EUROPEAN GREEN DEAL AND SMEs

TÜRKONFED

KONRAD ADENAUER STIFTUNG

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Refik Saydam Caddesi Akarca Sokak N: 41 Tepebaşı, Beyoğlu/İstanbul
+90 212 251 73 00 / +90 212 251 58 77 www. turkonfed.org / info@turkonfed.org

The Report Is Authored by
Assoc. Prof. Dr. Nazlı Karamollaoğlu, TÜRKONFED's Economic Consultant

Peer Review
Prof Dr. Erinç Yeldan
Assoc. Prof. Dr. Ahmet Atıl Aşıcı

Publication/Editorial Preparation
TÜRKONFED Corporate Communication

Graphic Design BMD MEDIA

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EUROPEAN GREEN DEAL AND SMEs

Orhan Turan
President of TÜRKONFED

Our blue planet, which doesn't have unlimited resources, is experiencing today not only economic transformation, but also serious crises arising from global warming and climate change. It doesn't seem possible to sustain the linear economic system which creates an increase in resource scarcity risk and increases the threat.

A new vision focused on sustainable development and social welfare, by which the needs of next generation are observed and today's needs are met in a balanced manner, should be put into practice with common sense. At this point, new approaches changing the game itself instead of its rules, referred to as the **"Green Deal"** or **"Green Transformation"** by the EU and as the **"Green Order"** by the USA, are being introduced.

As Turkey, like in the **Digital Transformation** which will create a leverage effect in the competitiveness of our economy and our SMEs, it is gaining importance for us to go into action as soon as possible in the **"Green Deal"** process as well, for the sake of our common future for new and creative solutions such as circular economy, carbon border adjustment mechanism and **Paris Climate Agreement**. Not only states, but also the business world and non-governmental organizations and private sector have important responsibilities for the success of the UN's **Sustainable Development Goals** for 2030.

There are 3.2 million SMEs in Turkey operating in the industry and service sectors, compared to 7 thousand large companies. Like in the world, our SMEs have a strategic importance in our country in spinning the wheels of economy and in the supply chain. Considering that 40 percent of our export is carried out by SMEs, a new period is starting, in which new rules and implementations to be created within the scope of the **"Green Deal"** will be put into use in the economic relationships to be established in the new period, not only with the EU, but also with all countries with which the EU does business.

For the competitive power of our SMEs, it is becoming more important than ever to build a new economic model focused on **"Digitalization"** and **"Green Transformation"**. It seems to be the most correct and comprehensive solution area to address the **Green Deal** from the perspective of SMEs in the process of updating the **Customs Union** between the EU and Turkey.

Accordingly, our report on the **European Green Deal** and SMEs included in its centerline the "**Green Transformation"** which is one of the focused fields of study in the new period of **TÜRKONFED** in cooperation with **KAS.** While the report aims to raise awareness about the green transformation opportunities in our SMEs which have many collective effects, although their effects in terms of environmental footprint is less, it also lays emphasis on the adaptation of SMEs to the Green Deal process for the sake of maintaining their competitiveness.

I would like to extend my thanks to **Assoc. Prof Dr. Nazlı Karamollaoğlu, TURKONFED's Economic Consultant**, who authored our report, and **Assoc. Prof Dr. Erinç Yeldan** and **Assoc. Prof Dr. Ahmet Atıl Aşıcı**, the peer reviewers of the report. **Digitalization and Green Transformation** are not a luxury for our SMEs, but an obligation for them. I believe that our report will lead the way and contribute to our country, our economy and our SMEs in the start of the sustainable development journey focused on digitalization leverage and green transformation in world trade.

Best regards,

YÖNETİCİ ÖZETİ
EXECUTIVE SUMMARY

YÖNETİCİ ÖZETİ

Avrupa Komisyonu Aralık 2019'da 2050 yılına kadar Avrupa'yı iklim nötr hale getirmeyi ve ekonomik büyümenin kaynak kullanımından ayrıştırılarak Avrupa Birliği (AB) ekonomisinin sürdürülebilir olmasını amaçlayan Avrupa Yeşil Mutabakatı'nı (AYM) yayımlamıştır. AYM'de kapsamlı bir politika tasarımı öngörülmüş, bu süreçte inşaat, tarım, enerji gibi sektörel yaklaşımların yanında, sıfır kirlilik aksiyon planı, biyoçeşitlilik stratejisi, iklim gibi farklı politika alanlarına odaklanan ve sektörel hedefleri destekleyen stratejiler oluşturulmuştur. AYM sürdürülebilir kalkınma hedeflerini politika tasarımı ve aksiyon sürecinin merkezine konumlandırırken, ekonomi politikalarının ana motivasyonu sürdürülebilirlik ve halkın refahı olmaktadır.

Bu dönüşüm Avrupa'da başlayacaktır ama bu hedeflere Avrupa'nın tek başına ulaşması imkansızdır. Bu dönüşümün uluslararası platformda uygulanmasını sağlayan önemli bir kanal, İklim Eylem Planı'nın araçlarından biri olan ve en geç 2023 yılında uygulamaya geçirilmesi planlanan Sınırda Karbon Düzenlemesi (SKD) mekanizmasıdır. Bu mekanizma ile AB üretiminin, özellikle Enerji Yoğun Ticarete Açık (EYTA) sektörlerinde, daha gevşek iklim standartlarına sahip ülkelere kaydırılmasından kaynaklanan karbon kaçağı riskinin azaltılması amaçlamaktadır. Karbon kaçağının varlığı AYM'nin genel amacı ve ayrıca Paris Anlaşması'nın hedefleri ile çelişmektedir. Bu yeni uygulamanın detayları ve hangi sektörleri kapsayacağı henüz netlik kazanmasa da SKD'nin AB'nin iklim değişikliği ile mücadele konusunda temel araçlarından biri olan Emisyon Ticaret Sistemi'nin (ETS) uluslararası alana genişletilmesi şeklinde olma ihtimalinin yüksek olduğu değerlendirilmektedir. Bu düzenleme ile ağırlıklı olarak karbon yoğun sektörlerde faaliyet gösteren ihracatçıların maliyet kanalı ile etkilenmesi beklenmektedir.

AYM'nin Türkiye ekonomisine etkisi SKD'nin yanı sıra döngüsel ekonomi kanalı ile de gerçekleşmesi beklenmektedir. AYM kapsamında sunulan Döngüsel Ekonomi Eylem Planı'nda iklim nötr ve döngüsel ürünlerin üretimi amaçlanmaktadır. Döngüsel Ekonomi Eylem Planı'nın bir parçası olan sürdürülebilir ürün politikası ile özellikle tekstil, inşaat, plastik ve elektronik gibi kaynak yoğun sektörlerde üretilen tüm ürünlerin döngüsel tasarımının önemi vurgulanmaktadır (Avrupa Komisyonu, 2020a). Kaynak verimliliği kapsamında önemli bir strateji olan döngüsel ekonomide hammadde ve enerji kullanımını azaltılması, atık oluşumunun kontrol altına alınması ve enerji kaybının minimize edilmesi amaçlanmaktadır.

AB, Türkiye'nin, 2019 yılında ihracat ve ithalatının sırasıyla yüzde 42'sini ve yüzde 32'sini karşılayan en büyük ihracat pazarı ve ithalat sağlayıcısıdır. Türkiye'nin Avrupa ile güçlü uluslararası bağları göz önüne alındığında, Türk işletmelerinin Avrupa tarafından AYM kapsamında uygulanacak politikalardan haberdar olmaları önem taşımaktadır. Bu dönüşümde, Türkiye'de toplam cironun yarısını ve istihdamın yüzde 72,4'ünü oluşturan küçük ve orta ölçekli işletmeler (KOBİ'ler) önemli bir rol oynamaktadır. Ayrıca, Türkiye'nin ihracatının yüzde 37'si KOBİ'lerden kaynaklanmaktadır (TÜİK, 2020b).

AYM'nin Birleşmiş Milletler'in 2030 Gündemi ve Sürdürülebilir Kalkınma Amaçları kapsamında hayata geçirilen stratejilerin önemli bir parçası olduğu düşünüldüğünden bu dönüşümün aynı zamanda ekonomik büyümenin çevresel faktörlerle uyumlu hale getirilmesini hedefleyen yeşil büyümenin de katalizörü olduğu

değerlendirilmektedir. Yeşil büyüme Birleşmiş Milletler Çevre Programı (UNEP) tarafından işletmelere yeni fırsatlar sunacak, toplumsal eşitliği ve toplumsal refahı artıran ve aynı zamanda çevresel riskleri ve ekolojik kıtlıkları azaltmayı amaçlayan bir büyüme modeli olarak tanımlanmaktadır.[1] Bu perspektifte düşünüldüğünde beklenen dönüşümün iklim hedefleriyle uyumlu ve Türkiye'nin ekonomik gelişimini ve büyümesini destekleyen bir büyüme stratejisi olarak kurgulanması önem taşımaktadır. Özellikle AYM ile başlayan değişimin önemli bir parçasını oluşturan Döngüsel Ekonomi Eylem Planı ile KOBİ'ler düşük karbonlu ekonomiye geçiş sürecinde gerekli uygulamaları benimseyerek bu dönüşümün katalizörü olma konusunda potansiyel oluşturmaktadırlar. KOBİ'ler bu rollerinin yanı sıra yenilikçi kapasiteleri ve motivasyonları sayesinde yeşil dönüşümün sunduğu fırsatlardan yararlanarak hem istihdam hem de katma değer yaratma kapsamında itici güç olma konumuna sahiptirler.

2012 yılında "Orta Gelir Tuzağı" kavramını gündeme getiren TÜRKONFED bu tuzaktan çıkış stratejisi kapsamında yüksek teknoloji, yüksek verimlilik ve yüksek katma değerli üretim ve ihracat konusunda yol alınması gerekliliğinin altını çizmiştir. Bu çerçevede AYM'nin gelişmekte olan ülkeler için bir engel olarak düşünülmesinden ziyade bir fırsat olarak değerlendirilmesi önem taşımaktadır. KOBİ'lerin toplam üretim ve istihdamdaki payları düşünüldüğünde bu değişimde kilit rol oynamaktadırlar. Bu nedenle AYM'nin bir büyüme stratejisi olarak kurgulanıp, KOBİ'lerin mevcut kırılganlıkları düşünülerek gerekli politikaların yüksek teknoloji, yüksek verimlilik ve yüksek katma değeri hedefleyen bir amaç doğrultusunda oluşturulması önem taşımaktadır.

Çalışmanın ana bulguları aşağıda özetlenmektedir:

» Tüm OECD ülkeleri arasında son dönemde (2010-2018) en yüksek sera gazı artışı kaydeden ülke Türkiye'dir. Diğer taraftan yenilenebilir enerji üretiminde kapasite artışı olumlu olmakla birlikte toplam enerji ihtiyacının artmasına paralel yenilenebilir enerjinin

[1] Yeşil büyüme kavramı, 2012 Rio + 20 Sürdürülebilir Kalkınma Konferansı'nda ana tema olarak ortaya çıktıktan sonra iklim değişikliği ile ilgili sorunlara sıklıkla çözüm olarak ortaya sunulmaktadır (Dale ve diğerleri, 2016).

toplam enerji kaynakları içindeki payında önemli bir artış gözlenmemektedir. İklim mücadelesi kapsamında kömürün enerji arzı kompozisyonundaki payının düşürülmesi ve halen birçok AB ülkesinde de devam eden fosil yakıt teşviklerine ilişkin uygulamaların sona erdirilmesi önem taşımaktadır.

» Hava kirliliğine ilişkin göstergelere baktığımızda Türkiye'de özellikle kirli hava maruziyeti (PM2.5) OECD ortalamasının oldukça üstünde seyretmektedir ve buna paralel erken ölümler ve bu ölümlere ilişkin hesaplanan refah maliyeti (welfare cost) yüksektir. Belediye atık yönetimi konusunda da Türkiye OECD ortalamasının oldukça altındadır. Avrupa ülkelerinde artık uygulamada olmayan kentsel atık depolama alanları Türkiye'de yaygın bir şekilde kullanılmakta ve kentsel atıkların yaklaşık yüzde 90'ı araziye doldurulmaktadır.

