



Sustainability Report 2018

Topsoe is a world leader in heterogeneous catalysis, committed to helping our customers achieve optimal performance – getting the most out of their processes and products, using the least possible energy and resources.

We provide project development and investments and supply high-performance catalysts, proprietary technologies, process design, engineering, and services for use in the chemical and oil & gas industries, and we are at the forefront of developing sustainable technologies.

Our solutions address pressing global challenges by improving energy efficiency, enhancing food production for the world's growing population, and protecting our environment

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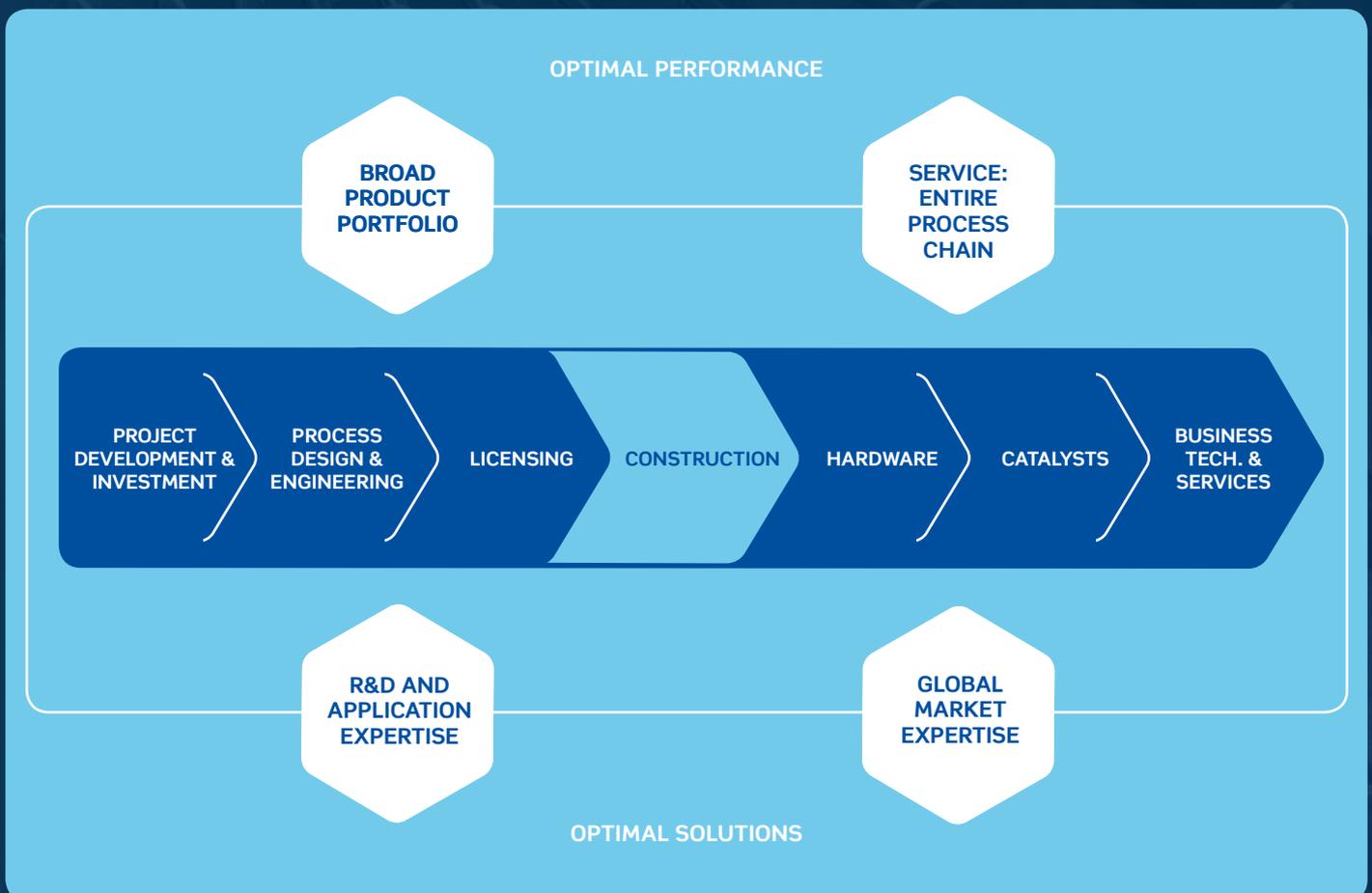
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General reporting standards and principles

