current) cable systems between the offshore transformer platforms and connections to shore. The advanced solution enables the integration of 600 MW (megawatt) into the mainland grid, and brings green energy to 600,000 Danish households. Design, testing and production of the submarine cable system were conducted in NKT's world-class facilities in Karlskrona, Sweden. NKT was also responsible for installation, cable-laying and pull-in operations for the three-core submarine cables. This approach significantly reduces interface risk thanks to NKT's in-depth understanding of both cable systems and installation methodology.

NKT's experience and expertise ensure reliable transmission of electrical energy. The offshore cable laying, platform connection and land installation were successfully performed with the state-of-the-art cable-laying vessel NKT Victoria. The vessel is built specifically for handling and laying submarine cables. The performance was excellent, with regards to both speed and accuracy, and the mission was completed within the scheduled time. This grid connection has a total length of

about 100 km, of which 11 km is between platforms and 44 km is from each of these platforms to shore.

As a supplier of the cable system and installation, NKT provided its expertise throughout the value chain, which enables safer and more predictable project execution, both in terms of liabilities and costs. The cable system was put into service in 2019.

Results

A turnkey 220 kV HVAC cable system with a 600 MW power rating // A turnkey 170 kV high-voltage cable system with a 400 MW power rating. 100 km // 50 km (two parallel cable systems of 25 km).

About NKT

NKT connects a greener world with high-quality power cable technology and takes centre stage as the world moves towards green energy. NKT designs, manufactures, and installs low, medium and high voltage power cable solutions enabling sustainable energy transmission.



Read more: <https://stateofgreen.com/en/solution-providers/nkt/>

Indo-Danish collaboration launches conceptual plan for 15 offshore wind parks in India

The Danish Energy Agency and the Indian Ministry of New and Renewable Energy have published a conceptual plan with a pipeline identifying 15 locations for offshore wind in India.

The conceptual plan provides substantial inputs to the current stakeholder dialogue on the recently released draft tender document from the Indian Ministry of New and Renewable Energy.

The joint study was presented at a high-level event in Chennai, India, on 23 November 2022 as an activity under the Centre of Excellence for Offshore Wind and Renewable Energy, a joint initiative between The Danish Energy Agency (DEA) and The Indian Ministry of New and

Renewable Energy (MNRE). It highlights the rough and fine screening process as well as a conceptual build plan for the selected zones off the coast of Tamil Nadu and Gujarat, and is based on Denmark's approach to maritime spatial planning for offshore wind. The plan provides substantial inputs to the current stakeholder dialogue on the recently released draft tender document from MNRE.

Moreover, the two parties presented a viability assessment of existing port infrastructure in proximity to the coasts off the two states including recommendations for upgrades and development. The projects provide significant input to the undergoing stakeholder consultation on the draft tender document for the first offshore wind parks in India, released by MNRE on 14 November 2022. This includes further details on the exact locations of the first 4 GW in Tamil Nadu that MNRE have taken into consideration as part of the comprehensive stakeholder inputs.

FACTS

The Maritime Spatial Planning project and port infrastructure study

The Maritime Spatial Planning is based on two separate reports – one for Tamil Nadu and one for Gujarat. The reports focus on the rough and fine screening process in the two states, including heat mapping and conceptual planning basis for the selected zones. The applied methodology is based on best practices from the Danish experiences within offshore wind development.

The Maritime Spatial Planning project builds on the existing work carried out in the EU-supported projects, FOWIND and FOWPI, to refine and make further recommendations supporting a clear and transparent future planning and collaborative balance of interests, which will encourage investments in offshore wind.

FACTS

About the Indo-Danish Centre of Excellence for Offshore Wind and Renewable Energy

Together, India and Denmark have launched a knowledge hub; The Centre of Excellence for Offshore Wind and Renewable Energy (COE). This is formalised as a joint initiative between the Indian Ministry of New and Renewable Energy (MNRE) as the host of the COE and the Danish Energy Agency (DEA) as support. The COE is an initiative under the India-Danish Energy Partnership. By bringing together industry, public authorities and civil society, the COE will play a crucial role in facilitating and accelerating the implementation of India's offshore wind strategy.

Through collaboration across various stakeholders, the COE aims to create a transparent, facilitating and enabling environment for offshore wind in India. This is done by developing and disseminating best available practices, methods and tools in order to minimise risk and reduce the overall cost of offshore projects.

Dinesh Jagdale, Joint Secretary, Ministry of New and Renewable Energy: "The joint projects on maritime spatial planning and port infrastructure have provided significant inputs for the draft tender document that is currently under stakeholder consultation as well as the upcoming tenders for offshore wind in India. The Danish approach and experience has been very helpful to advance this and has brought great value to take us forward and reach 30 GW by 2030."

The joint studies have been developed under the Centre of Excellence for Offshore Wind and Renewable Energy. The centre is a joint initiative between the Indian Ministry of New and Renewable Energy and the Danish Energy Agency aiming to support India's ambitious target of 30 GW offshore wind in 2030.