» Kaynak verimliliği ile çevre üzerindeki etkilerin minimize edilerek kaynakların sürdürülebilir bir şekilde kullanılması ve daha az girdi ile daha çok üretim yapılması hedeflenmektedir. Türkiye'de 2011-2017 döneminde malzeme tüketimi yüzde 8 artış kaydetmiştir, bu oran OECD ülkelerinin genelinde yüzde 7 düşmüştür. Malzeme başına üretilen çıktı olarak adlandırılan malzeme verimliliği 2010-2017 yılları arasında OECD ortalamasının altında seyretse de, 2011-2017 döneminde artış kaydetmiştir.

» Türkiye çevre ile ilişkilendirilebilecek vergi yükü konusunda OECD ortalamalarının üzerinde olmakla birlikte bu vergilerin mevcut çevresel göstergelerin performansına yansıması sınırlıdır.

» Devletin çevre ile ilgili AR-GE harcamaları, toplam AR-GE harcamaları içerisinde diğer OECD ülkelerine oranla küçük bir paya sahiptir. Bu durum eko-inovasyon önünde engel teşkil etmektedir.

» SKD ile maruz kalınacak vergi ve ek maliyetler önümüzdeki dönemde özellikle büyük ölçekli firmalar için önemli bir maliyet unsuru olabilecektir. Diğer taraftan KOBİ'lerin ihracatlarının toplam satışları içindeki paylarının büyük şirketlere kıyasla daha az olması SKD ile oluşması beklenen maliyet unsurlarının KOBİ'ler üzerinde ilk etapta sınırlı olabileceğini göstermektedir.

» SKD'nin etkileri iki boyut göz önünde bulundurularak değerlendirilmiştir: 1) Sektörel ve ölçek bazında hesaplanan AB ihracat yoğunluğu (AB ihracatı/toplam ciro); 2) Sektörel düzeyde hesaplanan ETS'nin ima ettiği vergi oranı. Bunun sonucunda:

- SKD'nin etkileri özellikle mikro ve küçük işletmelerde AB'ye olan düşük ihracat yoğunlukları nedeniyle sınırlı kalmaktadır.

- SKD'nin büyük ve orta ölçekte faaliyet gösteren üreticilerin değer zincirleri boyunca tedarik kararlarını etkileme ihtimali vardır. Bunun sonucu olarak daha büyük şirketlerin tedarikçisi konumunda olan mikro ve küçük ölçekli işletmelerin SKD sonucu dolaylı olarak etkilenmeleri muhtemeldir.

- SKD'nin ilk dönemlerinde ana metal sektöründe faaliyet gösteren orta ve büyük ölçekte firmalar "görece riskli" olarak değerlendirilmektedir. SKD'nin olgunluğa eriştiği dönemde tüm sektörleri kapsayacağı öngörüsü altında orta ölçekte tarım, maden ve gıda sektörlerinin, büyük ölçekte ise kok kömürü ve tarım sektörlerinin etkilenmesi beklenmektedir.

» KOBİ'lerin yeşil ekonomiye geçiş sürecinde karşılaştıkları fırsatlar, kaynak verimliliği kanalıyla kazanılan maliyet avantajı, yeni marketlere erişim fırsatları ve eko-inovasyon olarak sıralanmaktadır. Flaş Barometre Anketine (2018) göre

- Türk KOBİ'lerinin yüzde 12'si kaynak verimliliği aksiyonlarının üretim maliyetini "önemli ölçüde" azaltan, yüzde 32'si ise üretim maliyetini "kısmen azaltan" bir faktör olarak değerlendirmektedir.

- Türkiye'de yeşil ürün satan KOBİ'lerin oranı AB ortalamasının oldukça altında ve çalışmada yer alan ülkeler arasında son sıralarda gelmektedir.

- Yeşil ürün ve hizmet yelpazesini oluşturma ve genişletme kapsamında Türk KOBİ'lerinin en çok mali teşvik ve danışmanlık ihtiyacı bulunmaktadır.

» KOBİ'lerin yeşil ekonomiye geçişte karşılaştıkları en önemli engeller, belirsizlik (talep, getiri, düzenleme), finansal kaynakların yetersizliği, farkındalık ve işgücü eksikliği olarak sıralanmaktadır.

- Türk KOBİ'lerinin yüzde 40'ının kaynak verimliliğini artırma konusunda hiçbir yatırım yapmadığı gözlenirken, yüzde 29'u cirosunun yüzde 5'inden az bir kısmını kaynak verimliliğine ayırmıştır.

- Kaynak verimliliği aksiyonlarının üretim maliyetlerini "önemli ölçüde arttırdığını" belirten KOBİ yüzdesi diğer AB ülkelerinin oldukça üzerindedir. Bu durum kaynak verimliliğinin üretim maliyeti üzerindeki pozitif etkileri konusunda rehberlik ihtiyacının gerekliliğini ortaya koymaktadır.

- Kaynak verimliliği konusunda idari veya yasal prosedürlerin karmaşıklığı, çevresel eylemlerin maliyeti, çevresel uzmanlık eksikliği, talep eksikliği ve doğru kaynak verimliliği eylemlerini seçme konusunda bilgi eksikliği en çok karşılaşılan zorluklardır.

» Türkiye, Paris Anlaşması'nı imzalamış olmasına rağmen statüsüne ilişkin belirsizlik

KOBİ'lerin yeşil ekonomiye geçişte karşılaştıkları en önemli engeller, belirsizlik (talep, getiri, düzenleme), finansal kaynakların yetersizliği, farkındalık ve işgücü eksikliği olarak sıralanmaktadır.

nedeniyle onaylamamıştır. Diğer taraftan Türkiye Paris Anlaşması'na taraf olmamasına rağmen, 2030 yılı itibariyle gerçekleştirmeyi öngördüğü "Niyet Edilen Ulusal Katkı" (INDC) beyanını 2015 yılında yüzde 21'e varan artıştan azaltım olarak Birleşmiş Milletler İklim Değişikliği Çerçeve Sözleşmesi (BMİDÇS) Sekreteryası'na sunmuştur. Türkiye INDC'si ısınmayı 2°C'nin altında tutmak ile uyumlu olmadığından "kritik derecede yetersiz" olarak değerlendirilmiştir (Climate Action Tracker, 2018). Bu durum Türkiye'nin önümüzdeki dönemde iklim finansmanı kaynakları erişimine yönelik risk oluşturmaktadır.

» Çevre politikalarında KOBİ ve yeşil büyümeye ilişkin hedefler sunulmakla birlikte, bunların KOBİ'lerde de uygulanmasına yönelik politikaların daha sınırlı kaldığı gözlenmektedir. KOSGEB ana uygulama organı olmakla birlikte yeşil büyüme kapsamında ilgili faaliyetlerin koordinasyonu konusunda ilerleme kaydedilmesi gerekmektedir. KOBİ'lerin yeşil ekonomiye geçişinde planlanan politikalar kadar bu süreci hızlandıran teşvikler ve düzenlemeler önem kazanmaktadır. KOBİ'lerin mevcut kırılganlıkları göz önünde bulundurularak iklim, çevre ve istihdam politikalarında tamamlayıcı bir yaklaşım ile bu sürece uyum sağlanması gereklidir.

EXECUTIVE SUMMARY

In December 2019, the European Commission published the European Green Deal (EGD), which aims to make Europe climate neutral by 2050 and to make the EU economy sustainable by decoupling economic growth from resource use. A comprehensive policy design was envisaged at the EGD, in addition to sectoral approaches, such as construction, agriculture and energy. Strategies that support sectoral goals are presented in different policy areas, such as the zero-pollution action plan, the biodiversity strategy, and climate. While the EGD positions sustainable development goals at the heart of its policy design and action process, the main motivation of its economic policies is sustainability and the well-being of the population.

This transformation will begin in Europe, however, it is impossible for Europe to achieve these goals alone. An important channel that ensures the implementation of this transformation on an international platform is the Carbon Border Adjustment Mechanism (CBAM), which is one of the tools of the Climate Action Plan and is scheduled to be implemented no later than 2023. This mechanism aims to reduce the risk of carbon leakage resulting from shifting EU production to countries with looser climate standards, especially in the Energy Intensive Trade Open (EITO) sectors. The existence of carbon leakage contradicts the overall purpose of the EGD, as well as the objectives of the Paris Agreement. Although the details of this new mechanism and which sectors it will cover are not yet clear, it is considered likely that the CBAM will be in the form of an international expansion of the Emissions Trading System (ETS), one of the EU's main tools for combating climate change. Within this arrangement, it is the exporters who operate mainly in the carbon-intensive sectors that are expected to be affected most through the cost channel.

In addition to the CBAM, the impact of the EGD on the Turkish economy is expected to be realized through the circular economy. The Circular Economy Action Plan presented within the scope of the EGD aims to produce climate neutral and circular products, and the sustainable product policy, part of the implementation of the Circular Economy Action Plan, aims to plan the circular design of all products produced, especially those in resource-intensive sectors such as textiles, construction, plastics and electronics (European Commission, 2020a). Being an important strategy within the scope of resource efficiency, the circular economy aims to reduce the use of raw materials and energy to control waste formation and to minimize energy loss.

The EU is Turkey's largest export market and import provider, accounting for 42 percent and 32 percent of its exports and imports in 2019, respectively. Given Turkey's strong international ties with Europe, it is important for Turkish businesses to be aware of the policies that will be implemented by Europe within the scope of the EGD. In this transformation, small and medium-sized enterprises (SMEs) that account for half of the total turnover and 72.4 percent of employment in Turkey play an important role. In addition, 37 percent of Turkey's exports originates come from SMEs (TURKSTAT, 2020b).

Since the EGD is considered to be an important part of the strategies implemented within the scope of the United Nations Agenda 2030 and sustainable development goals, this transformation is also considered to be the catalyst for "green growth", which

aims to harmonize economic growth with environmental factors. Green growth is defined by the United Nations Environment Programme (UNEP) as a growth model that will offer businesses new opportunities, promote social equality and social well-being, and also aim to reduce environmental risks and ecological shortages.[2] From this perspective, SMEs play an important role in limiting environmental impacts when the expected transformation is designed as a growth strategy that is compatible with climate goals and which supports Turkey's economic development and growth. In particular, within the Circular Economy Action Plan, which forms an important part of the change that begins with the EGD, SMEs have the potential to be the catalyst for this transformation by adopting the necessary practices in the transition to a low-carbon economy. In addition to these roles, SMEs hold the position of being the driving force in creating both employment and added value by taking advantage of the opportunities offered by the green transformation thanks to their innovative capacities and motivations.

TÜRKONFED, which brought up the concept of the "Middle Income Trap" in 2012, underlined the need to move forward with high technology, high productivity and high value-added production and exports within the scope of its exit strategy away from this trap. In this context, it is important that the EGD is considered an opportunity rather than an obstacle for developing countries. Due to their large share of total production and employment, SMEs play a key role in this change. For this reason, it is important that the EGD is established as a growth strategy and that the necessary policies are designed in line with a final goal aiming for high technology, high productivity and high value-added considering the current vulnerabilities of the SMEs.

The main findings of the study are summarized below:

» Turkey recorded the highest greenhouse gas increase among all of the OECD countries for the period covering 2010-2018. However, while the capacity increase in renewable energy production is positive, there is no significant increase in the share of renewable energy in the total energy supply in parallel with the increase of total energy needs.

[2] After the concept of green growth emerged as the main theme at the 2012 Rio + 20 Conference on Sustainable Development, it is often presented as a solution to problems related to climate change (Hickel and Kallis, 2019).

Looking forward, as part of the climate battle, it is important to reduce coals' share in the composition of the energy supply and to end the practice of fossil fuel incentives, which are still utilized in many EU countries.

» When we look at air pollution indicators, it can be seen that, in particular, the mean population exposure to particulate matter (PM2.5) is well above the OECD average and the calculated welfare cost for these deaths is high. In terms of municipal waste management, Turkey is well below the OECD average. Urban waste storage areas, which are no longer in practice in many European countries, are widely used in Turkey and approximately 90 percent of urban waste is disposed of through landfill.

» Resource efficiency aims to use resources in a sustainable way by minimizing their effects on the environment and by producing more output with less input. In Turkey, total domestic material consumption increased by 8 percent in 2011-2017, while in OECD countries a declining trend (7 percent) was seen during the same period. Material efficiency, defined as gross domestic product per domestic material consumption, was recorded as being below the OECD average during the period 2011-2017. On the other hand, its growth rate has been positive during this time, implying an improvement.