Through Topsoe's annual reporting it complies with the Danish Financial Statements Act's sections 99a and b. The reporting includes the required disclosure of non-financial and diversity information. Topsoe's Annual Report 2018 and its Sustainability Report 2018 collectively addresses the requirements to describe its business model and management of risks, and reporting related to environment, climate, human rights, labor and social conditions, anti-corruption and gender distribution.

Business model

Topsoe has a solutions-focused business model covering the full value chain, based on unique chemical engineering competences.



 **TOPSOE OFFERINGS**

 **TOPSOE DOES NOT OFFER CONSTRUCTION SERVICES, BUT COOPERATES WITH WORLD-CLASS ENGINEERING, PROCUREMENT & CONSTRUCTION COMPANIES (EPC).**

Sustainable business

Topsoe continuously strives to create sustainable solutions that make a difference in the world of today - and tomorrow - and we are committed to ensure that our solutions as well as our conduct are economically, environmentally, and socially sustainable.

Acting responsibly in all aspects of our business is a fundamental element of our values - expressed in the Topsoe Spirit - that serve as the foundation for how we do business in a complex, international business environment with cultural, political, and legal challenges.

We lead our company based on good governance practices and have implemented business structures to ensure that our customers, owners, and business partners can always trust us.

Compliance & sustainability program

Topsoe has a compliance & sustainability program in place and has established a non-Board Compliance

& Sustainability Committee that oversees this agenda. The program and its components are continually assessed and developed to meet external requirements of relevance to our business.

Our code of conduct puts our values into action by providing a common framework that helps everyone understand the standards of behavior we expect of each other, as well as the requirements, laws, and regulations we must all comply with in our day-to-day work. This includes speaking up if we come across a situation that is inconsistent with our code of conduct or values. For this purpose, Topsoe has established a compliance hotline to provide our employees and other stakeholders with a channel through which they can also submit concerns anonymously.

Corporate responsibility framework

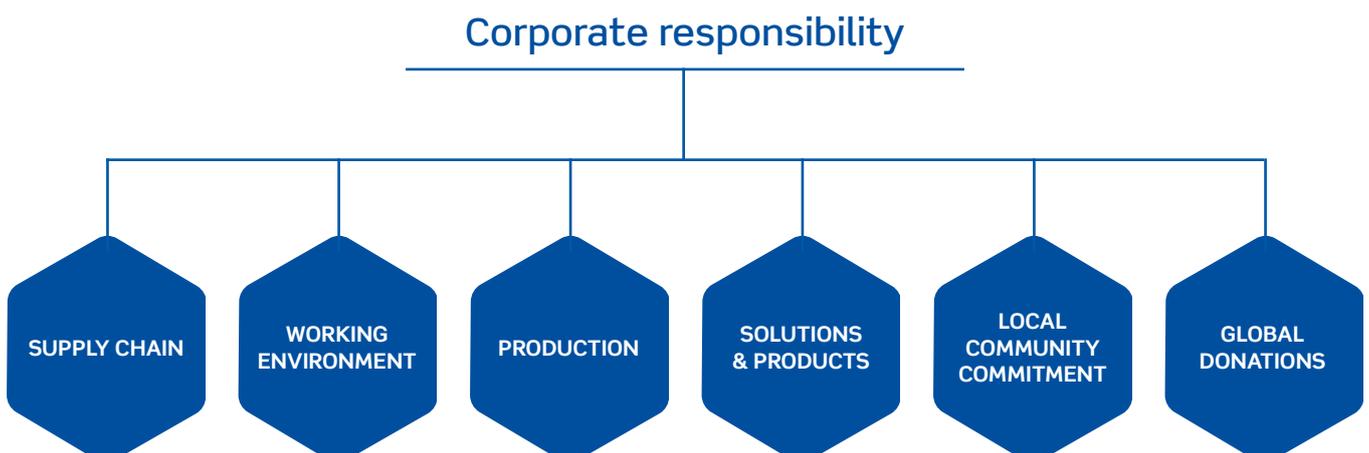
As stated in our Corporate Social Responsibility (CSR) and sustainability policy, it is vital for us to conduct

every aspect of our business with honesty, integrity, and openness, respecting human rights and the interests of our employees, customers, and business partners.

