

PIONEERING GREEN TRANSITION IN TÜRKİYE

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IN TÜRKİYE**

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FOREWORD



Stockholm
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Foreword

Climate change and environmental degradation have been a threat to the world for a long time. Almost every nation is feeling the effects of this threat ranging from rising global temperatures and rising sea levels to wildfires, melting ice at the poles etc. Climate change does not only affect the environment but also economies. In fact, the global economy could lose 18% of GDP by 2050 if no action is taken and temperatures could rise by 3.2 °C. To avoid this scenario, the production and consumption model needs to be transformed into a sustainable system that facilitates positive environmental impact.

The world still suffers from the post-pandemic effects of COVID-19 which disrupted global supply chains. In addition, the ongoing war in Ukraine has caused energy and food shortage for millions. To cope with the negative effects of climate change, reduce dependency on fossil fuels and minimise macro-economic risks today; governments, organisations, companies and even individuals must take action to reach sustainability goals.

Türkiye has recently taken concrete actions to accelerate the green transition. One of the most comprehensive documents outlining the path to sustainable development is the “Green Reconciliation Action Plan”, published in July, 2021. With this plan, Türkiye aims to comply with the European Green Deal while becoming competitive in global value chains. Türkiye, with the customs union agreement, exported goods and services worth USD 86.7 billion to the EU in 2021 - 42% of total recorded exports. The application of the plan is vital for Türkiye in both environmental and economic aspects considering the additional tax measures announced in EU Green Deal for sustainably non-compliant imports.

Sweden, with its long history of strong sustainability performance, is pioneering the global green transition. Swedish companies view sustainability as a competitive edge and are paving the way for the green transition worldwide. Swedish companies, drawing both on their local and global expertise, are establishing partnerships and continuously bringing innovative, climate-smart solutions to Türkiye. Within Team Sweden, we are convinced that Sweden and Swedish companies are among the best possible partners to help Türkiye speed up its green transition. Together, we provide insights, highlight case studies and explore potential partnerships between Swedish and Turkish stakeholders.



Staffan Herrström
Ambassador



Peter Ericson
Consul General



Edin Erkocevic
Trade Commissioner
Business Sweden – The Swedish
Trade & Invest Council



Mustafa M. Alaca
Chairman of Board
Swedish Chamber of
Commerce in Türkiye



Executive Summary

This report presents Sweden's perspective on environmental sustainability and explores how Swedish sustainable business practices and sustainable technology solutions are being implemented in Türkiye. In doing so, the report aims to highlight potential partnership opportunities between Swedish companies and Turkish stakeholders.

The first part of the report provides a brief overview of Sweden's approach to environmental sustainability, as well as insights into Türkiye's green transition journey. To investigate cooperation areas between the two countries, the second part of the report further analyses environmental sustainability in the context of three main focal points:

- Circular Economy
- Green Energy
- Sustainable Smart Transportation

These three themes have been selected to reflect the scope of the operations that Swedish companies have in Türkiye.

Under each theme outlined above, several case studies are presented to showcase the sustainability initiatives of leading Swedish companies in Türkiye and how these contribute to Türkiye's green transition goals. The case studies include:

Systemair, the first company in Türkiye to apply the Life Cycle Assessment (LCA) method in assessing environmental impact of production operations in the air conditioning sector

Circularity solutions by Tetra Pak for waste beverage cartons

ViaCon Türkiye's corrugated steel ecological bridges to safeguard wildlife and support transport continuity

H&M Group's climate strategy and green investment approach in Türkiye

Volvo Car's journey to become a fully electric car company by 2030 and climate neutral by 2040

Epiroc's zero-emission battery-powered electric machinery to reduce environmental impacts in the mining industry



Svinesund
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Introduction

The Swedish approach to sustainability

Sweden has a long history of safeguarding the environment and cracking the sustainability challenge. The first country in the world to pass an environmental protection act in 1967, Sweden also became one of the first countries in the world to introduce a carbon dioxide tax in 1991.¹ Since then, Sweden managed to grow its economy substantially while at the same time reducing carbon emissions and limiting pollution – **since 1990, emissions in Sweden have fallen by 33% (2021) while GDP increased by 86% in the same period.**²

Taking a bold step further, Sweden now aspires to be the first fossil-free OECD country by 2045. As a pioneering and progressive country, Sweden is ready to be the catalyst leading the sustainable transformation globally. **In 2021, Climate Change Performance Index ranks Sweden as the global leader in implementing the Paris Agreement (2021),** the best ranking with a “high” in the categories Greenhouse Gas Emissions, Renewable Energy and Climate Policy. Sweden stands out also in international surveys on innovation with global significance. Among these, Sweden achieved

1st place on the European Innovation Scoreboard (2021)

2nd place in the Global Innovation Index (GII) (2021)

3rd place in the Sustainable Development Goals (SDG) Index (2022)

5th place in the EU Eco-Innovation Index (2021)





SWEDEN'S CLIMATE ACT

In 2017, Sweden's Riksdag (the Swedish parliament) introduced a climate policy framework with a climate act for Sweden. This framework is regarded as the most important climate reform in Sweden's history and sets out the implementation of the Paris Agreement in Sweden.⁴

The Riksdag's goal: Sweden will have zero net emissions of greenhouse gases by 2045. By 2030, emissions from domestic transport will be reduced by at least 70 per cent compared with 2010.

The framework contains a Climate Act that makes every future government responsible for conducting a policy that is in line with the targeted goals and a Climate Policy Council to evaluate the policy conducted.

The European Green Deal, adopted in December 2019, set the blueprint for transformational change: all 27 EU Member States committed to turning the EU into the first climate neutral continent by 2050. And to get there, the Member States committed to reducing emissions by at least 55% by 2030, compared to 1990 levels.⁵

As the **first Member State to meet the renewable energy targets for 2020** set by the European Union, eight years ahead of schedule, Sweden is already well ahead in driving the green transition not only regionally but also globally. **Sweden's vision is thus to be a world exhibition for fossil free technology and climate-smart solutions.**⁶ By taking the lead and showing how these solutions and products promote sustainable transformation, Sweden aims to inspire other countries to follow suit.