» The share of environmental taxes in GDP is above the OECD average, however, the impact of these taxes on the performance of existing environmental indicators is limited.

» Taxes to be exposed with the CBAM may be an important cost element in the coming period, especially for large-scale companies. In parallel to lower exports to sales ratios (in comparison to large companies) prevailing in SMEs the cost impact, which is expected to occur with CBAM, may be limited.

» Research and development (R&D) expenditures related to the environment have a small share in total R&D expenditures compared to other OECD countries. This situation is an obstacle to eco-innovation.

» The effects of CBAM were evaluated in two dimensions: 1) EU export density calculated on a sectoral and scale basis (EU exports/total turnover); 2) The tax rate implied by ETS calculated at the sectoral level. As a result:

- For micro and small businesses, the effects of CBAM are limited due to their low export density to the EU.
- CBAM is likely to influence procurement decisions across the value chains of manufacturers operating on a large and medium scale. As a result, micro and small businesses that are suppliers of larger companies are likely to be affected indirectly by the CBAM.
- In the early stages of CBAM, medium and large enterprises operating in the basic metal sector are considered "relatively risky". It is expected that, under the projection that CBAM will cover all sectors when it matures, medium sized companies in agriculture, mining, and food sectors as well as large scale companies operating in coke and agriculture sectors will be also affected.

» The opportunities that SMEs face during the transition to the green economy are listed as a cost advantage gained through resource efficiency, opportunities to access new markets, and eco-innovation. According to the Flash Eurobarometer Survey (2018)

- 12 percent of Turkish SMEs consider resource efficiency actions to be a factor that "significantly" reduces the cost of production, and 32 percent consider it a factor that partially reduces the cost of production.

- The proportion of SMEs selling green products in Turkey is well below the EU average and ranks last among the countries in the sample.

- Turkish SMEs need financial incentives and consultancy within the scope of creating and expanding the range of green products and services.

» The most important obstacles that SMEs face in the transition to the green economy are uncertainty (demand, return, regulation), lack of financial resources, lack of awareness, and lack of a skilled workforce.

- It was observed that 40 percent of Turkish SMEs made no investments in improving resource efficiency, while 29 percent devoted less than 5 percent of their turnover to resource efficiency.

- The percentage of SMEs that say that the resource efficiency actions have "increased significantly" their production costs is well above that of other EU countries. This situation demonstrates the need for SME guidance on the positive effects of resource efficiency on production costs.

- Complexity of administrative or legal procedures, the cost of environmental actions on resource efficiency, lack of environmenta expertise, lack of demand, and lack of knowledge regarding choosing the right resource efficiency actions are the most common challenges faced by SMEs.

» Although Turkey has signed the Paris Agreement, it has not ratified it due to uncertainty regarding its status. On the other hand, although Turkey is not a party to the Paris Agreement, it has submitted its "Intended Nationally Determined Contribution" (INDC) declaration to the United Nations Framework

The most important obstacles that SMEs face in the transition to the green economy are uncertainty (demand, return, regulation), lack of financial resources, lack of awareness, and lack of a skilled workforce.

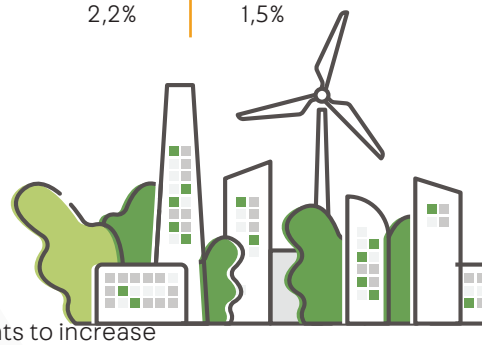
Convention on Climate Change (UNFCCC) Secretariat in 2015 as a reduction from an increase of up to 21 percent. Turkey's INDC has been categorized as "critically inadequate", as it is not compatible with keeping warming below 2°C (Climate Action Tracker, 2018). This poses a risk to Turkey's access to climate finance resources in the coming period.

» Targets for SMEs and green growth are presented in environmental policy documents; however, it can be observed that the policies for their implementation in SMEs are more limited. Small and Medium Enterprises Development Organization (KOSGEB) is the main implementation body, but progress must be made in coordinating related activities within the scope of green growth. Incentives and regulations that accelerate this process are as important as the policies planned for the transition of SMEs to the green economy. Considering the current vulnerabilities of SMEs, it is necessary to adapt to this process with a complementary approach to climate, environment, and employment policies.

COMPARISON OF TURKEY AND OECD / ENVIRONMENTAL INDICATORS

Reference: OECD. (2018a).

	TURKEY	OECD
Emission Increase (2005-2018)	55%	2.2%
Municipal Waste Recycling ratio (2018)	12%	26%
Landfilling (2018)	88%	39%
Share of renewable energy in total energy (2018)	13,3%	10,6%
Environmental taxes, % of GDP (2019)	2,2%	1,5%



TURKISH SMEs AND EU SMEs

Reference:: Flash Eurobarometer 456 (2018)

While **40%** of Turkish SMEs made no investments to increase resource efficiency, this ratio is **30%** in the EU

While the tendency to receive external support in resource efficiency remained at **7%** in Turkish SMEs, the average rate was **22%** in 28 EU countries.

As a result of resource efficiency actions, the production costs

Turkish SMEs
increased partially for 16% of them
increased significantly for 16% of them
decreased for 44% of them
didn't change in 8% of them

EU28 SMEs
increased partially for 14% of them
increased significantly for 4% of them
decreased for 41% of them
didn't change in 27% of them

While approximately **13%** of Turkish SMEs provided green products and services, this rate occurred as **24%** in the EU.

EXPORT REPORT OF TURKISH SMEs

Reference: Turkish Statistical Institute (2020b)

In 2019, SMEs carried out **37%** of total export

Micro enterprises carried out **3.8%** of total export

Small enterprises carried out **14.1%** of total export

Micro enterprises carried out **18.7%** of total export

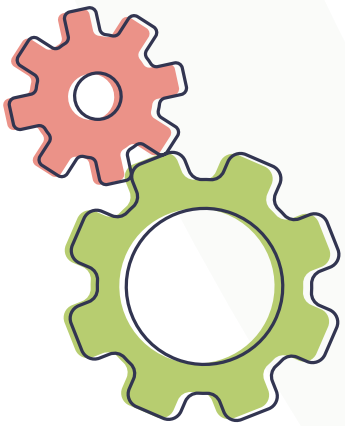
In 2019, SMEs carried out their total export

by **46%** to **Europe**

by **37%** to **Asia**

by **11%** to **Africa**

Reference: TÜİK. (2020b)



ENERGY EXPENSES OF SMEs BY SECTOR

Total in the industry and service sectors

in electricity expenses Share of SMEs **45%**

in fuel expenses Share of SMEs **59.5%**

Total in the manufacturing sector

in electricity expenses Share of SMEs **38.6%**

in fuel expenses Share of SMEs **39.1%**

Reference: TURKSTAT's Annual Industry and Service Statistics (2015)

INTRODUCTION

01 INTRODUCTION

With the European Green Deal (EGD), which was put on the agenda by EU in December 2019 and which aims to make Europe climate-neutral by 2050, an important transformation process was started by taking policy actions in different areas. Within the scope of the EGD, strategies focused on biodiversity, circular economy and clean air as well as road maps aimed at certain sectors such as sustainable food and agriculture implementations, construction and sustainable transportation, are provided. The EGD is also a growth strategy aimed at increasing resource and energy efficiency. In this process, the EGD aims to ensure a fair conduct of the transition to a climate-neutral economy, without leaving anybody behind with the financing resources provided under the Fair Transition Mechanism.

The change to start with the EGD is not limited to Europe. Companies making production in the EU may pursue a policy of shifting their production to those countries which are less strict in respect of emission, and bring along the carbon leakage risk. As a result of this, global emissions will continue to increase. To prevent this, it is planned to reduce this risk through the Carbon Border Adjustment Mechanism (CBAM) by fixing a carbon price on the goods imported to the EU.

The European Commission provided an interim goal to reduce the greenhouse gas emissions of the EU in 2030 at least by 50 to 55 percent compared to the levels of 1990. Accordingly, it was reported that the existing climate policies will be reviewed until June 2021 and amended when deemed necessary. CBAM is presented as one of the tools of the climate policy which will be updated in the upcoming period by the EU to prevent the carbon leakage risk, and it will start to be implemented in 2023 at the latest. Although the details of this arrangement and which sectors it will cover are not yet clear, opinions that it is likely that the CBAM will be in the form of an international expansion of the Emissions Trading System (ETS), which is the EU's main tool for combating climate change, are prevalent. Within this arrangement, it is the exporters who operate mainly in the carbon-intensive sectors that are expected to be affected most through the cost channel.
The EU is Turkey's largest export market and import provider as the group of countries where 41 percent of export was canalized and 33 percent of import was met in 2020. Given Turkey's strong international ties with Europe, Turkish businesses should be aware of the actions that will be implemented within the scope of the EGD.

In this study, we aimed to assess the change which started within the scope of the EGD, within the framework of SMEs. In this context, the purposes of the report are listed as follows:

1– To measure the existing position and the performance in the recent period of Turkey in comparison with other OECD countries within the framework of environmental indicators,

2– To calculate the potential effects on SMEs of the CBAM by using the input-output tables by sector,

3– To assess Turkish SMEs from the perspective of the policies to be put into practice within the scope of the EGD, especially in terms of resource efficiency, digitalization and sustainability,

4– To assess the roles of SMEs within the scope of green growth and the obstacles and opportunities they encounter.

The plan of the study is as follows: In section two, a short assessment of Turkey's environmental policies in the recent period are presented. In section three, Turkey's comparative environmental view is summarized within the framework of existing indicators. In section four, the policies to be implemented within the scope of the EGD and the steps aimed at SMEs in the EU within the scope of the new industrial strategy, are discussed in comparison with Turkey. In section five, potential effects of implementation of the CBAM are assessed; in section six, the role of SMEs in green growth is assessed; and in section seven, the opportunities for and the obstacles to green growth are assessed. In the last section, policies created within the scope of SMEs will be mentioned. The concluding section reports the findings of the study.

With EGD, there is an approach aimed at different policy areas, and strategies focused on biodiversity, energy efficiency, circular economy and clean air as well as road maps aimed at certain sectors, such as sustainable food and agriculture implementations, construction and sustainable transportation.

ASSESSMENT OF ENVIRONMENTAL POLICIES IN TURKEY

02 ASESSMENT OF ENVIRONMENTAL POLICIES IN TURKEY

The Paris Agreement 2020, which came into force following the termination in 2020 of the Kyoto Protocol, constitutes the framework of the regime for combating climate change. The Paris Agreement was adopted at the Conference of Parties to the United Nations Framework Convention on Climate Change (UNFCCC) 21 in December 2015, and entered into force on November 4, 2016. While the Kyoto Protocol which was in force before the Paris Agreement set a goal of decreasing emission for developed countries, under the Paris Agreement, every country should, independent from its level of development, report its goals of decreasing greenhouse gas in accordance with its intended nationally determined contribution declaration. A consensus was reached under the Paris Agreement, that average temperature increase will be 2°C, and, if possible, it will be limited to 1.5°C.

Turkey was among the parties to the UNFCCC, which entered into force in 1994, from the beginning as an OECD country, both in Annex-1 and in Annex-2. Countries listed in Annex-1 should take stricter measures within the scope of combating climate change. The developed countries in Annex-2 are obliged to provide financial resources to the developing countries in order that they can fulfill the aforementioned obligations, and to support them for the technology transfer. In the 7th Conference of Parties, which was held in 2001, Turkey's position, which is different from the other Parties in Annex-1, was recognized, and it was removed from the list of Annex-2 but remained on the list of Annex-1. The fact that the Paris Agreement made no clear distinction similar to the distinction of countries made in Annex-1 and Annex-2 to the UNFCCC, brings along the likelihood that Turkey might not be treated equally with those countries similar to it. The Paris Agreement created a platform where all the countries will share the responsibilities under the principle of "common but differentiated responsibilities and relative capabilities." In this framework, developed countries should provide the developing countries with the support they need in financing and capacity development.