Not only are we committed to creating and maintaining a safe and healthy working environment for our employees, we also strive to create a workplace with mutual trust and respect, and where every person is responsible for the performance and reputation of our company. This is very much in line with a central principle on which Topsoe was founded, namely that the company must be a "great place to work and have worked".

Further, Topsoe has instituted a corporate responsibility framework that allows Management to drive progress on corporate social responsibility and sustainability across Topsoe's global organization in a structured way. The framework provides transparency of environmental, social and governance efforts within our business.

The Topsoe corporate responsibility framework





Employee working on Topsoe's MOSAIK™ solution for producing bio-based chemicals from sugar.

Global standards and training

In 2017, we decided to retrain our employees in the code of conduct to ensure that everyone knows what is expected of them, and what they can expect from Management. Based on the work initiated in 2017, we thus finalized and implemented a bespoke compliance and sustainability e-learning course during 2018 focusing on dilemma-based awareness training. This has proved to be an efficient approach to creating awareness and training, and more courses are planned to be developed during 2019.

Third party assurance and due diligence

During 2018, we saw our business environment become both more

transparent and increasingly complex due to, e.g., geopolitical changes. We know how important it is to ensure compliance with all applicable international rules and regulations. So we are satisfied that our proactive due diligence measures continue to increase transparency and help ensure that all relevant risks, e.g. corruption or sanctions, are identified and mitigated when we venture into new partnerships and business relations. Further, our efforts also provide us with a deeper understanding of our own business in the context of the world around us. Based on this insight, we have been working on an update of our third party assurance policy that we will implement in 2019.

Enhancing our operating standards

In 2018, we continued to assess Topsoe's compliance and sustainability with a view to measure and document our status and progress on internal processes that are critical for our business and expected from customers, business partners, and regulators. The assessment verified that we have strong measures in place in key areas, e.g., when it comes to protecting our knowledge and know-how, as well as procedures that minimize the risk of corruption. In 2019, we will review our anti-corruption policy and procedures.

Supply chain

Topsoe values an open dialogue with our suppliers about our expectations. We wish to pursue a balanced approach to our supply base that integrates commercial, risk, and quality aspects as well as social, environmental, and ethical responsibility.

Revised policy

In 2018, Topsoe updated its procurement policy to ensure a more transparent and compliant procurement process. The goal of the policy is to effectively guide all employees on how to acquire goods and services in a way that ensures that Topsoe gets the right value from suppliers.

The policy is the first step of a development process in Procurement, which ensures that all employees live up to our code of conduct and the underlying policies and procedures. A key element of the policy is that it emphasizes cooperation with our suppliers and responsible procurement, which will be a driving force in achieving better agreements with our suppliers.

The policy enables us to clearly and precisely communicate how we expect our employees to engage with our suppliers and supports Topsoe in achieving its strategic goals within our procurement activities.

Conflict minerals

Topsoe do not wish to contribute directly or indirectly to prolonging any potential or ongoing armed conflicts through our procurement of conflict minerals, i.e., tungsten. Therefore, we have begun tightening our business procedures to ensure compliance with EU regulations on conflict minerals that will take effect from 2021. In the past, we have supported our customers in staying compliant with the US Dodd Frank Act, and now we take the next step ourselves as well.

We see this not only as an issue of compliance, but also as a way of meeting the expectations expressed in our procurement policy and code of conduct.

We know that changing our processes and procedures will not in itself change

the course of conflicts. However, we believe that the international community must cooperate to tackle the conflicts, and we hope that our efforts will support the global cooperation. Our updated procedures will become an integrated part of our supplier assessments that we are currently improving, and conflict minerals will be a part of this setup.