Sweden has many ongoing initiatives, spanning both private and public sectors as well as multiple fields and segments, driven by national and international partnerships, which are set to break new ground and drive progress globally. Some of the prominent initiatives include:

Green Batteries: At the end of 2021, full-scale production of the world's greenest battery cells started in the north of Sweden. Using renewable energy, recycled components and sustainable processes, Northvolt will produce its lithium-ion batteries on a giga scale.⁷

Sustainable Textile: TreeToTextile – owned by H&M Group, Inter IKEA Group, Stora Enso and LSCS Invest – is now focusing on developing the use of cellulose. Using a new technology, TreeToTextile produces bio-based textile fibres with a low environmental footprint, i.e. wood, using less energy and chemicals, allowing for a much more sustainable and cost-efficient process compared to conventional technologies.⁸

Sustainable Housing: The new 'eco-quarter' of Norra Djurgårdsstaden, Stockholm Royal Seaport, is using an old gasworks to build thousands of ecofriendly homes complete with biogas produced from food waste, as well as providing electric car chargers and planning a new tram line. Stockholm Royal Seaport is now a test bed for a globally innovative smart energy grid in partnership with energy companies, universities, and homebuilders.⁹

Fossil Free Steel: In 2021, SSAB, LKAB and Vattenfall have initiated HYBRIT (Hydrogen Breakthrough Ironmaking Technology) to develop a fossil free value chain for iron and steel production using fossil free electricity and hydrogen. The first Volvo Trucks made from fossil free steel will be on the road shortly and commercial scale production will be up and running from 2026.¹⁰

Circular Textile: In 2020, the world's first large-scale plant for automatic textile sorting, owned and operated by the waste company Sysav, was inaugurated in Malmö. With a sorting capacity of 24,000 tonnes of textiles per year, it is expected to accelerate Swedish textile recycling and give tons of clothes and fabrics a new life.¹¹

Bioenergy: Stockholm Exergi is one of the first companies in the world to be exploring large scale carbon capture and storage (CCS) from a biofuel heat and power plant. In the bio-cogeneration plant, carbon dioxide is to be captured, transported and buried below the ocean floor. A demonstration project is running, and the goal is to implement it in full scale by 2025 capturing 800,000 tonnes of carbon dioxide a year.¹²

Eco-friendly products for green buildings

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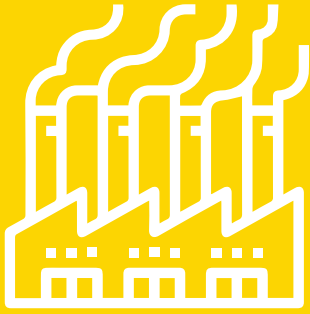


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FOSSIL FREE SWEDEN

Co-creation is the backbone of achieving Sweden's vision to be the first fossil free welfare nation in the world. Fossil free Sweden is an initiative, commissioned by the Swedish government, to gather the forces in society that want to contribute to achieving this vision. As part of fossil free Sweden, **22 different industries have produced their own roadmaps** to show how they can enhance their competitiveness by going fossil free or climate neutral.¹³

The roadmaps show the opportunities, identify obstacles, and contain proposals for solutions both through the industries' own commitments and through political proposals. Taken together, they set an example of what a fossil free business sector will be like.



Following the unprecedented crisis caused by the COVID-19 pandemic, Sweden has accelerated its green transformation journey further. As part of the Recovery and Resilience Facility - the EU's flagship recovery plan to help economies recover from the COVID-19 pandemic - Sweden set out a recovery and resilience plan that includes substantial reforms and investments required to put the country on track towards the achievement of carbon neutrality.

The plan overall is expected to support the green transition through investments of EUR 811 million in local and regional climate related projects.¹⁴ Furthermore,

EUR 286 million will be allocated to climate investment in the industrial sector, projects that develop and implement new technology with zero, low or negative emissions of greenhouse gases in industries with high process emissions.

EUR 247 million will be invested in protecting valuable nature in areas that host high natural values by establishing formally protected areas of nature reserves.

EUR 148 million will be invested in strengthening support to improve railway capacity.

In addition, the plan includes a reform incentivising the decarbonisation of transport, by abolishing reduction of energy tax on fuel and adjusted taxable benefit rates for company cars.



Transitioning to a sustainable and resource-efficient economy, Türkiye aims to strengthen its position within global supply chains, improve its competitiveness and attract green investments to the country.

The Atlas Copco logo, featuring the company name in a white serif font centered between two horizontal white bars, all set against a teal square background.A scenic landscape of rolling green hills under a bright blue sky with scattered white clouds. Several wind turbines are visible on the ridges. A large teal triangular graphic is overlaid on the bottom right, containing technical drawings and the main text.

Enabling the transformation to a low-carbon society

We are innovating for a sustainable future as we launched ambitious targets to reduce carbon emissions. By constantly innovating to reduce the climate impact of our products and solutions, we also support our customers' own sustainability ambitions.



Türkiye's green transition journey

Türkiye has accelerated to transform its sustainable development initiatives in recent years. Environmental concerns and the term “sustainable development” were first mentioned in 1973¹⁵ and 1996¹⁶ respectively. Although sustainable development process started late, since then Türkiye has been party to many international contracts including United Nations Convention on Biological Diversity (UNCBD), United Nations Framework Convention on Climate Change (UNFCCC), United Nations Convention to Combat Desertification (UNCCD), the Montreal Protocol, the Kyoto Protocol and the **Paris Agreement**.

Especially in recent years, Türkiye has announced several frameworks to set sustainable development strategies. The Economic Reform Package (ERP) launched on March 12, 2021 sets incentive schemes for renewable energy as extension of Renewable Energy Support Scheme and commits to support further green reforms. The National Renewable Energy Action Plan and 2019-2023 Strategic Plan of Ministry of Energy and Natural Resources aim to increase renewable energy in electricity generation. Also, the National Energy Efficiency Action Plan sets efficient energy use strategies for the years between 2019 and 2023.

Action points that have been defined in several strategic frameworks have accelerated Türkiye's green transition. Initiatives such as “**Zero Waste Program**” by the Ministry of Environment, Urbanization and Climate Change helped to prevent 2 billion greenhouse gas emissions and continue to do so. With several incentives for renewable energy installation, Türkiye has Europe's 5th largest installed renewable energy capacity while renewable energy capacity currently accounts for 54% of total capacity. The local **electric car initiative TOGG** is expected to help pave the way for green mobility transformation; while creating infrastructure and supplier network around smart transport.

In addition to the government's strategy, local initiatives support the green transition. Municipality of Istanbul's Solid Waste Incineration Plant, which is the **largest incineration plant in Europe** established in 2021, will provide electricity for 1.4 million people¹⁷. The municipality of Ankara initiated the world's first project to transform diesel fuelled buses to 100% electric buses¹⁸. Similarly, the Municipality of Izmir has begun installing solar power generation on the roofs of municipality buildings¹⁹.

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GREEN RECONCILIATION ACTION PLAN

The most recent strategy document in Türkiye's sustainable development journey is the **"Green Reconciliation Action Plan"** which was published in July, 2021. The Action Plan aims to support Türkiye's **transition to a sustainable and resource-efficient economy** in line with its development goals. The plan emphasises vitality of **compliance to EU Green Deal** for Turkish exports. Overall, the Action Plan is highly important for Türkiye to strengthen its position within global supply chains, improve its competitiveness and attract green investments to the country.

The Green Reconciliation Action Plan has objectives and actions for **public, private and other relevant stakeholders**.²⁰ The action plan focuses on increasing awareness and collaboration by evaluating the current state and taking concrete actions towards Türkiye's green transition. The Green Reconciliation Action Plan is structured under 9 main headings and specific objectives and actions such as: **use of IPA funds, increased usage of renewable energy, empowering green financing and economy**, etc. The plan, includes a total of 32 objectives and 81 actions.