Turkey has signed the Paris Agreement, but it hasn't become a party to it yet. Turkey's most up-to-date official document in relation to decreasing emission is the "Intended Nationally Determined Contribution" (INDC) declaration. Although Turkey is not a party to the Paris Agreement, it has submitted its INDC that it

anticipated to fulfill as of 2030, to the UNFCCC Secretariat in 2015, as a reduction from an increase of up to 21 percent. In this framework, the emission amount which was anticipated to increase to 1.17 billion tons of C02 in the implementation period from 2021 to 2030, is aimed to be decreased to 929 tons.

Turkey's INDC has been categorized as "critically inadequate", as it is not consistent in keeping warming below 2°C (Climate Action Tracker, 2018). In addition to this, the fact that the INDC presented by Turkey didn't anticipate that emissions will be maximized until 2030, is not compatible with international goals. The fact that the Paris Agreement restructured existing financing resources poses a risk for Turkey's access to climate financing in the upcoming period. For example, Turkey cannot benefit since 2015 from the Green Climate Fund, which is one of the funding channels of the UNFCCC and which provided 2.4 billion USD of funds in 2016.

In our country, environmental protection and management of natural resources are addressed within the framework of development plans, mid-term plans, action plans, sectoral strategies and various corporate strategic plans. The policies to be implemented in order that Turkey can achieve its goal that it has specified in INDC, which is its last official document where it put forward its climate goals, are presented particularly in the National Strategy and Action Plan for Climate Change (2010-2023), Industry Strategy Document, Energy Efficiency Strategy Document (2012-2023), National Recycling Strategy and Action Plan (2014-2017), National Smart Transportation Systems Strategy Document (2014-2023) and Action Plan (2014-2016).

Environmental goals are addressed in different dimensions in mid-term plans. The Mid-Term Program for the period from 2016 to 2018 emphasized the green growth and specified that "the green growth will be supported by utilizing the new job opportunities, sources of income and opportunities for the development of products and technologies, accommodated by environment-friendly approaches". The Mid-Term Program for the period from 2018 to 2020 emphasized that the share in energy consumption of the renewable energy resources should be increased in order to decrease the dependency to import in the energy, and, on the other hand, specified that domestic brown coal will continue to be used in an environment-friendly manner. The New Economic Plan covering the period from 2021 to 2023 emphasizes the efforts on waste management and recycling. The Environmental Agency, which was established in early 2021 under

the Ministry of Environment and Urbanization for the waste management which showed an increase in its activities in the recent period, aims to take the Zero Waste Project efforts further and to efficiently collect the packages of beverages. A working group was set up under coordination of the Ministry of Trade for the purpose of preparing for the changes to come with the EGD. The EGD Action Plan which will be made at the end of this study, will draw a road map for Turkey.

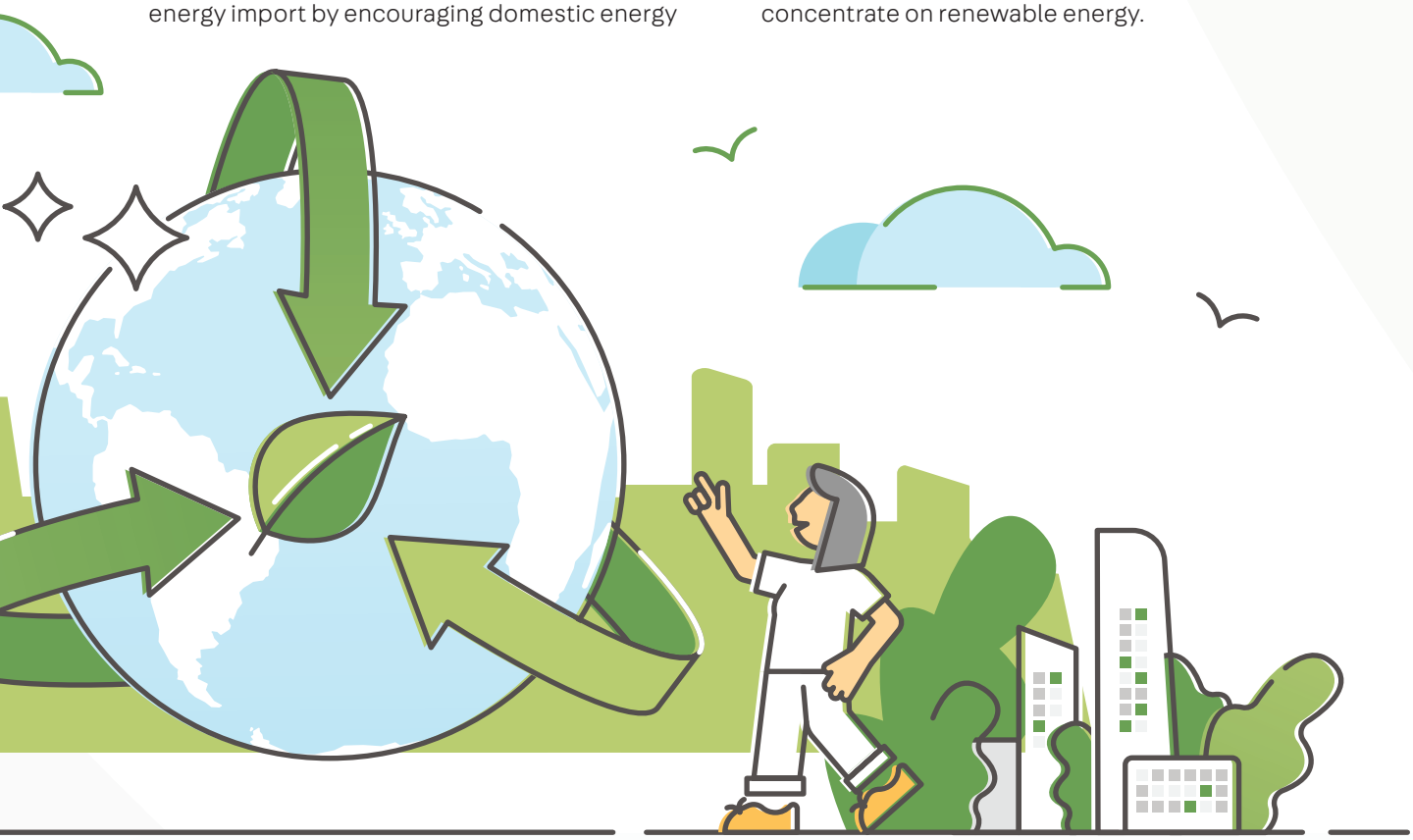
The Ministry of Environment and Urbanization is basically positioned as the primary regulator in environmental issues, but the other ministries may also develop policies in relation to energy, water resources and biodiversity. In this context, it is important to clarify the duties, authorities and responsibilities of the institutions and organizations playing a role in the policies in relation to the environment and to form a structure where all the stakeholders are involved in the decision-making processes. In addition to this, it is important for investors that the environmental goals are compatibly specified in the existing policy documents. For example, the goal anticipated in the INDC in relation to the goal of wind energy and the goals specified under the National Renewable Energy Action Plan are decoupled (OECD, 2019c). Making progress in relation to the provision of data for the follow-up of the performance of the environmental indicators and standardization of data between institutions is of great importance (the Ministry of Development, 2018).

The environmental legislation in Turkey was significantly strengthened as a result of the ongoing efforts for bringing it in harmony with EU directives. Although this harmonization ensures legal infrastructure and guidance, deficiencies are observed in relation to implementation. For the efficiency of implementations, the existing incentive, control and sanction mechanisms should be reviewed (the Ministry of Development, 2018).

The primary implementations in Turkey encouraging the decrease of carbon emissions can be listed as the support provided for taxes, renewable energy incentives and energy efficiency. As a result of the high amounts of taxes levied on gasoline and diesel among OECD countries, Turkey is among those countries with the highest share in the gross

domestic product of the taxes received in relation to the environment. Energy taxes (petroleum and natural gas products, energy consumption tax) constitute 66 percent of total taxes.

On the other hand, while 51 percent of the carbon emissions arising from energy used have not been priced in 2015, we have a table where only 21 percent of emissions was priced above 30 Euro per ton of CO_2.[3] This view shows that the energy taxes do not sufficiently reflect the environmental costs arising from carbon emission (OECD, 2019a). In addition to its environmental goals, Turkey is also endeavoring to decrease the dependency to energy import by encouraging domestic energy consumption with different channels. In line with this purpose, the increase of renewable energy resources on the one hand and the provision of a purchasing guarantee to coal investors on the other hand, led to growth of the coal sector. In addition to this, the coal aid provided to poor families is ongoing. This table conflicts with the goals set by Turkey to combat climate change. While the rapid increase of renewable energy resources is positive, the increase in total energy need brings to the forefront the requirement that this increase should accelerate. It is important in the upcoming period to decrease the share in Turkey's energy supply of fossil fuels, coal being in the first place, and to concentrate on renewable energy.



[3] 30 Euro shows the environmental damage created by 1 ton of CO_2 emission.

ENVIRONMENTAL INDICATORS

03 ENVIRONMENTAL INDICATORS

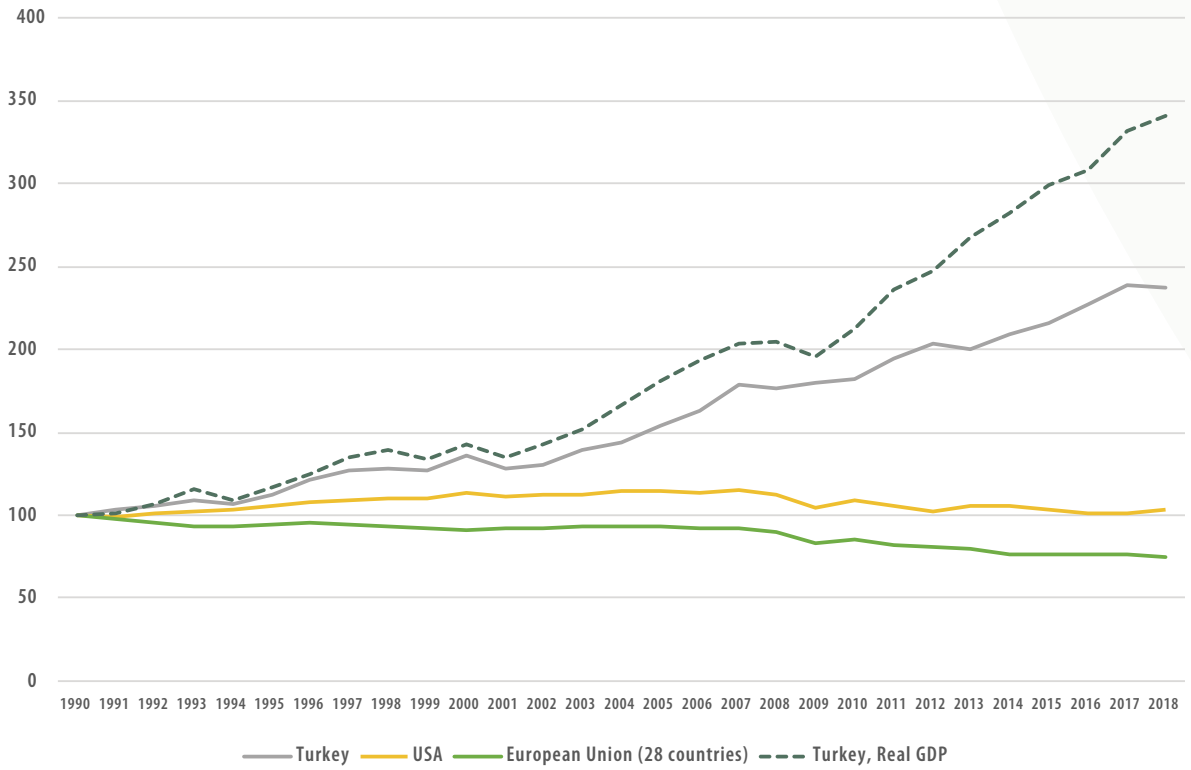
While ensuring economic growth is the ultimate goal of all the countries, the increase of resource utilization and emissions together with the economic growth endangers the opportunity of economies to reach their sustainability goals. While greenhouse gas emissions which cause climate change increased globally 50 times starting from mid 1800s, when we look at the recent 30 years, they increased 50 percent since 1990 and 35 percent since 2000 (OECD, 2020a).
Within the scope of the strategies aimed at climate, the goal of economic growth and decoupling of greenhouse gas emissions comes to the forefront. The degree of this decoupling is determined by the structural change experienced by economies, technological progress and environmental regulations (OECD, 2020a). While a trend where CO2 emissions are decoupled from growth is prevalent in developed countries, the exact opposite situation is in question in developing countries (Wu et al, 2018).