Staying competitive and independent

Topsoe want our suppliers to be competitive and independent to ensure the best performance.

To support this, we are working towards ensuring that no supplier generate more than 30% of their revenue from Topsoe. In the coming year, we will develop the method for measuring this.

From a compliance perspective, there are a number of reasons for ensuring that our suppliers do not develop an unhealthy dependency on us, including improving the competitiveness of our supply chain.

Working environment

In Topsoe, we are committed to keeping our employees safe and healthy by eliminating risks and accidents. We take care of our employees' daily and long-term well-being by caring for their physical and mental health and have addressed these important topics in our health & safety policy.

We encourage and expect our employees to share their opinion, and we focus on making our working environment inclusive and diverse. Caring for people is an integral part of our DNA and it is part of what makes Topsoe a great place to work. We will never accept discrimination, and we will always safeguard the privacy of our people.

Our safety focus

In 2018, we have seen a satisfactory decrease in the number of accidents and also in the number of lost workdays caused by accidents, meaning that the accidents that occurred were less severe.

Evaluating our efforts

From 2009 to 2016, we have reduced our lost time accident frequency by 77%. However, in 2017, we suddenly experienced an unfortunate rise. Even though the accidents were less severe, it was decided by top management and the Board of Directors to strengthen Topsoe's focus on safety even more. Among several initiatives implemented in 2017 and 2018, it was decided to obtain an expert third party assessment of Topsoe's safety efforts.

The main conclusions of the report were that Topsoe is well on track when it comes to developing an active health and safety culture. The quality of our initiatives are on par with other comparable companies that have zero accidents as an ambition. The report recommended implementing Vision Zero in 2019, a campaign and strategy that focus on the mindset needed to push the health and safety work to the next level.

Vision Zero

Vision Zero is our holistic and process-orientated ambition, that focuses on

ensuring that we are maintaining a healthy and safe working environment that does not cause work-related illnesses. Unlike accidents, occupational illness often materializes after many years and requires an extra effort to identify and address.

It is equally important for Topsoe to ensure employees' mental well-being by providing means for avoiding and dealing with work-related stress and having zero tolerance of harassment and discrimination in the workspace.

This health, safety, and well-being trinity will be increasingly transparent in our efforts going forward, aspiring to achieve Vision Zero.

Dialogue to improve culture

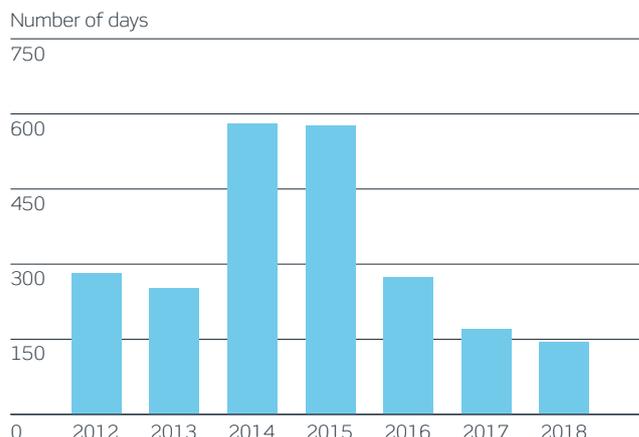
Building a strong health and safety culture is an important aspect of working strategically with eliminating accidents and maintaining a healthy workplace. To improve our health and safety culture, we have ensured a constructive, ongoing dialogue between managers and employees throughout the year.

Lost time accident frequency rate



LTA Frequency is the number of lost time accidents per one million working hours over a twelve-month period.

Lost workdays caused by accidents





Equipped with “speakers notes” for health and safety related subjects for inspiration, Topsoe managers have had a KPI during 2018 to conduct a given number of safety walks or safety talks in their departments. Many of the talks have revolved around specific risks identified in the manager’s department, and employees have also been engaged in selecting the most relevant topics for their areas.

At the headquarter and production sites, our managers have completed a workshop that clarifies Topsoe’s expectations to them in the field of working environment and safety. As part of the implementation of Vision Zero, the workshop will be rolled out in the regional offices as well, so that all managers in Topsoe know and understand their role in maintaining a safe working environment.