- Limiting Carbon Emissions
- A Green and Circular Economy
- Green Financing
- A Clean, Economic and Safe Energy Supply
- Sustainable Agriculture
- Diplomacy
- Combatting Against Climate Change
- Sustainable Smart Transportation
- European Green Deal Information and Awareness Activities



The EU Green Deal announced additional tax measures for sustainably noncompliant imports. Therefore, the application of the Green Reconciliation Action Plan is of utmost importance for Türkiye considering both environmental and economic aspects.

The EU Green Deal announced additional tax measures for sustainably non-compliant imports. Therefore, the application of the Green Reconciliation Action Plan is of utmost importance for Türkiye considering both environmental and economic aspects. In this report, we have **focused on three of the plan's main headings to investigate cooperation opportunities between Swedish companies and Turkish stakeholders:**

- **Circular Economy:** The action plan explains targets to **improve green and circular economy to preserve the value of materials used and reduce the amount of waste** by adopting a holistic approach. To achieve the goals, a national circular economy plan is being prepared to facilitate the adoption of the EU Circular Economy Plan. Infrastructure and R&D focusing on circular economy will be supported while the requirements will be analysed in prioritised sectors. The plan refers specifically to efficient use of water, by planned “Water Usage Master Plan” and “Water Footprint Guidance Document”. Also, the plan outlines international financing and Instrument for Pre-Accession (IPA) funds that will be used for industrial projects that contribute to a green and circular economy.

- **Green Energy:** The plan states the importance of using **renewable energy and efficient use of the limited resources** in Türkiye. As an action to comply with the European Green Deal, a gap analysis is being planned to evaluate the current state of renewable energy sources and energy efficiency processes in Türkiye. In parallel with that, awareness raising activities towards industry and promotion of Green Tariff is planned. The plan anticipates the installation of 1000 MW wind power and 1000 MW solar energy installation every year until the end of 2027. Also, a guideline towards use of energy efficient and low carbon HVAC solutions is being planned to be set in further strategy documents.
- **Sustainable Smart Transport:** In parallel to EU Green Deal, Green Reconciliation Action Plan emphasises the expansion of **green transport modes**, increasing the share of railway and seaway in logistics and developing **electrical vehicle infrastructure**. According to the plan, “Combined Transportation” and “Logistics Centers” regulations will be issued, and Green Port Certificate Program will be started. In the meantime, electric vehicle and charge station infrastructure will be planned, bicycle and shared e-scooter roads will be prioritised. IPA funds will be used to create sustainable urban mobility solutions.

Swedish companies continuously support Türkiye’s green transition journey by using their local and global expertise. **Innovative and sustainable solutions of Swedish companies can be cutting-edge in terms of realising the Green Reconciliation Action Plan.** In this report, three focus areas in parallel with the action plan are examined to evaluate potential partnership opportunities while also demonstrating **sustainability case studies of Swedish companies currently active in Türkiye.**

H&M Group



As H&M Group, we are a family of brands and business driven by our desire to make great design available to everyone in a sustainable way. Together we offer fashion, design and services, that enable people to be inspired and to express their own personal style, while making it easier to live in a more circular way. H&M Group's vision for sustainability is to lead the change toward a circular and climate positive fashion industry while being a fair and equal company.

[www.hmgroup.com/
sustainability](http://www.hmgroup.com/sustainability)

Circular Economy

The transition to a circular economy entails the transition into a system where we consume dramatically fewer natural resources in a more efficient way, since the products we use are circulated in one of four ways; **reused, reset, upgraded, or recycled**.²¹ The circular economy works by extending product lifespan through improved design and servicing, and relocating waste from the end of the supply chain to the beginning. As such, everything is reused, remanufactured, recycled back into a raw material, used as a source of energy, or as a last resort, disposed of²².

The circular economy, however, is still in its infancy – today, only 8.6% of the world economy is circular. This proportion needs to almost double to shrink the global carbon footprint and tackle environmental challenges such as waste and resource depletion.²³ Speeding up the transition heavily depends on innovation in technology, business models and regulation. Here, **international collaboration and exchange of experiences are key** finding new ways of utilising technology in production, extending service life of a product and establishing regulations that promote circularity between countries.²⁴ As such, Both Sweden and Türkiye have much to gain from mutual collaboration.



How Sweden is taking action

One of the key pillars in achieving Sweden's emissions reduction, in fact, lies in building its circular economy to **shrink its large material footprint**. According to the report published by The Circularity Gap Reporting Initiative, Sweden funnels more than 266 million tonnes of materials into its economy each year. This means that Sweden consumes more than twice as many materials as the global average: 25 tonnes per person, per year.²⁵ However, only 3.4% of the resources Sweden uses are cycled back into the economy after use.

Thus, to accelerate the transition to a circular economy, the Swedish Government adopted a national strategy in 2020, with the vision of creating "A society in which resources are used efficiently in toxin-free circular flows, replacing new materials."²⁶ The strategy sets out four focus areas in which measures are necessary:

- A circular economy through sustainable production and product design
- A circular economy through sustainable ways of consuming and using materials, products and services
- A circular economy through toxin-free and circular ecocycles
- A circular economy as a driving force for the business sector and other actors through measures to promote innovation and circular business models

Backed by a solid national strategy, Swedish business has good prospects to be at the forefront of **circular economy practices**. One such initiative was recently launched by Stena Recycling with its investment in **battery recycling**. Funded by the Swedish Energy Agency, Stena Recycling is now intensifying its work on the construction of a new recycling plant in Halmstad, creating a battery value chain that is sustainable and circular. Similarly, Renewcell, a sustainable tech-company, is opening the largest chemical **textile recycling factory** in the world where a new recycling technology is being used to dissolve used cotton and other cellulose fibers and transform them into a new, biodegradable raw material called Circulose® pulp. This Circulose is later to be used to make biodegradable virgin quality viscose or lyocell textile fibers.²⁷

Among leading Swedish apparel brands, H&M Group set ambitious targets to become a 100% circular and climate positive company by 2040. The company however has already achieved marked successes, including sourcing 64.5% of all materials (and 100% of its cotton) from recycled, organic or more sustainable sources and powering company-owned facilities through 90% renewable energy.²⁸ Filippa K, similarly, launched an initiative, the Collect programme, whereby people get a discount on new purchases if they return garments they no longer use. The company now aims to remake, resell or recycle 100 per cent of collected garments by 2030.²⁹ With several other companies having strong climate commitments and knowledge, Sweden is well poised to spearhead a circular transition, bringing impactful change in various sectors owing to its innovative and progressive spirit.³⁰

Speeding up circularity in Türkiye

As has been the case for Sweden, it is also important for Türkiye to take action and speed up the transition to a more resource efficient and circular economy. In 2020, a total of 104.8 million tonnes of waste, of which 30.9 million tonnes was hazardous, was generated in manufacturing industry establishments, mining establishments, thermal power plants, organised industrial zones (OIZ), health institutions and households. When compared to 2018, the total amount of waste increased by 10.5%.³¹