When emission on country basis is examined, it is seen that 65 percent of total emission arises only from 10 countries, and the share in the emission of 100 countries with least emission is less than 3 percent (World Resource Institute, 2017). While the share in emissions of China was 8.6 percent in 1990, it continuously increased until 2016 and reached 24.4 percent. The share of the USA first increased from 16.8 percent (1990) to 18 percent (2000), and then decreased in 2016 and reached 12.3 percent.

It is seen that the share in global carbon emissions of the OECD showed a decreasing trend after the 2008 crisis, depending upon the slowdown of economic activity, climate policies and more efficient use of energy. A large part of these emissions comes to light during energy production.

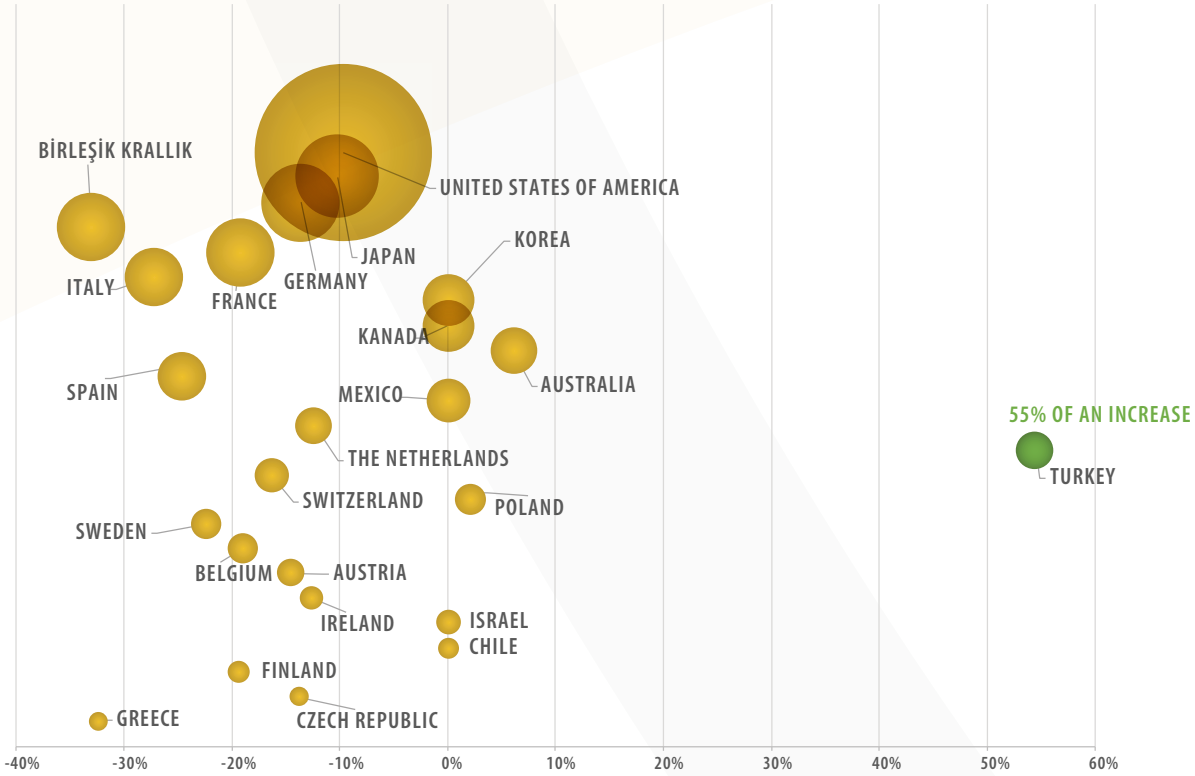
Although Turkey's share in the world's greenhouse gas emission is less than 1 percent, its emission amount has been regularly increasing since 1990. The emission amount in CO2 equivalent, which was approximately 220 thousand tons in 1990, increased to 521 thousand tons in 2018.

In the same period, the emission amount of European Union has regularly decreased. The emission amount of the United States of America has gradually increased until the global financial crisis, and then started to decrease. As seen in the greenhouse gas emission graphics provided in graphic 1, the European Union achieved this decoupling in a far more earlier period.



Graphic 1: Greenhouse gas emissions in Turkey, USA and European Union (1990=100)

Reference: OECD (2018a); Note: Except for land use, change of land use and forestry (AKAKDO)

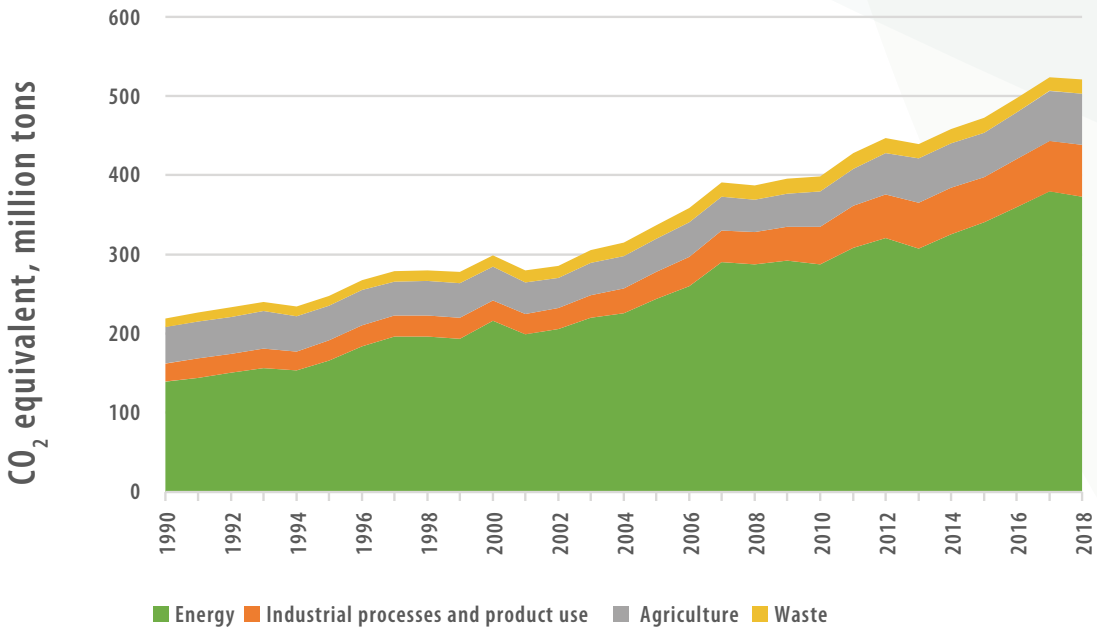


Graphic 2: Change in Greenhouse Gas Emission (CO2 equivalent) (2005-2018)
Note: Size of circles is directly proportional to the nominal Gross Domestic Product (GDP) for 2018.
Reference: OECD (2018a); Note: Except for land use, change of land use and forestry (AKAKDO)

When we look at the growth trend, Turkey's annual greenhouse gas emissions increased by 55 percent from 2005 to 2018, and this comes to the forefront as the highest emission increase among OECD countries (Graphic 2). Like in the whole world, the biggest source of greenhouse gas emissions in Turkey is the energy sector (Graphic 3).

While the changes in other sectors are limited, the greenhouse gas emission of the energy sector in CO2 equivalent, has increased by 166 percent from 140 million tons which was the value for 1990, and reached 380 million tons in 2018. When the sectoral composition is examined, while the share of energy was 63 percent in 1990, it increased to 71.6 percent in 2018.

The emissions per capita differ considerably among the countries. The emission in CO2 equivalent in Turkey, which was 4 tons in 1990, increased to 6.2 tons in 2018. Despite the increase, it is far below the OECD average, which was 12 tons in 2018.



Graphic 3: Resource allocation of greenhouse gas emission in Turkey, 1990-2018
Reference: TURKSTAT Greenhouse Gas Emission Statistics (TURKSTAT, 2020b)

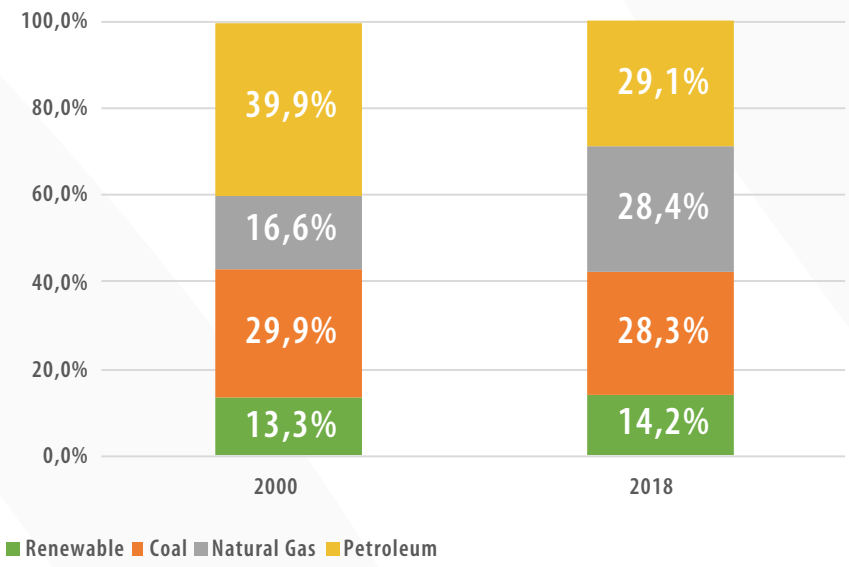
Fossil fuel consumption arising from transportation, industry and household, which is the most important source of carbon emissions, still constitutes 80 percent of the energy supply of OECD countries. When we look at Turkey's energy resources, the share of fossil fuels as of 2018 is 86 percent. When we look at the fuel composition, it is seen that the share of natural gas increased and the share of renewable energy was at a level of 13 to 14 percent in the period from 2000 to 2018 (Graphic 4). Although the capacity of renewable energy increased, no significant increase was observed in the share of this rate in total energy resources. On the other hand, the share of renewable energy is almost identical to the averages of the world and of OECD.

Due to its high dependency to import of petroleum and natural gas, Turkey focuses, for the purpose of decreasing the external dependency, on the policies for increasing the production of coal, renewable energy and nuclear energy and for supporting energy efficiency.

In this context, it is important for achieving the environmental goals, to decrease the share in the energy demand composition of coal which covers approximately 30 percent of fossil fuels, to set clear targets for energy efficiency and to put into practice incentive within the scope of energy efficiency (OECD, 2019c).

While challenging climate goals are set on the one hand, efforts are ongoing in many countries in relation to the fossil fuel incentives given for the purpose of keeping the price of energy resources at a low level, and fossil fuel consumption is supported. To ensure security in the energy supply in Turkey and to decrease external dependency, there are various incentives such as VAT exemption, customs duty exemption, tax deduction and investment place allocation. (Acar and Yeldan, 2016).

When we look at the European countries, it is seen that a recession was experienced in the last decade in fossil fuel support. While fossil fuel supports were recorded at a level of 50 billion Euro in 2018, the investments made for wind energy are at a level of 16 billion Euro, solar energy investment is at a level of 8 billion Euro, and the investments made for electricity and distribution are at a level of 31 billion Euro (European Commission, 2020e). An analysis which was made, specified that the world is on its way to produce fossil fuel 50 percent more than the maximum amount to limit the global warming with 2°C in 2030, and 120 percent more than the maximum amount to limit it with 1.5°C (IISD, 2019). This situation demonstrates the inconsistency between the global warming goals specified under the Paris Agreement and the fossil fuel production policies of the countries.



Graphic 4: Primary energy supply composition

Notes: Primary energy supply is described as the energy production plus energy import minus the energy export minus the international fuel storehouses plus or minus the stock changes (OECD).