Other company-wide initiatives include a campaign to counter the effects of sedentary work, as well as preparing the implementation of training to avoid accidents from heavy lifts in both production and office work.

The effect we have seen is that everybody takes health and safety more seriously, because it becomes more directly relevant within each department.

The lost time accident frequency has been more than halved in 2018, and we see this as evidence that our huge efforts have paid off. We are now back on trend from before the spike in accidents in 2017.

Mental well-being

In 2018, around 400 employees have tested a survey tool that enables us to measure stress and mental well-being on a monthly basis. The purpose of testing frequent, “real-time” data was to strengthen the tools and support for managers, in order to boost a more proactive approach to stress and mental well-being. The pilot indicated that a tool like this provides leaders with valuable insights, and guides us in focusing our efforts to improve the working environment. The learnings from the pilot will be used when a new engagement and well-being survey tool is implemented globally in 2019.

In 2018, we also implemented new information sites and comprehensive stress/well-being tools for employees affected by stress, concerned colleagues, and managers.

Furthermore, our new mental well-being policy and procedure have been defined with a view to increase focus on how to improve mental well-being

by reducing stress and address other work-related issues. The policy and procedure are to be implemented globally in 2019.

Human rights & diversity

Topsoe’s stance on human rights and diversity is described in our code of conduct and our updated diversity policy that was launched in 2018. Topsoe believes that a diverse workforce who are treated equally, regardless of race, sex, color, religion, sexual orientation, national origin, disability, or age, is a prerequisite for growth and to operate a strong global business. Our managers are constantly striving to give our talents the best opportunities to develop and grow by ensuring that Topsoe has an inclusive working environment that is attractive to all talents, regardless of their background.

Respect for human rights

Topsoe supports and respects internationally proclaimed human rights and labor rights. Our commitment is anchored in our CSR and sustainability policy and our code of conduct. We support equal treatment, and a clear zero tolerance is expressed in our anti-harassment



and discrimination policy which also points out that managers or employees are required to intervene if they become aware of any incidents.

We respect our employees' rights to - and we work to ensure:

- Favorable conditions at work, including:
 - Safe and healthy working conditions
 - Fair wages
 - Equal opportunity
- Non-discrimination
- Freedom of association; and
- That we employ no child/forced/bonded labor

Our respect for human rights is integrated into our business processes to ensure the protection of our employees' rights.

An employee can always discuss a people-related concern with a person competent to tackle the issue, thanks to the open door policy in all our HR departments. We regard the risk of violation of employee rights as low, as we have only seen very few cases and most of them minor.

In the unlikely event that an employee feels unable to discuss an issue with their manager, HR, or another person, Topsoe has its compliance hotline in place for reporting of concerns or actual incidents. It is a standard grievance mechanism for reporting

serious concerns or dilemmas, also anonymously, if needed.

Diversity

Following the update of our diversity policy in 2018, Topsoe initiated the process of working more strategically with diversity. A group of diversity ambassadors were been identified in 2018, and in 2019 the group will identify key actions that need to be taken to achieve our diversity objectives.

Equal opportunities

Our approach to diversity and inclusion among other things means that we want to ensure an optimal gender representation in all our career tracks, including our leadership pipeline.

In 2018, we had 23% female applicants, down from 25% in 2017. Out of the candidates invited for a job interview, 28% were women, which is a decrease from 30% in 2017, while we saw 23% of interviews with women in 2016.

Diversity in management

The gender ratio across all Topsoe locations is 28% female and 72% male. In 2018, the share of female employees decreased by one percentage point from 29% in 2017. Our target for the ratio of women in leadership positions is 30% by 2020, and that we, at all times, aim for a ratio that reflects the share of men and women employed at Topsoe.

In accordance with section 99b of the Danish Financial Statements Act, Topsoe discloses its gender diversity policy, targets, and current performance. Topsoe's diversity policy is available at www.topsoe.com.

The Topsoe Board of Directors have five male and one female board member, giving a female representation of 17% on the Board. The Board has set a target of two female board members by the end of 2020. Please see the Corporate Governance section of the Annual Report for more details.

