

GROWTH WITH SDGs:

INDIA – LAND OF OPPORTUNITIES

7 learnings

3 recommendations



A report from the
Danish Academy of Technical Sciences, ATV
December 2019

This report is the result of observations and discussions made by a delegation from the Danish Academy of Technical Sciences, ATV, in September 2019 as part of ATV's Science & Engineering project.

Invaluable assistance has been provided by a number of people. A warm thank you to The Embassy of Denmark in India, in particular Ambassador Freddy Svane, to Innovation Centre Denmark in both New Delhi and Bengaluru, represented by Counsellor Jakob Williams Ørberg,

Consul General Jette Bjerrum, Innovation Advisor Twinkle Jawrani and Innovation Associate Joseph Kurian. We also wish to thank Director, Stakeholder Relations G.S. Krishnan, Novozymes, India and the Indian ambassador to Denmark, Mr. Ajit Gupte.

The members of the ATV delegation have also been instrumental in establishing contacts in India.

Lia Leffland, Managing Director of the ATV.

Preface:

This century belongs to India



Centuries created India, now India creates this century.

Soon to be the world's 4th largest economy, India appears as the centre for what is probably the world's most comprehensive sustainability project. Due to both its size and its rapid growth in population as well as in terms of economy, India plays a leading part.

We cannot solve the world's energy or climate crisis without India. This is also true when it comes to access to drinking water and to basic health services.

India offers close to innumerable opportunities and this report demonstrates that Denmark - and Danish businesses, research and innovation hubs - fit perfectly with Indian ambitions. ATV and their visit to India has prepared the foundations for new and comprehensive collaborations between Denmark and India. Denmark's agenda for sustainability provides a unique frame.

It is my hope that we can accelerate our cooperation so that we can create growth, jobs and innovation bilaterally as well as globally. With sustainability as our focus, India and Denmark together can make a substantial contribution to a greener planet that is livable for years to come.

However, this calls for strategic thinking in Denmark and that we trade in ideas for actual cooperation. It is imperative that we give India more attention at Danish universities, in businesses and with authorities. This will create employment as well as growth in Denmark and give a significant contribution to the green transition of our planet.

Freddy Svane
Denmark's Ambassador to India

Executive Summary:

Land of Opportunities

1 Globalize Denmark's contribution to sustainability – set solutions into action

Denmark should take the lead, also concerning global solutions.

2 Develop solutions not for India, but with India

Western solutions do not necessarily adapt to India. If you want to be part of the world's most comprehensive sustainability project, you must do it through innovative cooperations with Indian partners.

3 Learn from India: develop a Danish "man on the moon" mission

Denmark should learn from the Indian government's determined staging of science and technology, which drives the country's development.

These are the main recommendations from ATV – the Academy of Technical Sciences – after an intensive study trip to the world's biggest, and fastest growing, democracy.

The trip took place in September 2019 as part of ATV's Science & Engineering Project. The goal of this project is to understand the future dynamics of the world's leading Science & Engineering regions and to make Denmark one of them.

The recommendations are ATV's suggestions for how Denmark can contribute to a more sustainable world by helping the world's biggest economy in its mandatory transition to a greener way while creating workplaces in both Denmark and India.

The overall conclusion is that India's focus on – and need for – science, education, technology, entrepreneurship and sustainability has huge potential for Denmark. Mads Søndergaard, the Executive VP from the engineering consultancy company NIRAS, puts it like this: "It's a unique opportunity for businesses, universities and investors to position themselves on one of the world's biggest markets.

If we grasp this opportunity we can support and develop Denmark's position as one of the world's leading Science & Engineering regions."

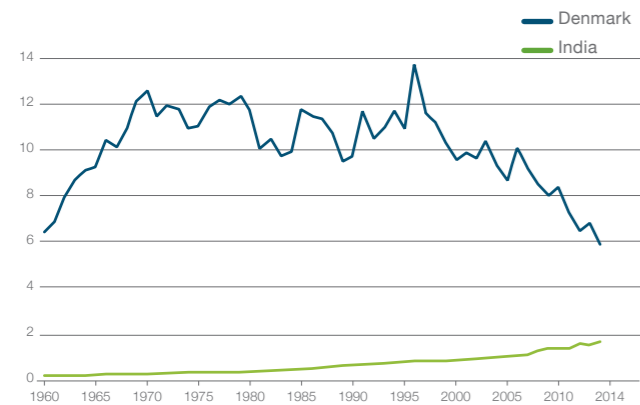
22 PERSPECTIVES ON COLLABORATION

Mads Søndergaard was part of ATV's India delegation along with 21 other representatives for tech-leaders from Denmark's Science & Engineering ecosystem.