Reference: IEA (2019)

Although the average polluted air exposure, which is an indicator of the air quality, is in a trend of decrease in OECD countries, it is above the standards of World Health Organization (10ug PM2.5/ m3) in many of the countries (OECD, 2020a). We have a table where the values per capita of the emissions with NOx and SOx content, which are the determinants of air quality in Turkey, have decreased. On the other hand, polluted air exposure is well above the OECD average. Premature deaths in parallel with this and the calculated welfare cost for these deaths is high.

The global demand for raw materials is in a trend of increase in parallel with industrialization of developing economies, high material consumption is ongoing in the development countries and the increased world population (OECD, 2020a). It is anticipated that the global economy will be quadrupled and global material use will be doubled by 2060 (OECD 2020a, Figure 1). The failure to correctly manage the environmental wastes created as a result of resource utilization and production can adversely affect the environmental factors and endanger human health. Within the scope of the achievement of the green growth and sustainability goals aimed at within the framework of the EGD, the terms resource efficiency and circular economy come to the forefront. Sustainable waste and material management is also a part of 2030 Sustainable Development Agenda goals. The share in total global emission of material production (for example metals, plastic, wood, plastic and construction minerals) increased from 15 percent to 23 percent in the period from 1995 to 2015 (UN, 2020). Thus, re-utilization of resources

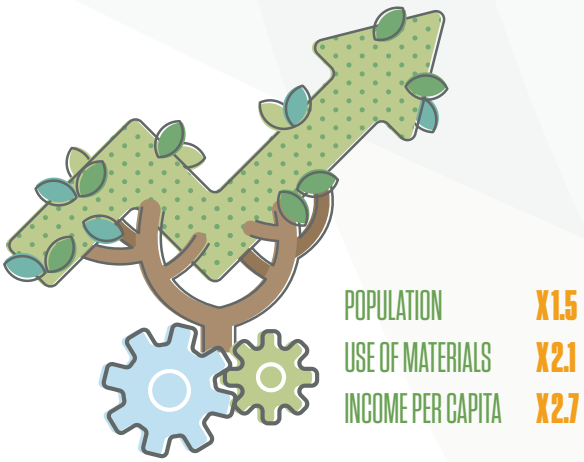
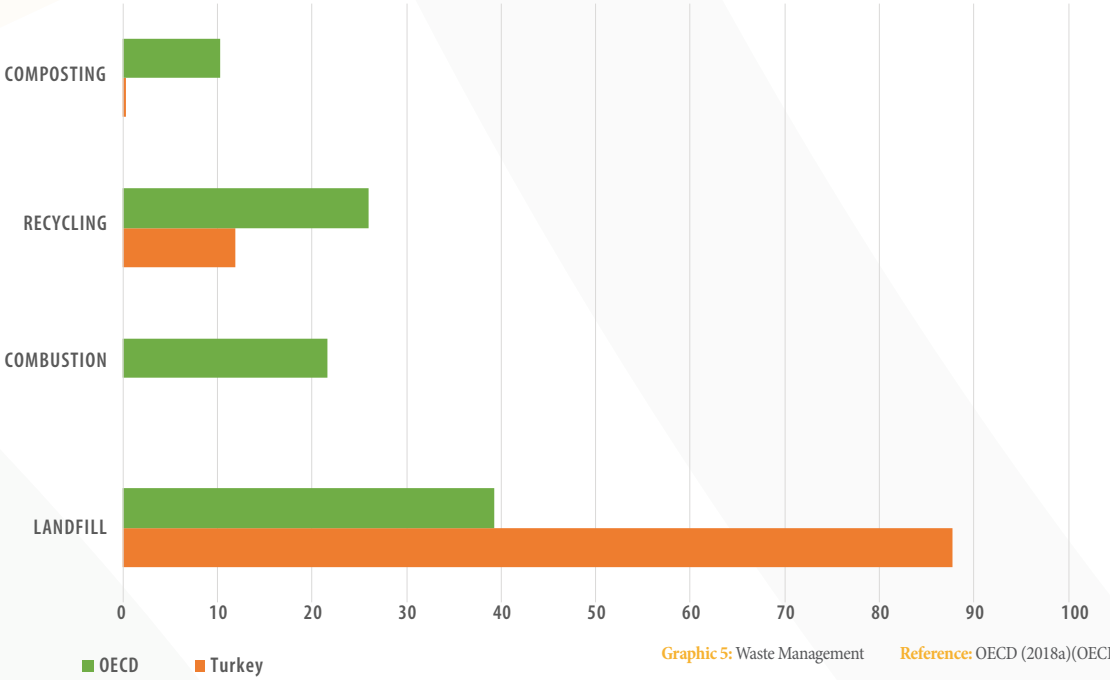


Figure 1: Resource utilization projection (2011-20602060)
Reference: OECD (2020a)

will limit the greenhouse gas emissions created while obtaining resources (UN, 2020).

The material consumption per capita in OECD countries is in a trend of decrease, except for the Baltic region. In the period from 2011 to 2017, the material consumption per capita decreased by 8 percent in OECD countries and by 2 percent in Turkey. In Turkey, total domestic material consumption increased by 8 percent in 2011-2017, while in OECD countries a declining trend (7 percent) was seen during the same period. On the other hand, although the material efficiency which is called as the output produced per material used was below the OECD average, it increased in the period from 2011 to 2017. A trend of increase is prevalent in the material footprint which measures the total amount of raw materials produced to meet the final consumption demands, in parallel with the use of import inputs. Material footprint per capita increased by 4 percent in the period from 2011 to 2017 throughout OECD and in Turkey.

While a positive view is displayed in relation to urban waste management throughout OECD countries, 26 percent of urban waste is recycled, 10 percent of it is composted and 22 percent of it is burnt for energy production. The recycling ratio in Turkey is far below the OECD average as of 2018 which is 26 percent, with 12 percent. Urban waste per capita is below the OECD average in 2018 with 414 kg, and it is observed that urban waste per capita has decreased since the 2000s. In addition to this, urban waste storage areas, which are no longer in practice in many European countries (for example, Switzerland, Germany, Finland, Sweden and Belgium), are widely used in Turkey and approximately 88 percent of urban waste was landfilled or buried as of 2018.

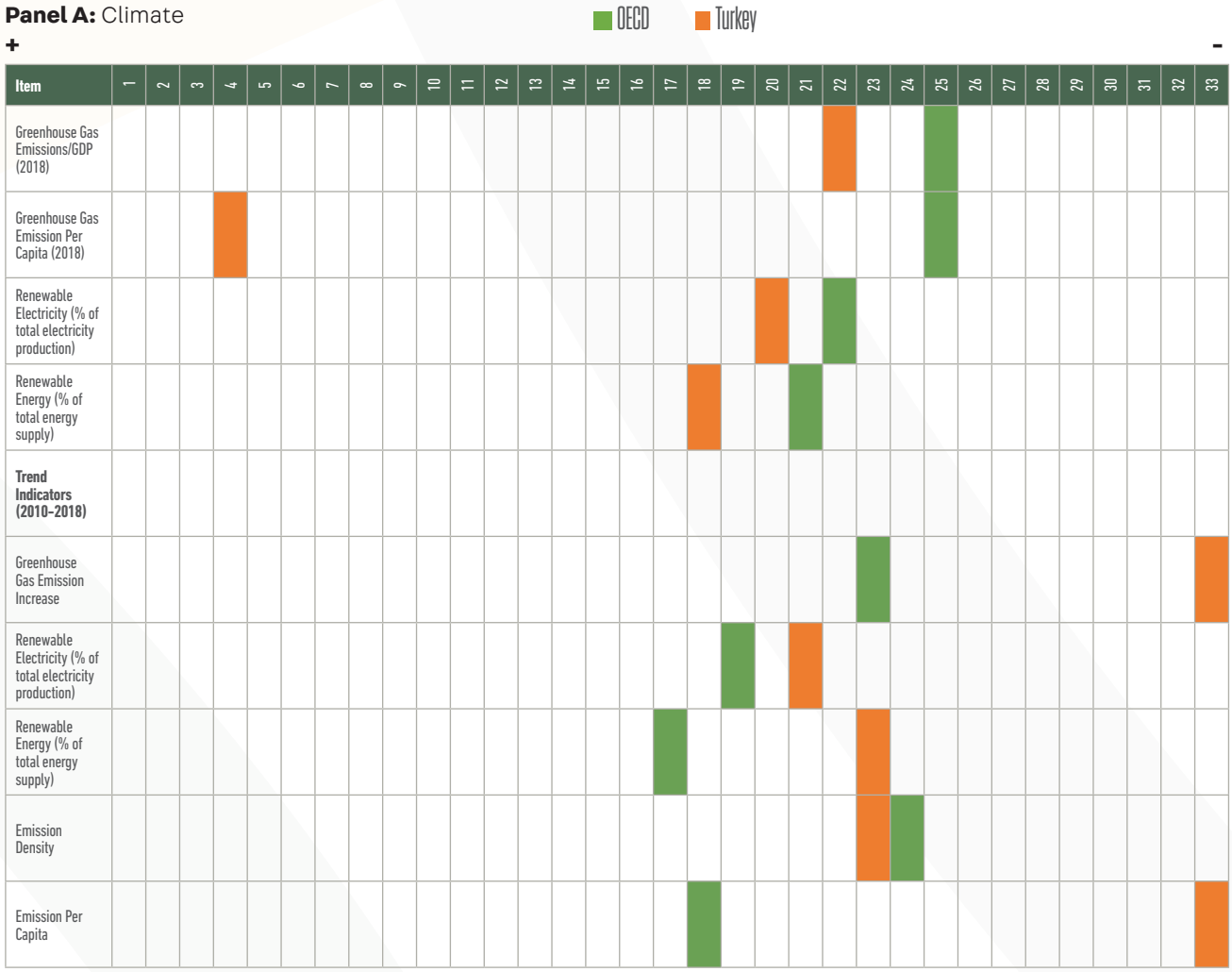


Graphic 5: Waste Management Reference: OECD (2018a)(OECD).

When we look at the share in total GDP of tax incomes, Turkey is in the forefront among OECD countries in environmental taxes. On the other hand, it is observed that high taxes cannot be used efficiently in the area of environment, and they only increase the costs. While the renewable energy tariff supports and the steps taken to increase the energy efficiency are positive, it is important to provide the environment for the emergence of circular business models (TUSIAD, 2016). When we look at the environmental protection expenditures made by the state, companies and households, it is observed that 46 percent of the expenditures were made in waste management and 38 percent of them were made in waste water management, and the expenditures made to prevent/decrease the ambient air pollution and the expenditures aimed at climate are only 3 percent (TÜİK, 2020a).