Data privacy and protection of information

Increasing focus on personal data protection across the globe led to Topsoe implementing the first phase of our data privacy project, specifically to ensure compliance with the European GDPR by May 2018. Protecting the personal data of our employees and business partners is important and an ongoing process. We have implemented principles to ensure that data is always obtained fairly and lawfully, that it can only be used for a defined purpose and is collected and stored securely, and, finally, that the data is permanently deleted after use. This work aligns well with our existing focus on information security.

Production

Topsoe takes a proactive approach to living up to the expectations of external stakeholders, including complying with environmental legislation. We are in ongoing dialogue and cooperate with authorities to ensure that we are in compliance. Our environmental policy guides us in our efforts to reduce our environmental impacts across our operations and production.

Managing and reducing environmental impacts

In 2018, Topsoe upgraded its environmental management system at its main production site in Frederikssund, Denmark, where we employ around 570 employees. With the upgrade, we ensure a continued strategic and professional approach to managing our environmental impact, aligned with company targets and our environmental policy.

As a consequence of upgrading our environmental management system, we are better integrating constructive input from our local communities and using the feedback to improve our production and management of impacts.

Further, we have strengthened how we assess the environmental impact

of our production already when developing our catalysts. This means that we can lower the impact of our production further in the years to come.

Saving energy and utilizing excess heat

Topsoe has a target of lowering our environmental impact by carrying out a minimum of seven energy reduction projects to save at least 6 GWh at our plant in Frederikssund, Denmark, every year. In 2018, seven projects were executed, saving 9.7 GWh in total.

In 2018, we delivered 30,427 MWh to the local district heating plant in the form of excess heat from our plant. This means that the district heating plant saved 2,766,091 Nm³ of natural gas, which reduced their CO₂ emission by 6,238 tons.

30,427 MWh per year is enough to heat around 1,700 single-family houses in the Frederikssund area.

Preserving water

As part of our focus on reducing our consumption of natural resources, we implemented initiatives that save significant amounts of water at the production plant in Frederikssund, Denmark. In 2018, more than 200,000

cubic meters of water was reused. The excess water from the production is cleaned and reconditioned to the desired quality and then led back into the production cycle.

Another water optimization project is underway, which will allow reuse of even more process water in the future.

Emergency setup

Topsoe is constantly working to improve its emergency setup. We continuously evaluate our business structures to ensure that we have the best possible means for dealing with unforeseen accidents. The aim of our efforts is to limit the impact towards people, the environment, assets, company reputation, and external stakeholders.

In 2018, we have evaluated all emergency procedures globally to identify best practice. In 2019, we will implement global standards to ensure the best possible response to emergencies through a new global setup. We will focus on lines of communication in case of an emergency, and we have implemented a new smartphone app that will help ensure shorter response time.

Products & solutions

Topsoe products and services can advance endeavors to address challenges such as climate change, access to food, and pollution. Addressing global challenges through innovative science and chemistry is at the core of our business model and has been since Topsoe was founded in 1940.

In 2018, we began the process of mapping and analyzing in detail the UN's Sustainable Development Goals (SDGs) and assessing the potential impact of Topsoe's solutions in this framework.

Identifying the SDGs where Topsoe has the most significant impact is an extensive task because the company has a vast portfolio of products and services, serving many industries, that impact many SDGs. Many of the products and solutions we offer can significantly improve our customers' impact on the SDGs. Furthermore, our extensive activities in research and development ensure that we are able to continuously offer new and optimized solutions that can contribute to meeting the global challenges described in the SDGs.

The process is ongoing. Throughout 2019, we will further qualify our assessment and identify data sources to quantify our positive impact on the SDGs. A preliminary mapping of some Topsoe solutions and development projects up against the SDGs makes us very enthusiastic about continuing this work.



Goal 7 – Affordable and clean energy

Goal 7 is about ensuring access to affordable, reliable, sustainable, and modern energy for all. To achieve that globally, we must change the way we produce energy, and Topsoe offers several solutions that enable a shift towards more sustainable energy sources. Topsoe delivers technologies that clean current energy sources such as diesel, jet fuel, and gasoline. This leads to cleaner combustion with less negative environmental impact.