The delegation's assessments have their background in meetings with some of the main actors in India's Science & Engineering(S&E) ecosystems in New Delhi and Bengaluru, where the ATV delegation had a number of meetings with leading researchers, business leaders, funds, entrepreneurs and top advisors as well as government officers. See overview p 8

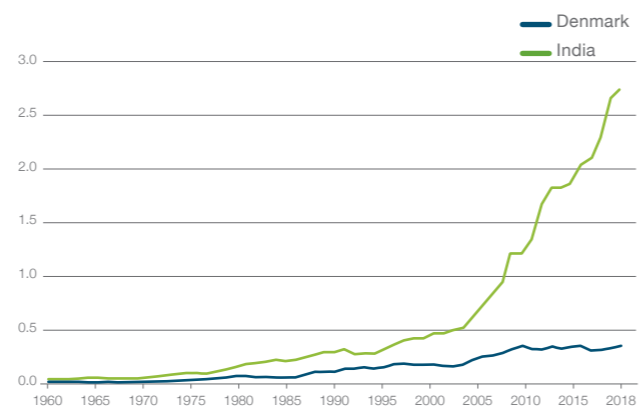
This has generated 22 qualified perspectives on how Denmark's S&E ecosystem can cooperate with India's on growth and sustainability. In general, the potentials for cooperating and the resulting outcomes are estimated to be huge, especially when it comes to developing solutions for supply of water, energy and handling of waste, as well as *smart city* solutions.

CO₂ emissions (metric tons per capita) – India, Denmark
Carbon Dioxide Information Analysis Center, Environmental Science Division, oak Ridge National Laboratory, Tennessee, United States.



India's huge economic growth is mirrored in its rapidly growing CO₂ emission. Denmark's emission per capita is much higher, but the CO₂ emission is no longer directly connected to economic growth.

GDP (current US\$) – India, Denmark
World bank national accounts data, and OECD national Accounts data files.



Chair of VIFU, The Danish Knowledge Center for Food Innovation, Bent Claudi Lassen comments: “it will create income from export, it will create employment and will document CO₂ reductions of a magnitude that matters, also because Denmark will have difficulties in reaching the short-term goal of a 70% reduction.

PERFECT TIMING

The timing for an intensified cooperation between Denmark and India is perfect. In many ways, 2019 marks a turning point for Denmark's relations to India. In January, a visit from a Danish delegation led by then Prime Minister Lars Løkke Rasmussen made it clear that a year-long diplomatic crisis had ended. Also, a new Danish chancery was inaugurated, and PM Narendra Modi invited to intensifying collaboration with the now famous words “Denmark has the skills, India has the scale”. Even so, according to Professor Maja Horst, DTU, it will take some development of new solutions and business models if the fruits are to be reaped by both India and Denmark. “Remember, the market isn't just something ‘out there’, it is something you develop along with new technology. And be ambitious, that's what they are in India”, Maja Horst states.

Modi's wordplay refers to India's intensified focus on sustainable transition which includes the goal of India having 175 GW green energy in 2022 and a comprehensive focus on *smart city* technology in 100 cities. A programme that may be distributed even further – to 4,000 cities in India - and that calls for sustainable solutions in waste management, energy and water. All

fields, in which Denmark has strengths at an international level.

GROWTH AND WIND TURBINES

Simultaneously, India is on the brink of surpassing China as the fastest growing big economy in the world. On the one hand, declining business cycles in world economy made the World Bank downscale its prognosis for India's 2019 growth for 7.5% to 6%. But because of the sheer size of Indian economy and its internal dynamics (urbanization, growth of the middle class, investments in infrastructure etc.), it is to be expected that India will handle a recession better than many other countries.

Even with a recession the potential is substantial, and Modi's agenda is that economic growth should drive the sustainability transition of India – and vice versa. Thus, sustainability is at the centre of India's growth plan, ‘Make in India’, and with the newly risen fair winds of the bilateral diplomacy, Denmark is in a good position for playing a part in the transition.

Increased strategic sector cooperation, e.g. in the field of renewable energy, has been a crucial part of the dialogue between the Indian and Danish governments over the last few months. In March 2019, the two governments signed a declaration of intent about establishing a “Centre of Excellence” for renewable energy in India. Simultaneously, the Danish Energy Agency signed a three-year agreement with Indian authorities with the purpose of support for developing the Indian sector of offshore wind power. India's goal is to establish wind

power with a 30 GW production before 2030, which is 23 times the capacity that Denmark has built since 1991.