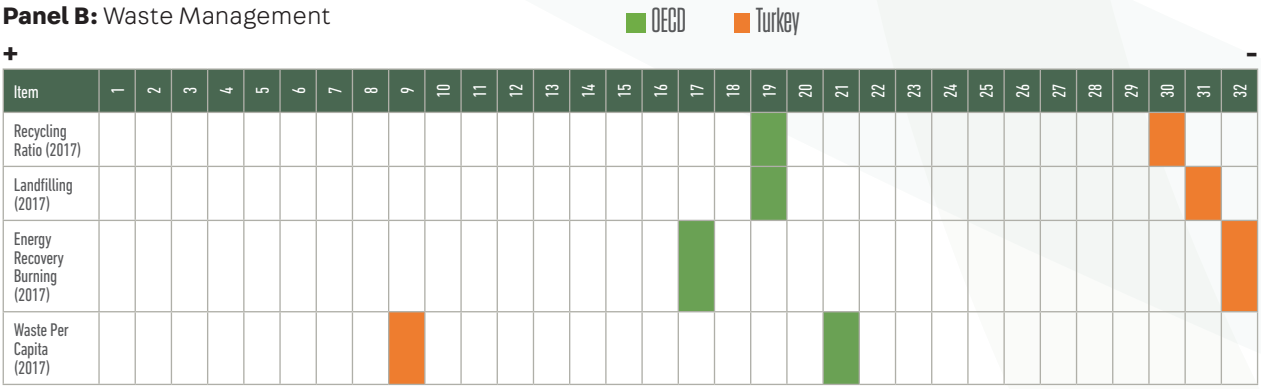
Environmental Indicators

Panel A: Climate



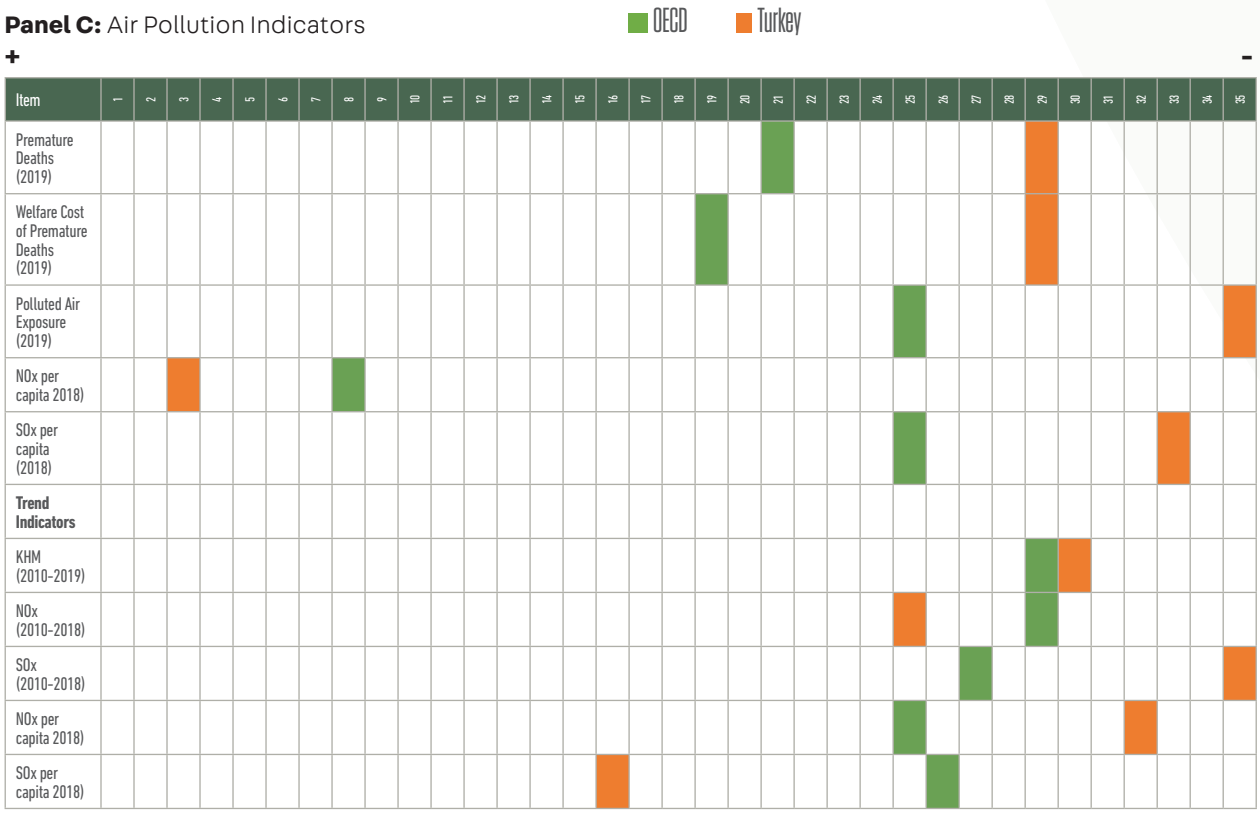
Notes: Chile, Colombia, Korea, Israel and Mexico were not included in the sorting due to lack of data.

Panel B: Waste Management



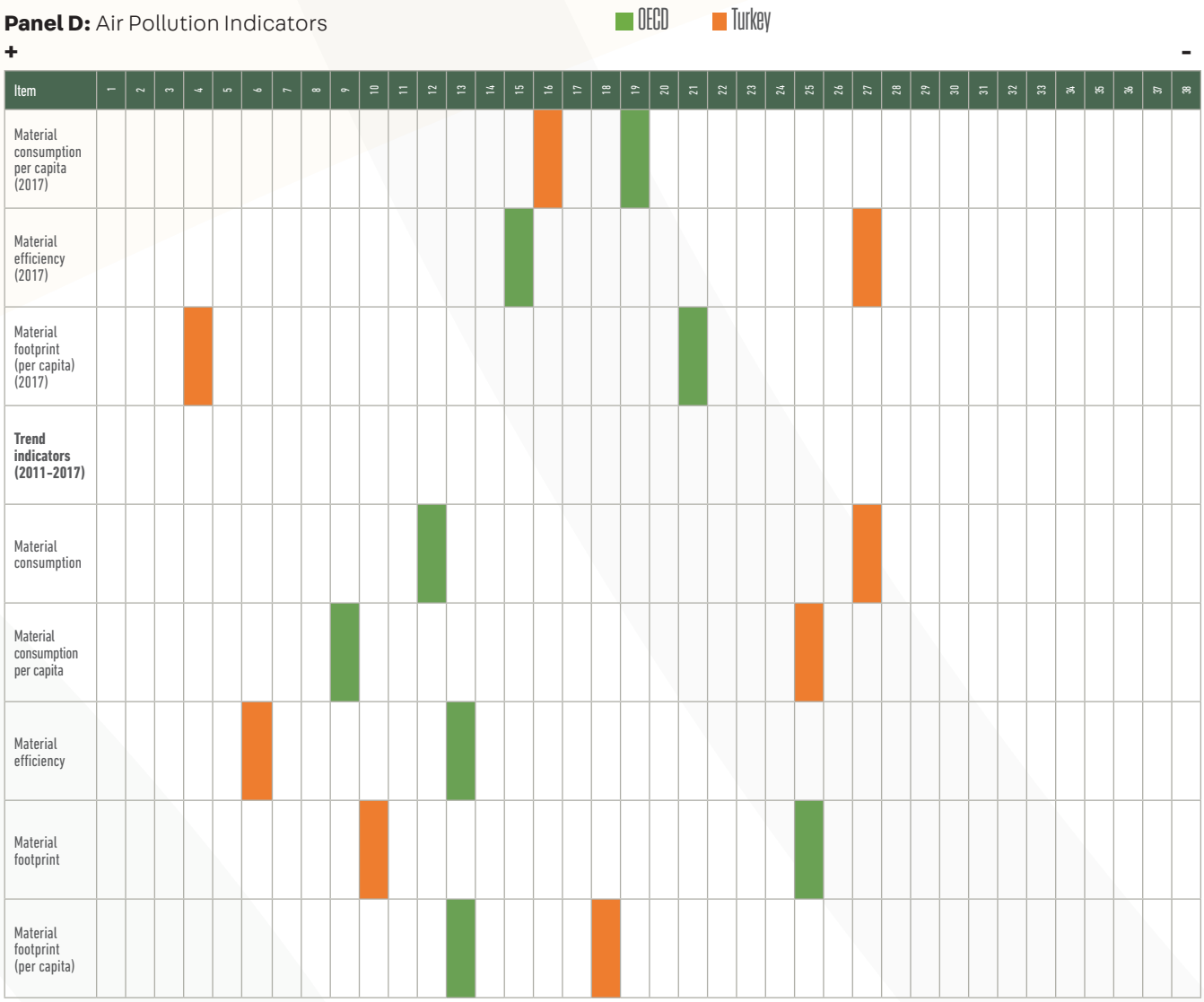
Notes: Australia, Canada, Colombia, Korea, Israel, Mexico and Holland were not included in the sorting due to lack of data.

Panel C: Air Pollution Indicators



Notes: Kore, Kolombiya ve Meksika veri eksikliği nedeniyle sıralamaya dahil edilmemiştir. Ozon ve partikül madde kaynaklı erken ölümler hesaplamalarda kullanılmıştır.

Panel D: Air Pollution Indicators



Panel E: Policy Indicators

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Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Share in total technologies of the technologies developed in relation to the environment (2016)																				OECD						Turkey						
Environmental patents produced per capita (2016)											OECD																		Turkey			
Emissions, CO_2 amount per ton of which is priced above 30 Euro, % of total emissions (2018)														OECD												Turkey						
Emissions, CO_2 amount per ton of which is priced above 60 Euro, % of total emissions (2018)													OECD											Turkey								
Environmental taxes, % of total tax income (2018)				Turkey																					OECD							
Environmental taxes, % of GDP (2018)																Turkey									OECD							
State R&D budget in relation to the environment, % of total state R&D (2017)												OECD															Turkey					
Relative advantage in the technology in relation to the environment (2016)																				OECD						Turkey						

Notes: Australia, Canada, Colombia, Korea, Lithuania and United States of America were not included in the sorting due to lack of data. OECD-wide emissions, CO2 amount per ton of which is priced above 30 and 60 Euro and the share in total state R&D of the state R&D budget in relation to the environment, were calculated by taking the average of the countries included in the data set. Relative advantage in technology in relation to the environment is calculated by dividing the share in all inventions of the inventions made in a country in relation to the environment by the share in all inventions of the inventions made in the world in relation to the environment. An index above 1 refers to a relative technological advantage or specialization in the technologies in relation to the environment compared to the world's value. Emission-pricing measures the pricing of emissions arising from use of energy through market-based policy tools (carbon tax, specific taxes levied upon use of energy, price of exchangeable emission prints) (OECD, 2016).

Reference: OECD (2018a)

THE EUROPEAN GREEN DEAL AND POLICIES TO BE IMPLEMENTED IN RESPECT OF SMEs

04 THE EUROPEAN GREEN DEAL AND POLICIES TO BE IMPLEMENTED IN RESPECT OF SMEs

04.01 THE EUROPEAN GREEN DEAL POLICY AREAS

The EGD is a new growth strategy aimed at reducing net carbon emission in all the sectors to 0 level until 2050 and making the EU's economy sustainable by decoupling economic growth from resource utilization. Due to the structure of the climate change covering many sectors, the EU is restructuring its policies in many different areas with the EGD. While the sustainable development goals within the scope of the EGD are positioned at the heart of its policy design and action process, the main motivation of its economic policies is sustainability and the wellbeing of the population (European Commission, 2019b).

The policy areas determined within the scope of the EGD are listed as follows:

- Climate Action
- Sustainable Industry
- Zero Pollution
  Protection of Biodiversity
- Food System from Farm to Dining Table
- Sustainable Agriculture
- Clean Energy
- Construction and Renovation
- Sustainable Transportation

The EU has proceeded with decoupling economic growth from greenhouse gas emission. While greenhouse gas emissions decreased by 23 percent in the EU from 1990 to 2018, the EU's economy grew by 61 percent. It is anticipated that greenhouse gas emissions will be decreased only by 60 percent until 2050 with the existing policies, and in this context it is important to adapt to the strategies introduced within the scope of the EGD (European Commission, 2019b). With the "Climate Law", the draft of which was submitted in March 2020 and which was agreed upon in 2021, the goal of being climate-neutral in 2050 was set into a legal framework. The "Climate Law" covers the measures which will ensure that the progress in this process is followed up and the actions taken are reviewed.

The European Commission set an intermediate goal of decreasing greenhouse gas emissions for 2030 at least by 55 percent compared to the levels in 1990, and this goal was incorporated into the law. All the policy instruments determined in relation to the climate to achieve the goal set for 2030 are planned to be reviewed in 2021. An implementation which comes to the forefront within the scope of climate action is the Carbon Border Adjustment Mechanism (CBAM). Although it is possible for the EU to achieve in itself the goal of being climate-neutral by 2050, achieving this goal at global level will not be possible unless international cooperation is made. Companies making production may pursue a policy of shifting their production to those countries which are less strict in respect of emissions, and bring along the carbon leakage risk. As a result of this, global emissions will continue to increase. The CBAM to be designed in this context will ensure that the import prices reflect the carbon content. It is also important, while preparing the CBAM arrangement, to make an assessment in relation to all the elements constituting the value chain of the product and all the sectors with which this value chain has a relationship (European Commission, 2020a).

The "New Industry Strategy", which is presented under the policy area of sustainable industry, is aimed at both a digital and a green transformation. With this strategy, with participation of all the stakeholders in the value chains constituting the industrial ecosystem, the existing processes are redesigned and new solutions are found with an entrepreneurial approach. (European Commission, 2020c). While digitalization and green economy are adopted as twin goals, ensuring competitiveness in international markets is also important.
In the policy design which is supported by the "Circular Economy Action Plan", it is aimed to develop climate-neutral and circular products, and to plan the circular design of all the products with sustainable product policy, especially in those resource-intensive sectors such as textiles, construction, plastics and electronics (European Commission, 2020a).
In this context, new business models allowing leasing and sharing on the consumer side are expected to gain importance in some sectors. In addition to this, it is important for consumers, during the product selection, to be able to follow up the properties of the products they buy (for example, electronic product passport), and to obtain reliable, comparable and verifiable information.