Cleaning fuels

Cleaner fuels lead to a cleaner combustion process. Our hydrotreating processes enable refineries to remove potentially harmful substances from naphtha, gasoline, kerosene, diesel, and heavier oil streams like, e.g., vacuum gas oil and marine fuels. These fuels are used in a large range of industries and for transportation. Fuels hydrotreated with Topsoe technologies emit less SO_x and NO_x (main components in smog) and have a lower negative impact on the environment and human health.

Aiding electrification

Topsoe is developing unique electrolysis technology that is a promising solution for storing surplus electricity from solar cells and wind turbines so that it is available when we need it. Topsoe provides solutions that turn excess electric power into hydrogen, methanol, or ammonia, which are easier to store. This can prove to be enormously important in an electrified future.

Upgrading biogas and production of renewable diesel

Topsoe provides technology that upgrades gases from biomass and waste to a cleaner, more valuable energy source. The process produces renewable natural gas and power for many applications such as household cooling and heating, and transportation fuels. This technology enables our customers to convert waste and byproducts into a reliable and clean energy source. We are determined to continue to lead the way in converting biomass into renewable diesel.



Goal 3 – Good health and well-being

Topsoe offers a number of technologies that help customers in a vast number of industries to reduce emissions that endangers human health. This positively impacts target number 3.9: "to reduce illnesses and deaths from hazardous chemicals and pollution".

Cleaning off-gases from industry

Topsoe's catalytic combustion technology, CATOX™, removes hazardous volatile organic compounds (VOCs) from off-gasses from many different industries. Another example is Wet gas Sulfuric Acid (WSA) technology that removes harmful sulfur from flue gasses while converting it into sulfuric acid (that can be used for fertilizers and many other purposes).

Topsoe's catalytic filter bags, CataFlex™, remove dust and multiple gaseous compounds in one step - eliminating the need for costly, space-demanding tail-end gas removal equipment.

TopFrax™ is a catalytic emissions filter made from refractory ceramics and impregnated with catalytic compounds. The filter removes gas emissions and dust in industrial off-gases up to 400 degrees Celsius. While the filters trap dust, the catalyst removes NO_x, dioxins, CO, and VOCs.



Goal 2 – Zero hunger

Achieving zero hunger in the world is impossible without the use of fertilizers for crop production – and Topsoe has played, and continues

to play, an important role with its world-leading and energy-efficient ammonia technology.

Ammonia for fertilizer

Ammonia is an essential ingredient in artificial fertilizer that increases the productivity of agriculture and decreases the risk of exhausting the soil. With more farmers gaining access to locally produced fertilizer, the agricultural production will increase and more food will be available to feed the hungry.

Topsoe's ammonia technologies play a significant part in doubling the productivity of small-scale farming as stated in target 2.3. Achieving this target is unlikely to happen without the use of urea fertilizer, in which ammonia is a key ingredient.

In many countries, such as Pakistan and India, the availability of locally produced fertilizer has been instrumental in increasing the agricultural productivity of small-scale farmers. Locally produced fertilizers typically result in higher availability and lower prices than imported fertilizers. This leads to an overall increase in yields for small-scale farmers, in some cases up to 300%. Historically, Topsoe has played a significant role in, for instance, India where starvation was a growing issue. Topsoe designs and products were used to establish fertilizer production plants across the nation. We see a very similar opportunity play out on the African continent.

The TopFrax™ catalytic filter removes dust, NO_x, dioxins, SO_x, and volatile organic compounds from industrial offgases.