In recent years, Türkiye has set targets to support the circular economy realisation in the country, mostly related to recycling and recovery of waste. **The Zero Waste Project**, which was initiated in 2017, is one of the leading examples of such waste management practices, aiming to increase Türkiye's recycling rate to 35% by 2023, while creating employment for 100,000 people in the recycling industry and saving USD 2.3 billion yearly.³² As part of the project, Zero Waste System, a **seven-step roadmap** was developed by the Ministry of Environment, Urbanisation and Climate Change, consisting of steps that companies, institutions or organizations should apply to be included in the "Zero Waste movement". Between 2017 to 2020, the project helped save 397 million tons of raw materials, 315 million kilowatt-hour of energy, 345 million cubic metres of water and 50 million barrels of oil. In the same period, 17 million tons of usable waste was collected, 2 billion tons of greenhouse gas emissions were prevented, and 209 million trees were saved.³³

On the business side, RVM Systems, Sweden's leading designer and manufacturer of Reverse Vending Machines (RVMs), has also been working actively to create awareness among the public and accelerate the transition process in Türkiye. As part of Ekomat Project, a pilot project is being run to increase recycling of drink containers, through its vending machines installed in the district of Yalova, RVM Systems has been taking an active role in the recycling of 70,000 drink containers monthly and thus contributing to the circular economy in Türkiye.



TÜRKİYE CIRCULAR ECONOMY PLATFORM

An important milestone was achieved in 2016 when Business Council for Sustainable Development Türkiye (BCSD Türkiye) and the European Bank for Reconstruction and Development (EBRD) joined forces to accelerate the transition to circular economy in Türkiye. Since then, the joint effort has established a knowledge hub where the platform offers training, financial opportunities, and consultancy services for companies that are looking to accelerate their transition to circular.



“Re:Waste - how Sweden is rethinking resources” EXHIBITION

An estimated two billion tonnes of municipal waste were generated globally in 2016, and according to projections from the World Bank, this number is expected to increase by 70 per cent before 2050. Curated by the Swedish Institute in Sweden, “Re:Waste - how Sweden is rethinking resources” exhibition outlines the underlying problems, the steps we all have to take to resolve the situation. Smart new innovations in development and on the market are urgently needed.

In 2021 and 2022, the Consulate General of Sweden in Istanbul displayed this exhibition at several locations in Istanbul and Izmir reaching more than 3 million people. This was carried out in collaboration with the Istanbul Metropolitan Municipality, Izmir Metropolitan Municipality, Aegean Exporters Association, Roots & Shoots Foundation, Mind Your Waste Foundation, IKEA Istanbul Ümraniye store and IKEA Izmir store.



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CASE STUDY

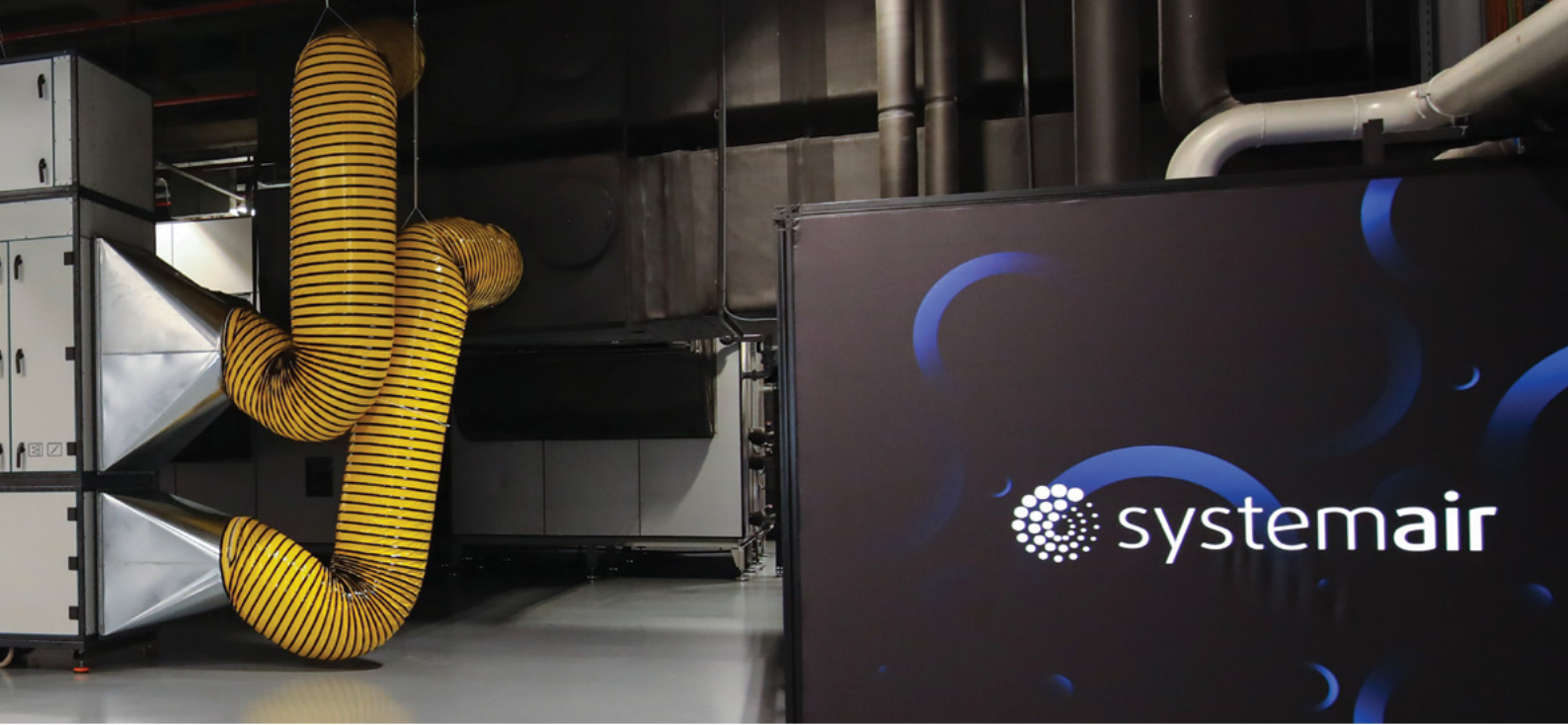


SYSTEMAIR'S LIFE CYCLE ASSESTMENT (LCA) METHOD:

Systemair, the innovative pioneer of the Heating, Ventilation and Air Conditioning (HVAC) sector, became the first company in Türkiye to determine the impacts its products create throughout their life cycle, with the Life Cycle Assessment (LCA) method.

LCA is a scientific and academic methodology that calculates the effects of products on climate change, water, air and land ecosystems. Besides calculating the carbon footprint of products, LCA is a methodology that helps quantifying and reporting the environmental impact of products throughout their entire life cycle and make the necessary improvements. This assessment methodology, which helps to identify processes that have high energy and raw material requirements during

production and use, and to quantify their effects, reveals the level of environmental impact of the products we produce. In this way, Systemair can identify which of the stages such as operation, logistics, raw material supply causes the most environmental impact. This calculation also provides data that will support eco-design in improving production processes, allowing greener solutions in transformation processes.