Freddy Svane, Ambassador of Denmark to India:

"The India-Danish collaboration on energy has taken remarkable steps and is a key contributor to the Green Strategic Partnership between India and Denmark. Offshore wind will be the next step in India's green transition and with a clear and strong mandate from our two countries, India and Denmark are leading this green energy transition together."

The port infrastructure study focuses on assessment of the viability of existing ports in Gujarat and Tamil Nadu to support up to 30 GW of offshore wind development using 15+ MW wind turbines. Based on the assessment, the project also identifies possibilities for upgrade/development of port facilities.

Clear pipeline for India's first offshore wind parks based on Danish experiences

The conceptual build-out plan proposes identification of 14 sites in Tamil Nadu (southeast India) and 1 site in Gujarat (northwest India) corresponding to the planned upcoming auctions announced in the Strategy Paper for Offshore Wind, released by Government of India in July 2022.

Moreover, the report puts forward four initial sites in Tamil Nadu for the first auction of 4 GW equivalent seabed in 2022-2023 for leasing to carry out required studies and surveys, and subsequent project development under an open access model (under model-3 of the strategy paper). Adopting a relatively high capacity density would allow for up to 25 GW across the identified areas in Tamil Nadu alone. This provides a clear pipeline and contribution to the 30 GW government target for offshore wind in 2030.

In addition to spatial planning, the necessary infrastructure also needs to be in place to secure the large quantities of offshore wind. In this regard, a dedicated port infrastructure study identifies a set of ports off the Tamil Nadu and Gujarat coasts that fulfil basic navigation and access criteria to support installation of wind turbines and foundations. However, these ports require significant upgrades in key infrastructure such as quaysides and yards, which are necessary for the marshalling of wind turbine components. Therefore, a set of development alternatives are proposed for each port.

CASE 5 ØRSTED
TAG RENEWABLES, FINANCING
LOCATION DENMARK

H2RES: state-of-the-art green hydrogen production

Challenge

Many have come to consider green hydrogen as a centrepiece of the green transition. Decision makers are increasingly betting on hydrogen produced from renewables as a means to lower emissions and transform hard-to-abate sectors. But currently, green hydrogen production capacity is low, and more knowledge is needed to turn green hydrogen into a scalable, cost-effective enterprise. At the waterfront of Avedøre close to Copenhagen, a project utilising the potentials of sectoral integration is going to research and demonstrate how such production models might be achieved. →

Solution

The 2 MW demonstration project, H2RES, helmed by Ørsted, will use the energy company's two 3.6 MW offshore wind turbines at Avedøre Holme to power green hydrogen production and explore how to best combine an efficient electrolyser with the fluctuating power supply from offshore wind. Inaugurated in May 2021, the project encompasses several 'state-of-the-art' elements, which have never been seen in this context before.

H2RES will be the world's first electrolyser connected directly to offshore wind turbines, forming an integrated setup.

H2RES will be the world's first electrolyser connected directly to offshore wind turbines, forming an integrated setup. The setup will be connected to the transmission grid as well, which requires new, intelligent dispatch algorithms to optimise the value of the setup depending on the market price signals. This solution ensures that external power can be imported during longer periods of low wind power production or exported if the electrical supply/demand situation is tight.

The modular electrolyser will be an intelligent N+1 electrolyser solution, which uses smart software and AI to optimise the efficiency of the hydrogen production. The hydrogen exiting the electrolyser will go through a high-

pressure compressor, which compresses the hydrogen from approximately 30 bar to 350 bar. High compression yields higher energy density and thus reduces storage costs.

The storage setup is comprised of a trailer bay system and trailer containers. This innovative setup will ensure that the hydrogen will flow to hydrogen storage containers that can be transported directly to local deposits, minimising the need for additional hydrogen storage.

Results

The facility will produce up to around 1,000 kilograms of green hydrogen daily, which will fuel zero-emission road transport in the Greater Copenhagen area and on Zealand. With these results, the H2RES project aims to show that electrolysis-based hydrogen production based on energy from offshore wind turbines can be used as an effective and valuable sectoral integration between the electricity grid and the transportation sector.

Crucially, because the project employs so many groundbreaking, scalable solutions from Danish providers, it will generate knowledge about the to further optimisation and cost-reduction of green hydrogen production. This is a critical steppingstone for future green hydrogen projects, which will play a major role in the global energy transition.

About Ørsted

The Ørsted vision is a world that runs entirely on green energy. Ørsted develops, constructs, and operates offshore and onshore wind farms, solar farms, energy storage facilities, renewable hydrogen and green fuels facilities, and bioenergy plants.

CASE 6 DANFOSS
TAG ENERGY EFFICIENCY
LOCATION INDIA

Cold chain reduces banana crop wastage for farmers in India

Challenge

Every third banana on the planet is produced in India. A third of this number, nine million tonnes, are produced within the state of Tamil Nadu. But, over the years, farmers of Tamil Nadu have witnessed a post-harvest loss of 30 percent. The biggest problem is, however, that the bananas were wasted in a country in urgent need of food for 300 million people. In other deprived areas of the world, post-harvest losses are also a common issue, calling for smart solutions to minimise the waste. →



Cold chain has been a game changer for banana farmers in India. Their income has doubled and even tripled, while banana wastage has been brought down by almost 20%.