With 2019 drawing to a close, the situation is that a mutually fruitful cooperation concerning sustainable solutions is there for the taking. Jukka Pertola, President of the ATV, puts it this way: “The Indian government's plan has a perfect fit with what Denmark can deliver. The door has been opened again, and the big Indian challenges can be met with Danish technology.”

7 IMPORTANT LEARNINGS

When you speak India, you speak big. Everything is big. Geographically big, the population will soon be the most numerous in the world, and the challenges of creating a sustainable society are big. But this is also true of the ambitions of the Indian government and the potential for Dano-Indian cooperation.

When Modi says, “India has the scale” he doesn't exaggerate. With a population heading for 1.5 bn in 2030, both opportunities and challenges are enormous when compared to a Danish scale. A full-scale project in Denmark is thus comparable to a pilot project in India. If, however, Danish projects are converted to Indian, it is important to realize that they will need to be modified in a major way, both in terms of size and culture.

Henrik Bindslev, chair of CLEAN at SDU, University of Southern Denmark, states that India in many ways is complementary to Denmark, since undertakings in India must be priced much lower than in Denmark, but on the other hand, the market is very big and still growing in

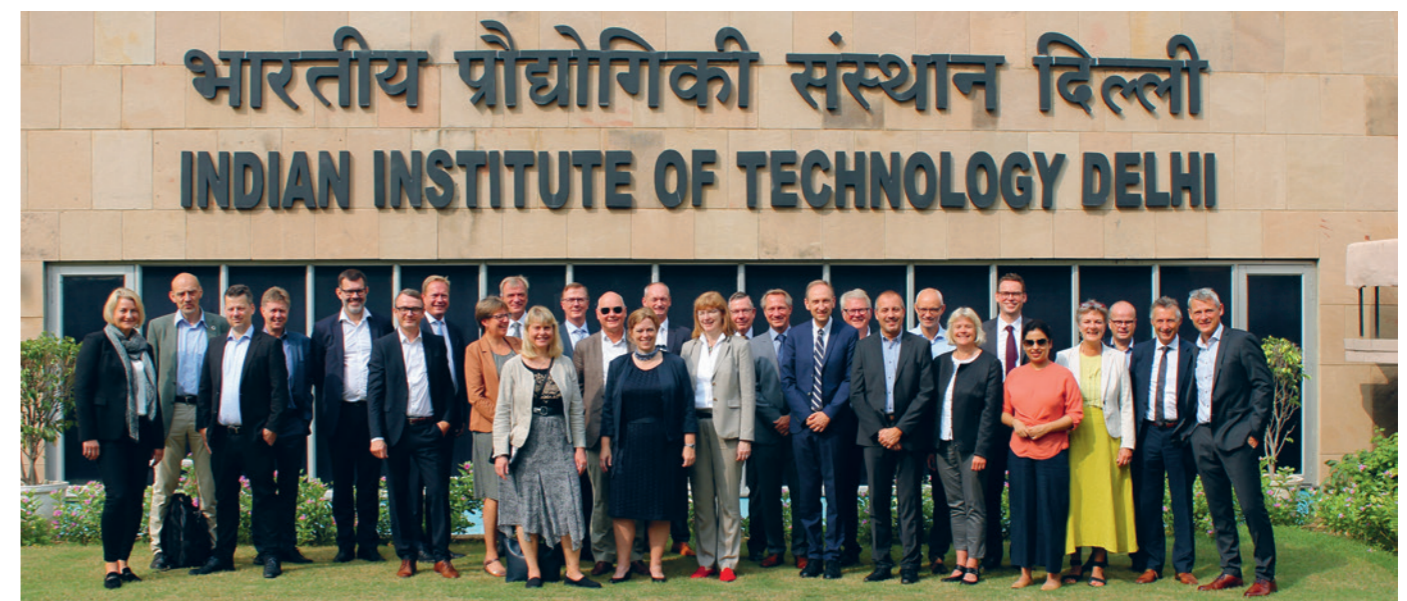
India and other countries in rapid development.

At the same time, India's democracy, which is very inclusive but also extensive and slow, may prove a challenge for the country's ability to implement new solutions. “Given the massive challenges that they have in terms of e.g. pollution and waste, one might worry if an inclusive and very democratic process can work so slowly that it becomes a threat for public health and global environment”, says Søren Riis, Senior Director in Oticon Medical.