Systemair R&D team produced a self-sacrificing in-house effort following the project carried out with İTÜ (İstanbul Technical University) and, by capitalising on the competence they acquired in the field of LCA, they integrated the life cycle assessment outputs into the selection programme used by the company. As a result of this project, they can automatically calculate the capacity, accessories and add-ons, as well as the environmental impacts created during the production process of the Geniox Tera series products they manufacture for data centres, together with other capacity and consumption data, and report them in the product technical selection outputs. In the second phase of the project, they aim to report the environmental

impacts of all products selected in Airware PRO, the product selection programme used within the Systemair Group which is open to their customers.

Ayşegül Eroğlu, Vice President of Systemair Türkiye, emphasized, “Thanks to the LCA calculation competence gained, we have added the emission values of more than forty raw materials and components to the database. What is more, Systemair Türkiye exports this engineering to 52 countries where Systemair operates. We are happy to be the first company in Türkiye and one of the few in the world to carry out the LCA work in the air conditioning sector, and to transform this work into a success in R&D exports. We believe that this study will both bring a different perspective to our industry and strengthen Türkiye’s strategic role in exports.”



We export carbon emission measuring technology (LCA) to 52 countries as Systemair Türkiye.

Ayşegül Eroğlu
Vice President of Systemair Türkiye



CASE STUDY



CIRCULARITY SOLUTIONS BY TETRA PAK FOR WASTE BEVERAGE CARTONS

Tetra Pak as an important player in the food and beverage industry, stands by its founder's belief that "A package should save more than it costs". Regarding this, the focus is on an innovation pathway driven by renewability and recyclability to ensure de-carbonisation and circularity of materials and to address the need for sustainable food packaging. As of today, the renewable content percentage of Tetra Pak packaging material averages 70%.



Our mission to minimise virgin raw material use in manufacturing, we are proud to be contributing to recycling of cartons to new products.

Mustafa Aydı
Aydı Entegre

From the aspect of circular economy strategies, Tetra Pak collaborates with multi-stakeholders to enable materials from our packaging to re-enter the economy at the end of their use, by working on expanding industrial recycling solutions and pulling market demand for high quality recycled materials (pulp, paper, polymer granules etc.) produced from waste cartons. In other words, recycling contributes to a low-carbon circular economy by keeping valuable materials in use and out of landfills.

In this regard, Tetra Pak Türkiye has contributed to the recycling of 9.7 billion used carton packages since 1995.

To commit to accelerating recycling and transition to the circular economy, Tetra Pak Türkiye has cooperated with Kahramanmaraş Paper (KMK), Viking Paper and Ozayti Recycling to reprocess all parts of the packaging materials in waste cartons.

Totalling at 47,000 tonnes in overall recycling capacity, these three partners produce various types of paperboard, hygienic paper products, composite panel-boards, roofing sheets and furniture as sustainable end solutions. Methods of beverage carton recycling in Türkiye also vary from re-pulping and extrusion to thermo-forming.

Continuing pilot projects to collect waste beverage cartons at source, and efforts to secure that they will end up at capable recycling plants, Tetra Pak considers Türkiye to be a model country in carton recycling infrastructure, however not without its restraints and limitations in the packaging waste separation-at-source, which is already being tended in collaboration with public institutions and private entities.

With reference to Tetra Pak sustainability report 2022, actual global recycling rate was 26% in 2021. By increasing the number of cartons recycled, Tetra Pak has contributed to the reduction of end-of-life emissions from 906 to 886 kilo tonnes between 2019 and 2021.

Green Energy

Reducing greenhouse gas emissions and the transition to a low-carbon economy has become vital for every nation to cope with the effects of global warming. The recent energy crisis fuelled by the COVID pandemic and Russia's invasion of Ukraine, has increased the urgency for nations to act. In this context, changing energy policies, towards more efficiency and renewable energy sources, is being prioritised globally. Most of the nations including Türkiye and Sweden, have set regulatory framework and official targets to accelerate the green energy transition. Especially, the European Green Deal strengthened the transition efforts in both countries.

Sweden is the global leader in terms of effective energy transition with ETI (energy transition index) score of 79.³⁴ Türkiye, on the other hand, ranked 63rd among 115 countries with ETI score of 58. ETI scores of countries indicate Sweden and Swedish companies can share their experiences and support Türkiye and Turkish companies on their green energy transition journey. In this section, energy efficiency and renewable energy are highlighted to give insights and investigate cooperation opportunities between countries.

Energy efficiency

In order to reduce dependency on fossil fuels, nations are investing heavily in energy efficiency for efficient use of valuable resources for both economic and environmental concerns. Innovations and developed technologies improved efficient use of energy in every dimension – buildings, industry, transportation etc. Energy efficiency supports countries' competitiveness by reducing dependency on fossil fuels. In parallel to global trends, both Türkiye and Sweden have published regulatory frameworks to achieve national targets.

Sweden, with the lowest share of fossil fuels in its primary energy supply among all IEA member countries is a global leader in building a low-carbon economy, and the secondlowest carbon-intensive economy.³⁵ Swedish authorities introduced tax on emissions of carbon dioxide in 1992,³⁶ and with the contribution of regulations in sub-dimensions, Sweden achieved the target of 20% more efficient energy consumption one year before than the original goal – in 2019.³⁷ Sweden continues to follow the ambitious goal of 50% more efficient energy consumption by 2030 than in 2005. As of 2019, Sweden reached 29% less energy intensity than in 2005.

In 2012, Türkiye Ministry of Energy and Natural Resources published Energy Efficiency Strategy Document to set the policy until 2023. In 2017, the ministry also published National Energy Efficiency Action Plan to apply the strategy set in the previous document to reduce primary energy consumption by 14% (23.9 Million-Ton Equivalent Petroleum - MTEP)³⁸ by realising USD 10.9 billion energy efficiency investments. Following the action plan, between 2017-2021 Türkiye has invested USD 6.5 billion and gained 4.5 MTEP energy efficiency, and thereby cumulatively achieved 109% of the targets for the period.