Solution

The situation has taken a positive turn since Danfoss initiated a task force with the Confederation of Indian Industry to address the challenges of food loss – focusing on bananas. The task force identified three major blocks: lack of good agricultural practices at the pre-harvest stage, good post-harvest management and failure to connect with the market.

Danfoss has worked on two interventions, based on the company's global expertise in cooling. First, pre-cooling the newly harvested bananas to extend the shelf life and quality of the bananas. Second, ripening chambers have resulted in better efficiencies and better control.

Results

Cold chain has been a game changer for banana farmers in India. Their income has doubled and even tripled, while banana wastage has been brought down by almost 20 percent. In 2018, the first bananas were exported from India to Europe by ship, which marked a new era for the world's banana giant:


“Previously, we did not know that we had to take care of the produce post-harvest as well. We were concentrating on producing more. Now we understand the use of post-harvest management techniques. This has enabled us to reduce losses as well as get better prices for our produce because of better quality. European markets were not known to us previously. However, this is only the beginning,” says a local banana farmer about the project.

About Danfoss

The global climate crisis caused by carbon emissions is a key threat to society and our planet. Danfoss' energy-efficient and climate-friendly solutions enable a cost-effective green transition.



Read more: <https://stateofgreen.com/en/solution-providers/danfoss/>

A large industrial machine, possibly a mill or roller, with a worker in a hard hat and safety gear working on it. The machine has a large, curved, metallic surface and is surrounded by various mechanical components and pipes. The worker is positioned on the right side of the machine, leaning over and working on a specific part. The machine is made of dark metal and has several large, curved rollers. The worker is wearing a white hard hat, safety glasses, and a dark t-shirt. The background is a dark, industrial setting with various pipes and structural elements.

STATE OF GREEN

CASE 7 FLSMIDTH
TAG ENERGY EFFICIENCY, DECARBONISATION
LOCATION INDIA

Delivering sustainable equipment for greenfield project in India

A decade from now, the cement industry will already look very different than it does today. As the realities of climate change continue to hit home, social pressure on heavy emitters will increase and financial pressure will follow, forcing cement producers to act. There will be no more time to hide behind targets or roadmaps; global tolerance will have been exhausted. The cement industry has a responsibility to follow through on all the things it has promised. →



Challenge

Due to an increased demand for sustainable productivity and emissions control, Indian cement producer Shree Cement has signed a greenfield contract with FLSmidth to deliver a series of sustainable equipment, including the world's largest Crossbar Cooler, the FLSmidth OK Cement Mill and the JETFLEX Burner.

Solution

Shree Cement Limited is one of India's top three cement producers with an installed capacity of 47.4 mtpy across India and the Middle East. The new line will be located near Nawalgarh in Rajasthan, 250 km southwest of the nation's capital, New Delhi. The project encompasses a 11,500 tpd pyro system, including a six-stage preheater and a three-support kiln.

"It is great to further strengthen the collaboration with Shree Cement, not only on growing their business, but doing it in a sustainable way. The new line in Rajasthan will include a state-of-the-art pyro system and grinding sections – both part of our MissionZero offerings. With this, Shree Cement makes a significant investment in future-proofing its sustainable production," says Carsten Riisberg Lund, Cement Industry President, FLSmidth.

Results

The benefits enabled by the OK Cement mill and JETFLEX Burner, such as reduced energy consumption, reduced CO₂ emissions and opportunities for alternative fuels,

make these solutions flagships in FLSmidth's MissionZero programme in Cement. MissionZero is the sustainability ambition to enable cement producers to run productions at zero emissions by 2030.

The full contract will include an additional OK Cement mill for a split grinding unit at Shree Cements' site in the West Bengal region, near Kolkata City.

About FLSmidth

FLSmidth provides innovative engineering, equipment and service solutions to the global mining and cement industries. We help our customers to improve performance, drive down costs and reduce environmental impact. Our sustainability program, MissionZero, enables the two industries to move towards zero emissions by 2030 as our digital solutions and innovative products deliver sustainable productivity. Our operations span the globe and we are close to 10,700 employees, present in more than 60 countries. In 2020, FLSmidth generated revenue of DKK 16.4 billion.



Read more: <https://www.flsmidth.com/en-gb/discover/the-green-cement-plant-quarry-packing-dispatch>

Want to get in touch?

Reach out to State of Green to connect with leading Danish players.

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(Bioenergy, District Heating, CCUS)

State of Green is your one-stop-shop to more than 600 Danish businesses, agencies, academic institutions, experts and researchers. State of Green connects you with leading Danish players working to drive the global transition to a sustainable, low-carbon, resource-efficient society.



MINISTRY OF FOREIGN AFFAIRS
OF DENMARK



MINISTRY OF INDUSTRY, BUSINESS
AND FINANCIAL AFFAIRS



Ministry of Environment
of Denmark



Danish Ministry of Climate,
Energy and Utilities



Danish Agriculture
& Food Council



Confederation of Danish Industry



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