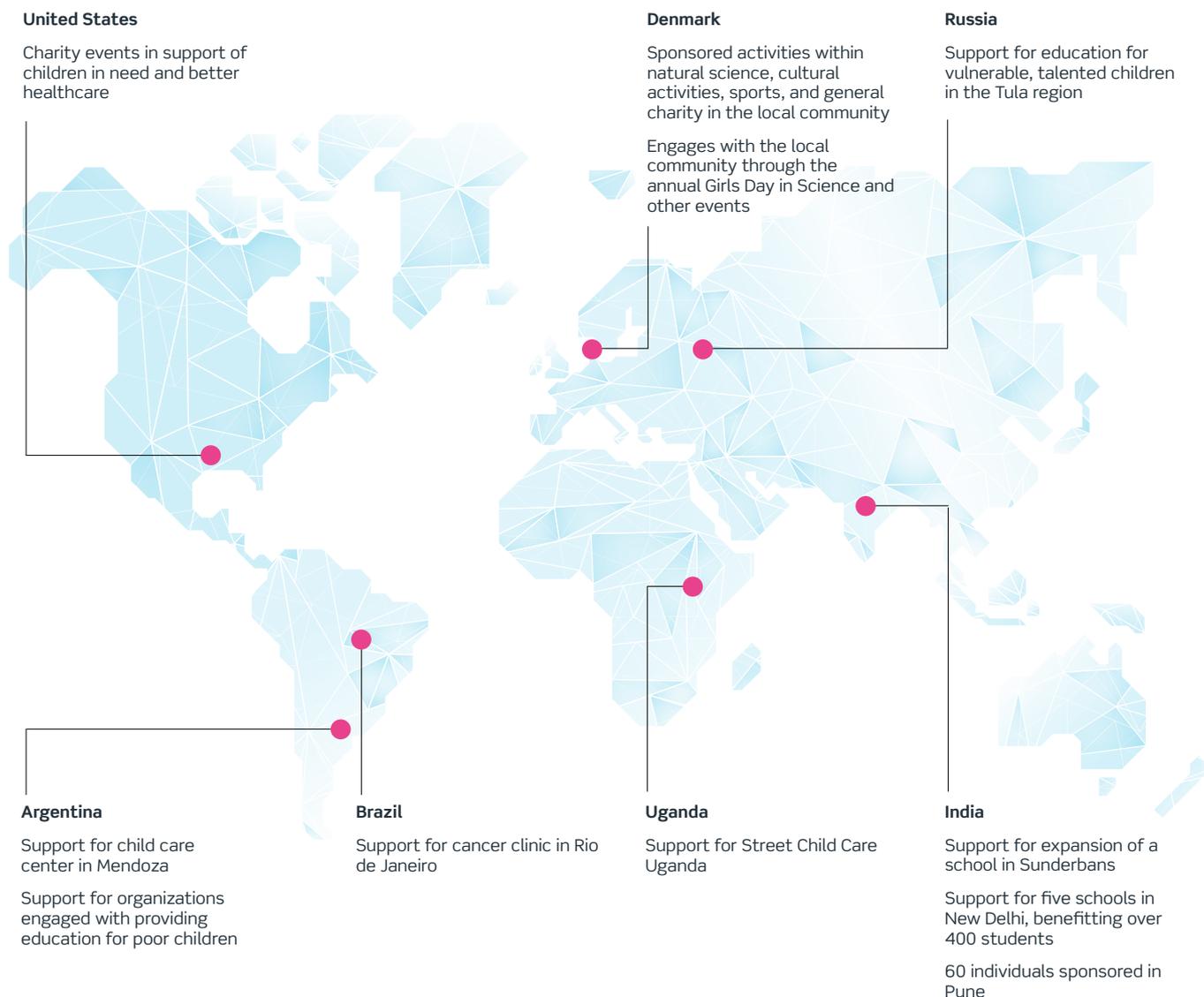


Local community commitment and donations

Topsoe's local offices around the globe ensure that we continuously support the communities we engage in. We engage in dialogue with representatives from local communities, to secure that support is given where it is most needed.

Furthermore, our Donation Committee meets four times a year to ensure progress in the larger development projects that Topsoe currently supports. The committee monitors and supports local efforts and ensures that goals are aligned and achieved

together with our partners. We are currently engaged in three larger development projects in India, Russia and in Uganda.





Braskem and Topsoe have entered a partnership to build and operate a demonstration plant that uses sugar as feedstock to produce more than 100 tons per year of glycolaldehyde, which is the precursor for MEG that is used to produce bio-based PET plastic.

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