Türkiye, increased its focus on energy efficiency and achieved its targets in recent years. Still, there are many opportunities to accelerate the development. As of 2019, carbon intensity of industry consumption in Türkiye was 51.8 gCO₂/MJ; while in Sweden it was 15.2 gCO₂/MJ.³⁹ Compared to 20 years ago, carbon intensity reduced in Türkiye by 20%; while being reduced by 40% in Sweden. Rapid development in Sweden is the result of coordination between public bodies, industry and academia. Sharing knowledge and experience between companies and use of innovative machinery & renewable resources has particularly accelerated this development. In addition to industry, Sweden achieved more than 30% improved efficiency in residential areas with the help of efficient building materials and by substituting fuel.⁴⁰

Swedish companies, with their innovative approach and solutions, share their energy efficiency know-how with Turkish industries continuously. Recently, In May 2022, Turkish company Nuh Cement agreed with ABB to electrify their mining fleet.⁴¹ The agreement is anticipated to save 1 million litres of diesel fuel per year. Another example of Turkish – Swedish cooperation took place in 2015 between Epiroc and Erkoç Kırmata. The quarrying company saved half of their fuel costs by using innovative SmartROC T40 drill rigs of Epiroc.⁴² In addition to the companies, Team Sweden in Türkiye continuously support cooperation in energy efficiency by creating know-how sharing platforms such as Swedish Energy Efficiency Delegation held in 2018 and Smart Industry Summits held in 2020 and 2021 that offered many collaboration opportunities to increase efficiency in Turkish industry.



Rapid development in Sweden is the result of coordination between public bodies, industry and academia.

HYBRIT PROJECT

SSAB (steel producing company), LKAB (Europe's largest iron ore producer based in north of Sweden) and Vattenfall (energy producer) joined forces under the HYBRIT project to develop the world's first fossil free steel.⁴³

The steel industry is an energy intensive sector which currently accounts for about 7% of global emissions and 10% of Sweden's carbon dioxide emissions. SSAB, LKAB and Vattenfall, receiving financial support from Swedish Energy Agency and the EU's Innovation Fund aim to create a unified and unique supply chain from mine to fossil free steel.

HYBRIT has been conducting R&D activities since 2016, and a pilot direct reduction plant in Luleå, Sweden was completed in 2020. Experimental development of reducing iron ore using fossil free hydrogen, which is split from water in electrolysis, is taking place in the plant. Adjoining the pilot plant, an underground hydrogen storage facility has been built which will be operational in the next two years. At LKAB Malmberget, after successful trials, the world's first fossil free iron ore pellets were produced in the autumn of 2020.

Volvo Construction Equipment (Volvo CE) became the first in the world to deliver a construction machine built using fossil free steel to customers. The A30G is produced at Braås facility in Sweden, using the existing manufacturing process with fossil free steel from Swedish company SSAB.⁴⁴ Also, after primary research, Volvo Cars teamed up with the project to become the first car maker to use fossil free steel for testing purposes and may use in a concept car⁴⁵ In addition to Volvo CE and Volvo Cars, Volvo Trucks also became the first heavy-duty vehicle manufacturer to use fossil free steel in its electric trucks beginning in the third quarter of 2022.⁴⁶



A piece of the future, candle holder in fossil free steel, ssab.com

Renewable energy

Increasing renewable energy usage is a cornerstone of nations' efforts to reduce emissions and reduce energy dependence. Renewables help the environment by reducing carbon output and improving public health by reducing pollution of air and water. Renewable energy also supports the economy by driving energy prices down and providing reliable energy sources while conserving natural resources. The benefits of renewable energy attracted nations' focus to diversify their energy sources. In recent years, substantial investments have been made to develop green energy both in Türkiye and Sweden.

In 2012, Sweden reached the government's goal of "50% renewable energy ratio of overall energy usage by 2020" – 8 years before the original target.⁴⁷ As of 2019, with almost 56% of the energy used in Sweden coming from renewable sources, the country tops the list in the European Union. For the power sector, Sweden has an ambitious goal of 100% renewable electricity production by 2040. An especially rich supply of hydropower and biomass contributes to the country's share of renewable energy. In addition to wind, bioenergy, solar and heat pumps; Sweden is investigating the potential of wave power, hydrogen, and body heat to use them as energy sources.

Türkiye follows 11th Development Plan (2019-2023) as its renewable energy agenda. The Economic Reform Package (ERP) launched in March 2021 and accelerated the progress. Elements of Türkiye's stimulus package are considered green, including the introduction of a "Green Tariff" for power generated from renewable sources, support for solar power, and extension of the Renewable Energy Support Scheme and commitments to support further green reforms. Türkiye currently ranks 5th in Europe and 12th in the world in terms of renewable installed capacity.⁴⁸ As of the end of May 2022, renewable energy capacity ratio reached 54.3% in the power market.⁴⁹ Also, Energy Market Regulatory Authority has announced USD 5 billion investments on wind and solar energy for the upcoming 2 years in March 2022⁵⁰.

Using their global experience, Swedish companies are actively providing solutions to renewable energy initiatives in Türkiye. ABB provided 5,000 relays to TEIAS (Turkish Electricity Transmission Corporation) to integrate renewables in the grid in 2018⁵¹. In 2020, Absolicon and Turkish renewable energy company Temiz Yaratici Teknolojiler (TYT) have signed an agreement for acquisition of T160 Solar collector production line. So, starting from 2023 TYT will be able to manufacture solar collectors with Swedish Absolicon's license⁵².

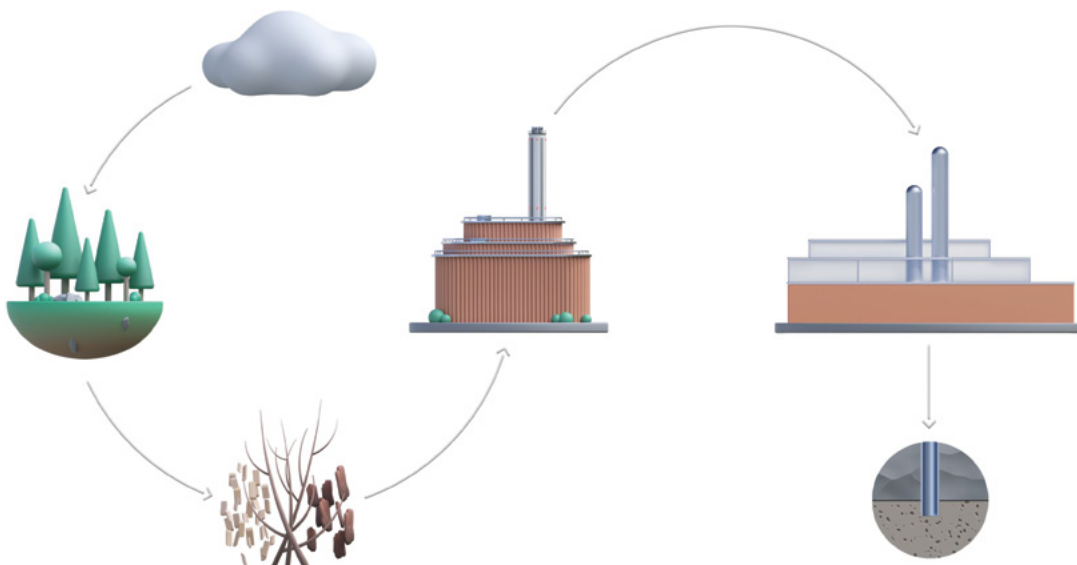


BECCS STOCKHOLM

Combining CO₂ capture with heat recovery, Stockholm Exergi's (Swedish district energy provider) Bio-Energy Carbon Capture and Storage (BECCS) project aims to capture and permanently store biogenic CO₂, resulting in carbon removal from the atmosphere and creation of "negative emissions".⁵³

The Beccs Stockholm project started in 2019 at the Värtaverket bio-cogeneration plant in Stockholm. Stockholm Exergi has installed a test facility with the support of the Swedish Energy Agency, aiming to establish the technology for separating carbon dioxide from flue gases.⁵⁴

The bio-cogeneration plant in Värtan uses biofuel to produce district heating and electricity. The combustion provides biogenic CO₂ that will return to the plants through photosynthesis, creating a climate-neutral cycle. According to Stockholm Exergi's calculations, the Värtaverket's plant has the potential to capture 800,000 tonnes of CO₂ a year. Considering Greater Stockholm and its businesses, the potential is 2,000,000 tonnes per year which is roughly equivalent to the CO₂ emissions from all road traffic in Stockholm.