All in all, the report focuses on seven learnings that need to be considered if the big potential is to be fulfilled. The learnings encompass potentials and challenges identified by the delegation from the Danish Academy of Technical Sciences during the extensive networking activities with main actors of India's Science & Engineering ecosystem and during visits on various sites and institutions.

The overall most important learning is, however, that India is a burning platform for the UN's SDGs. **If India doesn't succeed – the world will not succeed.** Therefore, it ought not to be the question if Denmark should contribute to India's sustainable transition, but of how.

Enjoy the reading.



The ATV delegation at their visit at Indian Institute of Technology, IIT, New Delhi.

Photo: ATV

Learnings to Consider

1 **A BURNING PLATFORM FOR THE SDGs**
If India doesn't succeed with the SDGs, the world won't. It shouldn't be a question IF we will contribute to India's sustainability change, but a question of HOW.

2 **AN IMMENSE MARKET FOR SUSTAINABLE SOLUTIONS**
India is on the verge of surpassing China, both as the world's most populous, and as the nation with the world's fastest growing economy. It is the avowed intent of the Indian government that the growth will drive the sustainability transition – and vice versa.

3 **KNOWLEDGE AND TECHNOLOGY IS THE FUTURE OF INDIA**
The driving forces in India's ambitious plans for growth are science and technology. With the top-adviser of the prime minister being a scientist and an ambitious space programme as the spearhead, it is the ambition that research and development will lead India into an economic, social and environmentally sustainable future.

4 **AN IMMENSE APPETITE FOR EDUCATION AND COMPETENCES**
Education is the way out of poverty. The competition for entering the best technical educations is fierce. The quality of the educations is on the rise, elite educations are at international level, and the access to a qualified work force is ample.

5 **AN INCUBATION CENTRE FOR UNICORNS**
Innovation and entrepreneurship, alongside with science, are top priorities in the Indian government's plan for sustainable transition. In particular, the ecosystems of Bengaluru and Delhi have developed into incubation centres for fast-growing tech entrepreneurs in the billion-dollar weight class.

6 **DEMOCRACY – FOR BETTER AND FOR WORSE**
India is the world's largest democracy, soon to be the world's most populated nation. Tradition is for consensus politics, and NGOs in e.g. environment and climate are powerful. Thus, decisions take time, and the implementing powers are poor. The advantage is that the support behind the decisions is broad.

7 **ENORMOUS OPPORTUNITIES FOR COLLABORATION**
India has great interest in cooperating internationally, and it is broadly recognized that Danish solutions and competences match the challenges of India.

FACTS ABOUT DELHI



Delhi is the second biggest city in India. New Delhi, one of the 11 districts that form Delhi, is the capital of India. Mumbai is India's biggest city, it holds 12.7 M people.

Population: 11 M in the city with an estimated 29 M in the urban agglomeration.

Area: 1,484 km²

Green Energy: In 2020, 20% of Delhi's energy supply should come from renewable energy sources.

FACTS ABOUT BENGALURU



Bengaluru is the third biggest city in India.

The name was officially changed from Bangalore in 2014.

Population: 5 M in the city with an estimated 11.8 M in the urban agglomeration.

Motor vehicles: over 7.5 M registered.

Traffic: on average, the inhabitants are stuck in traffic 240 hours a year.

The ATV Delegation's Visit in India

In September 2019 a delegation from the Danish Academy of Technical Sciences visited the Indian cities Delhi and Bengaluru with a delegation of 22 tech top-leaders. The delegation met with leading Indian government officials, scientists, university leaders, players from Indian business communities, knowledge networks, etc. See the list with some of the places, the delegation visited:



Delhi

Indian Institute of Technology Delhi (IITD)
Ministry of Earth Sciences
Barapullah Drain Site
Indraprastha Institute of Information Technology
The Energy Resource Institute (TERI)



Bengaluru

Indian Institute of Science (IISc)
C-Camp
Biocon
Bangalore Bioinnovation Centre
Novozymes, India
Novo Nordisk, India
L&T (Larsen & Toubro Limited)

The ATV-delegation also had dialogues with leading representatives from organisations as Tata Trust, ABLE (Association of Biotechnology Led Enterprises), Cognizant, Mærsk Coding and a number of Indian start-ups in both Delhi and Bengaluru, aided by ICDK and Denmark's embassy in India.

ATV – THE DANISH ACADEMY OF TECHNICAL SCIENCES – IS AN INDEPENDENT, MEMBER-DRIVEN THINK TANK.

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