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CASE STUDY

H&M

H&M GROUP'S CLIMATE STRATEGY

The urgency of the climate crisis is now undeniable. H&M Group has decided to accelerate its own progress to be part of the solution. The group is actively working to decrease impacts on the climate throughout its own value chain and beyond.

To do this H&M aims:

- To halve its emissions every decade and achieve net-zero by 2040, as defined by the Science Based Targets initiative (SBTi). The group recently sharpened its climate strategy and introduced new goals to reduce absolute scope 1, 2 and 3 emissions by 56% by 2030, from a 2019 baseline.

- Not to onboard any new suppliers or supplier factories into its supply chain if they have on-site coal boilers, from the 1st January 2022.
- To source electricity for the supply chain to be 100% renewable by 2030.
- To increase recycled materials' share to 30% in sourcing.



In order to achieve these targets, H&M prioritises its focus areas which are energy efficiency, renewable energy (includes power purchasing agreements and renewable energy certification schemes) and renewable fuel.

Under the energy efficiency focus area, The Expert Energy Efficiency Program has been launched in Türkiye by enrolling H&M Group's own energy expert team, aiming to create an industry-wide guidance platform on effective energy efficiency activities for suppliers.

Furthermore, H&M Group is investing in its suppliers to help them become more energy efficient and increase their renewable energy share. H&M Group set up a Green Investment team with the focus to financially support projects such as solar energy, wind energy, solar thermal etc. to reduce the group's emissions throughout the value chain and remove carbon from the atmosphere. The team will measure return on investment by emissions reductions, not financial gain.



H&M is committed to transform its business and changing the way fashion is produced, consumed and used.



CASE STUDY



SUSTAINABLE MINING WITH ZERO-EMISSION BATTERY POWERED EPIROC MACHINERY

Epiroc is leading the change towards sustainability in mining with zero-emission battery powered electric machinery, fulfilling its responsibility to the Planet and People.

In an underground mine, the heavy machinery required to break, load and haul rock generates noise, heat and fumes that can make uncomfortable working conditions even more difficult.

Battery-powered electric mining machinery brings savings on maintenance, ventilation, cooling and personnel health in mines, and provides a powerful opportunity to lessen the environmental footprint and create a healthier work environment for miners.

Epiroc's battery-electric narrow vein loader, Scooptram ST7 Battery has been a breath of fresh air for workers at the Atacocha mine in central Peru since January 2018.

The powerful machines used for drilling, lifting and hauling rock out of the mine release a toxic mix of carbon monoxide, nitrogen oxide and fine dust that can negatively affect workers' health.



“The diesel motor is quite dirty, and the amount of smoke it generates sometimes prevents us from working,” says Yordan Rojas, a fourteen-year veteran of Atacocha.

In most of the mine, a huge ventilation system ensures a continuous airflow that disperses the dirty air. But in closed tunnels, the contaminants can quickly accumulate, exposing workers to health hazards.

Battery-electric motors do not give off any emissions. So, they do not present the same challenges as their diesel equivalents when it comes to working in closed conditions. Therefore, electric vehicles have been a big hit with management and the operators, who fight to drive it.

“I have never seen a machine like this, there is no pollution, no gases,” says Rojas. “It is more comfortable for the operator and everyone else there.”

There are other advantages to using electric vehicles. Unlike a combustion engine, the electric motor hardly makes any noise as it drives through the mine’s muddy tunnels, reducing the strain on miners’ eardrums. Nor does it off large quantities of heat, an advantage when temperatures underground can reach a sticky thirty degrees Celsius.

With so many clear advantages, it is no wonder that the world’s mining industry is clamoring to electrify its mine fleet as soon as possible.



The battery-powered electric mining machinery will not only reduce the industry’s carbon footprint but will mean workers can breathe more easily.

Sustainable Smart Transport

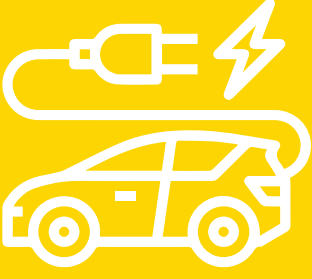
In today's world, transport is heavily dependent on fossil fuels; which causes large amount of greenhouse gas emissions, while it also threatens economies with steadily rising fuel prices. Enormous levels of fuel dependency on transport raise challenges for nations both environmentally and economically. **The sector is responsible for around 60% of oil demand globally** as of 2021.⁵⁵ Oil derived fuels account for 95% of transport's energy consumption in the EU⁵⁶ while the transport causes around 25% of the EU's total greenhouse gas emissions.⁵⁷ Transport is the backbone for businesses and global supply chains, but it comes with negative impacts as well. Economic and environmental costs of transport force the EU and other nations to **explore alternative mobility options** that are cleaner, greener and smarter.

Sweden started to evaluate sustainable smart transport options a long time ago. The country has the largest share (32%) of energy from renewable sources in transport in the EU.⁵⁸ Sweden still aims to improve sustainable mobility via the ambitious target of 70% reduction in emissions in transport in 2030 compared to 2010.⁵⁹ To fully transform transport into sustainable and smart, in addition to biofuels, Sweden also focuses on the opportunities for development and implementation of **electric and autonomous car technologies, batteries, charging infrastructure and fuel cells.**⁶⁰



Türkiye, in parallel to the EU Green Deal, has published several strategies on various documents to improve its competitiveness in sustainable smart mobility. In its 11th Development Plan, Türkiye set several strategies to develop intermodal and multimodal applications to **increase the share of railway and seaway**. Also, the 2019-2023 Strategy Plan published by Ministry of Transportation and Infrastructure indicates the investment targets to integrate all transport modes. Türkiye also initiated the government incentivised **TOGG project – domestic electric car manufacturing**. With the improved electric car infrastructure, Türkiye aims to reduce dependency on fossil fuels in line with the Green Reconciliation Action Plan.





TOGG: TÜRKİYE'S FIRST FULLY ELECTRIC NATIONAL CAR

The automotive industry has been a key economic driver in integrating the Turkish economy with the global value chain of international OEMs. One of the most prominent initiatives taken in this direction is the manufacturing of Türkiye's first fully electric domestic car, Togg. As of the 25th of June, 2018, Togg has been introduced as a globally competing Turkish technology brand. In 2022, Togg released the first test cars straight off the lines in the Gemlik Bursa industrial centre and it is expected that the first vehicle will come off the mass production line by the end of 2022.

Togg is expected to release the SUV model in the first quarter of 2023 in Türkiye⁶¹ and in 18 months in Europe. Togg SUV will have 2 options with 300 and 500 kms ranges. Togg SUV will be able to reach 80% filled capacity in 25 minutes with fast charging.

Togg has also established a company to manufacture its own charging stations called "Trugo". Initially the company plans to manufacture 1,000 stations. The first 6 Trugos are already installed in Bolu with 180 kw power capacity⁶².



Swedish companies have dedicated their resources to offer innovative solutions across all modes of transport globally. In Türkiye as well, Swedish companies had several **partnerships in sustainable mobility**. In fact, the first modern subway of Türkiye – M1 line in Istanbul- has ABB vehicles⁶³ (later Bombardier, currently Alstom). The 201 km high-speed electric railway project between Bandırma and Osmaneli, a project worth EUR 1.24 billion in total, involves a range of Sweden-based suppliers: Volvo Construction Equipment, Epiroc and Sandvik supply construction and tunnelling equipment, while Vossloh delivers rail technology and Alstom signalling equipment. A part of the project, EUR 462 million, has been financed by Swedish export credit.⁶⁴ **Green Loan** is used in the project since the high-speed railway will have far less environmental impact than road traffic by connecting important hubs. In March 2022 again, Smart City Sweden South hosted Turkish delegation including representatives of Ministry of Energy and Natural Resources to exchange know-how on best practices in renewable energy and energy efficiency applications. The delegation visited Evolution Road, the next generation of electric road system demonstrated and tested in municipality of Lund and Innovation Skåne⁶⁵.



tapflo

SUSTAINABILITY

We believe in being a sustainable and responsible business. Our basic structure has been formed by integrating the three dimensions of sustainability in our strategies, daily work and management. Tapflo works actively to achieve these and in this way contributes to long-term sustainable community development locally and globally. Sustainability should be a fundamental and guiding principle for all activities at Tapflo.

Tapflo pumps are built in a simple design with as few components as possible. We use less raw materials with fewer components.

70% fewer parts
then other producers

85% less consumed energy
then other pumps of similar
type





EVOLUTION ROAD

Evolution Road, commissioned by Swedish Transport Administration, allows charging of moving electric vehicles. The electric road project paves the way for fossil free transport⁶⁶.

The installation of the electric road test site began in May 2020 in Southern Sweden to revolutionise mobility. Charging the vehicle while driving eliminates the need to stop to charge the batteries. The initiative not only saves time; but also reduces the vehicle's battery size significantly. Reduced battery size leads to less environmental impacts and lighter vehicles that allow more goods or passengers.

The system demonstrates a range of solutions – not only charging – but also wireless communication between the road and vehicles, security solutions, automated payments and more. The technology being tested in the project has been developed by the Swedish company Elonroad in collaboration with the Faculty of Engineering at Lund University.







CASE STUDY

VIACON

BUILDING ECOLOGICAL BRIDGES IN TÜRKİYE BY VIACON

ViaCon Türkiye balances environment with business by building bridges to a more circular economy. A sustainable future depends on balancing the needs of wildlife and the environment with the demands of business. In Türkiye, ViaCon actively provides construction and engineering solutions to balance these demands, one of which is the need for ecological bridges and overpasses to preserve animal life and reduce disruption caused by transport accidents and development.



ViaCon Türkiye is at the forefront of sustainable civil engineering projects that contribute to a greener, more circular economy.

The challenge

The construction of highways and railways, while critical to development and growth, adversely affects the natural habitats of animals, dividing routes between homes and feeding grounds. Animal-vehicle accidents create a challenge not just for animals who need to cross but also for road and rail vehicles and their drivers, for overland transport, for business productivity, and the overall supply chain. Lives are at stake but cascading economic effects may also result. These effects range from vehicle, road and railway damage to delayed or cancelled transport for both passengers and cargo. Putting transport methods out of commission indefinitely and incurring replacement and repair costs is bad for business across the economy.

The solution

ViaCon Türkiye has tackled this challenge by building corrugated steel ecological bridges, enabling animals and vehicles to coexist with fewer accidents and with the fewest, if any, disruptions to existing services.

With its Ankara-Eskişehir high-speed railway ecological overpass and Istanbul highway animal overpass projects, ViaCon Türkiye is actively working with the government of Türkiye to support both the sustainability of wildlife and transport continuity.

While ecological bridges and overpasses can be built with concrete, ViaCon is committed to building with greener materials and a reduced carbon footprint. ViaCon focuses on steel because:

- Steel production causes 25% less carbon emissions versus concrete and requires 68% less natural resource use.
- Steel is 100% recyclable, contributing to the circular economy.
- ViaCon's construction process is shorter than other methods, leading to less energy and fossil fuel consumption.



CASE STUDY

V O L V O

VOLVO CAR'S ELECTRIC VEHICLES AND JOURNEY TO CLIMATE NEUTRALITY

Volvo Cars believes in equal safety for all and the most important approach to safety is leaving a better and sustainable planet to future generations. Volvo Cars is committed to rethinking sustainability in its operations, in its cars and in society. As a mobility provider Volvo Cars recognises that the company is part of the problem of climate change and has a responsibility to act.



Volvo Cars will become a fully electric car company by 2030 and strives to become climate neutral by 2040.

Until 2025, Volvo Cars is aiming to reduce overall CO2 lifecycle emissions per car by 40% and at the same time 50% of its global sales will be fully made up of electric cars, with the rest hybrids. Volvo Cars will become a fully electric car company by 2030 and has an ambition to be climate neutral by 2040.

To gain momentum, the company has initiated CO2 negotiations with strategic suppliers. In addition, Volvo Cars called on its suppliers to reach out with ideas and propose joint sustainability initiatives.

Javier Varela, Volvo Cars Head of Industrial Operations and Quality, says: "Emissions from our supply base are included in our footprint. This is an area where we must make significant progress in order to reach our CO2 emission targets and become a climate neutral company by 2040." The Torslanda factory in Sweden, became Volvo Car's first climate neutral car plant in 2021.

Furthermore, the company aims to make annual savings of SEK 1 billion and reductions of 2.5 million tonnes in carbon emissions from 2025 and to become a circular business by 2040. Volvo Cars will create closed material loops for emission-heavy materials such as steel and aluminium, as well as remanufacture, repair, reuse and refurbish parts.

By focusing on resource efficiency and retaining the value created in materials and components for as long as possible during the lifecycle, the company wants to optimise the use of materials, components and cars and eliminate waste in the process.

Already now, Volvo Cars remanufactures parts such as gearboxes and engines to make better use of material and reduce emissions. In 2020, around 40,000 parts were remanufactured, saving nearly 3,000 tonnes of CO2 emissions.

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