A comprehensive policy design was envisaged in the other areas of EGD as well, in addition to sectoral approaches, such as construction, agriculture and energy. Strategies that support sectoral goals are presented in different policy areas, such as the zero-pollution action plan, the biodiversity strategy, and climate. For example, while goals within the scope of construction and renovation policies are presented, such as assessing the long-term renovation strategies of member countries in relation to the energy performance of buildings, increasing the energy efficiency of buildings and decreasing the energy poverty, the potential of renovation to additionally revive the construction sector and to support SMEs and local employment, is emphasized.

It is aimed to form a sustainable food policy within the scope of the food system from farm to dining table. In this context, it is sought to take measures for bringing to the forefront sustainable actions such as precision agricultural implementations, agro-ecology and organic agriculture and reducing the use in agriculture of chemical pesticides, artificial fertilizers and antibiotics.

The food system from farm to dining table also has the potential for supporting circular economy efforts. Making obligatory the food labels which allow facilitation of selection by consumers of health and sustainable products, and accelerating the fight against food wastage, are also listed as other goals. With the new regulations, it will not be possible for the imported food products not in compliance with the environmental standards to enter into the EU market.

The EU will also provide financial support and technical assistance to help those who will be adversely affected by the transition to a green economy within the scope of the Fair Transition Mechanism. In January 2020, the European Commission declared the European Green Deal Investment Plan which aims to mobilize a minimum of 1 trillion Euro of sustainable investment in the next ten years. With this investment plan, which also includes the Fair Transition Mechanism, it is planned to mobilize a minimum of 150 billion Euro of support in the period from 2021 to 2027 to mitigate the socio-economic effect of transition in the regions which are dependent upon fossil fuel to a large extent.

04.02 VIEW OF SMEs IN TURKEY

Considering the share in the economy of SMEs, they play a key role in the transformation which will start with the EGD.

As of 2019, 99.8 percent of approximately 3.2 million enterprises operating in Turkey in non-agricultural sectors consist of SMEs. When we examine them on size basis, 92.3 percent of these companies are micro enterprises, 6.4 of them are small enterprises and 1.1 percent of them are medium enterprises. In addition, while SMEs constitute 50.4 of total turnover, they provide 72.4 of total employment. Sectors where SMEs densely operate are generally those sectors with a low entry cost, which do not have a capital requirement and which do not require skills and large-scale production. When we look at the sectoral breakdown of SMEs according to number of companies, it is observed that they operate mostly in the wholesale and retail trade sector (36.4 percent) and it is followed by transportation and storage (14.4 percent), manufacturing (12.4 percent), accommodation and food service activities (9.5 percent) and construction

(7 percent). When we look at the sectoral breakdown of the turnover created by SMEs, approximately 52.5 percent of total turnover is arising from the wholesale and retail trade and 20 percent of it is arising from the manufacturing industry. SMEs are also responsible for 44 percent of added value. While 28 percent of the added value created by SMEs is created by the manufacturing industry, 25 percent of it is arising from the wholesale and retail trade sector. Although those SMEs operating in the manufacturing industry have a share less than that of retail trade taking into consideration the total number of enterprises and turnover, it attracts the attention that they are responsible for a higher portion of the added value.

SMEs carrying operating in non-agricultural sectors constitute 72.4 percent of total employment. When we look at sectoral breakdown, while the retail sector, which has the largest share in turnover and total number of SMEs, has a share in total employment of 15.3 percent, the manufacturing sector constitutes 34.9 percent of total employment. While SMEs provide a significant part of existing employment, they also create new employment. Approximately 65 percent of the employment created in the non-agricultural sectors from 2014 to 2019 has arisen from SMEs. On a size basis, especially the micro enterprises have a big role in creating employment.

The "Circular Economy Action Plan", which is presented within the scope of the "New Industry Strategy" of the EGD, is aimed at making widespread the climate-neutral and circular products, especially in those resource-intensive sectors such as textiles, construction, plastics and electronics. Taking into consideration the existing sectoral breakdown of SMEs, 44 percent and 49 percent of total turnover in the textile and plastic sectors respectively, where circular economy practices can be carried out, is arising from SMEs.

An implementation which came to the forefront within the scope of resource efficiency actions and which was prioritized for SMEs in Turkey is the energy efficiency. According to the data of 2015, in the non-agricultural sectors, the share in total electricity expenses of SMEs is 45 percent and their share in total fuel expenses is 60 percent. In the manufacturing industry, the share in total electricity expenses of SMEs is 38.6 percent, and their share in total fuel expenses is 39.1 percent (Table 2). Thus, SMEs have an important role in increasing energy efficiency.

In addition to this, SMEs constitute a significant part of the agriculture sector. With the EGD, it will not be possible for imported food products not in compliance with environmental standards to enter into the EU market. In this context, it is important to support the development and adoption by SMEs of environment-friendly sustainable implementations in the agriculture sector.

As a result, taking into consideration the share in economy of SMEs, they play a significant role in limiting the environmental effects. In addition to these roles, SMEs have the potential for being the driving force in creating both employment and added value by taking advantage of the opportunities offered by the green transformation thanks to their innovative capacities and motivations.

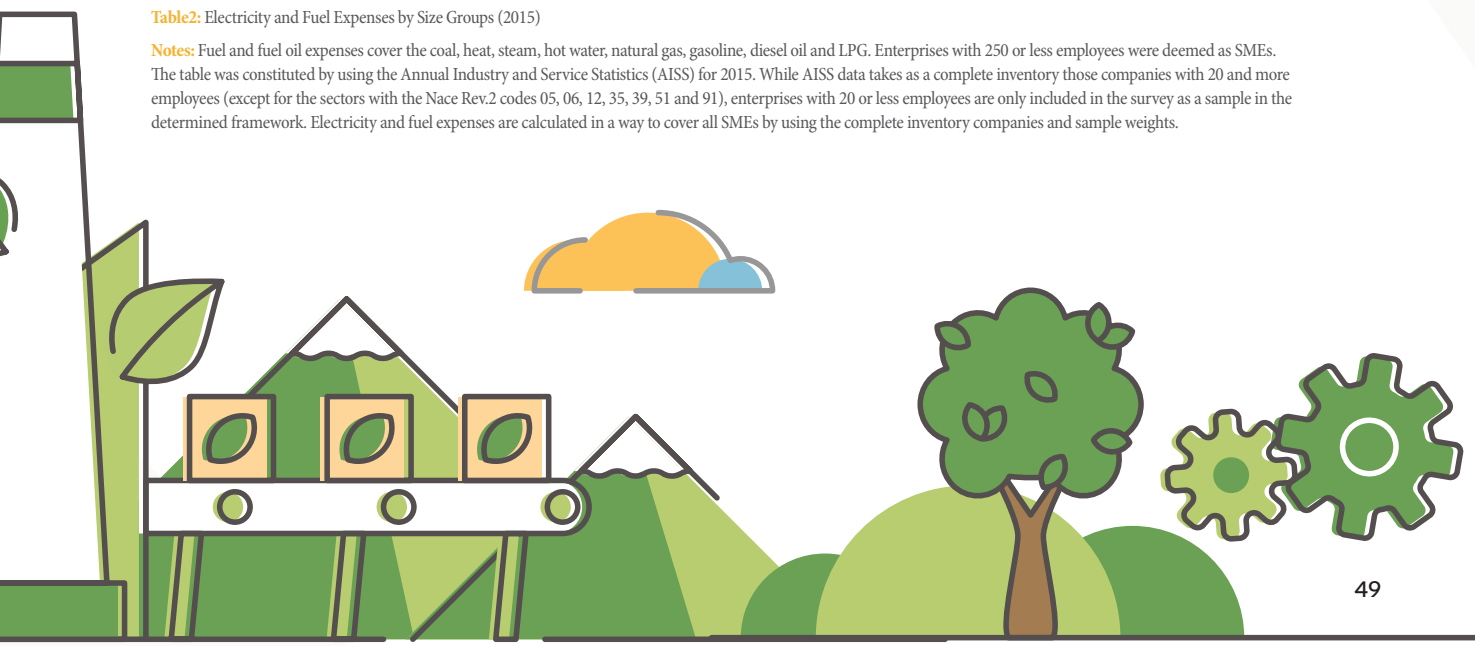
	Number of Enterprises			Turnover (million TL)			Employment		
	Total	SME (%)	Large (%)	Total	SME (%)	Large (%)	Total	SME (%)	Large (%)
Mining and quarries	5.079	99,8	0,2	67.543	32,1	67,9	127.520	47,8	52,2
Production	403.018	98,0	2,0	2.523.560	35,9	64,1	4.084.281	63,0	37,0
Electricity	5.334	99,3	0,7	348.885	11,6	88,4	113.392	21,8	78,2
Water supply	4.465	95,6	4,4	40.476	43,0	57,0	69.624	40,2	59,8
Construction	224.730	98,8	1,2	597.091	63,7	36,3	1.397.360	85,5	14,5
Wholesale and retail trade; repair of motor vehicles and motorcycles	1.169.837	99,7	0,3	3.916.786	60,4	39,6	3.770.320	82,4	17,6
Transportation and storage	463.708	99,9	0,1	539.664	44,7	55,3	1.383.523	77,9	22,1
Accommodation and food service activities	305.363	99,9	0,1	182.130	63,7	36,3	1.309.180	77,4	22,6
Information and Communication	40.115	99,9	0,1	153.250	37,2	62,8	234.180	70,4	29,6
Real estate activities	50.515	99,7	0,3	59.073	74,3	25,7	125.081	90,0	10,0
Occupational, scientific and technical activities	225.580	99,9	0,1	143.248	80,1	19,9	728.152	90,6	9,4
Administrative and support service activities	57.512	99,9	0,1	210.230	47,6	52,4	1.148.039	35,5	64,5
Human health and social service activities	46.458	99,4	0,6	56.717	51,9	48,1	395.254	65,2	34,8
Other service activities	172.916	99,9	0,1	15.749	96,1	3,9	306.506	99,1	0,9
Total	**3.228.421**	**99,8**	**0,2**	**8.940.594**	**50,4**	**49,6**	**15.656.571**	**72,4**	**27,6**

Table1: Key Indicators by Economic Activity and Size Groups, 2019 (TURKSTAT, 2020b).

	NACE Rev.2 Sector Name	Electricity Expenses		Fuel Expenses	
		SME	Large	SME	Large
B	Mining and quarries	40,8%	59,3%	61,6%	38,4%
C	Production	38,6%	61,3%	39,1%	60,8%
D	Production and distribution of electricity, gas, steam and ventilation systems	35,7%	64,1%	36,7%	63,3%
E	Water supply; sewerage, waste management and improvement activities	17,8%	82,0%	25,0%	75,0%
F	Construction	76,7%	23,2%	78,5%	21,4%
G	Wholesale and retail trade; repair of motor vehicles and motorcycles	64,6%	35,2%	85,0%	15,0%
H	Transportation and storage	25,3%	74,7%	70,8%	29,0%
I	Accommodation and food service activities	65,0%	35,0%	67,0%	33,0%
J	Information and Communication	14,8%	85,2%	60,0%	39,8%
L	Real estate activities	92,0%	8,0%	94,5%	5,4%
M	Occupational, scientific and technical activities	94,7%	5,3%	93,0%	7,1%
N	Administrative and support service activities	69,1%	30,8%	61,8%	38,0%
P	Training	43,1%	56,9%	68,1%	32,0%
Q	Human health and social service activities	41,4%	58,6%	64,1%	35,9%
R	Culture, art, entertainment, recreation and sports	78,4%	21,7%	48,6%	51,5%
S	Other service activities	99,4%	0,6%	98,4%	1,6%
Total		**45,2%**	**54,7%**	**59,5%**	**40,5%**

Table2: Electricity and Fuel Expenses by Size Groups (2015)

Notes: Fuel and fuel oil expenses cover the coal, heat, steam, hot water, natural gas, gasoline, diesel oil and LPG. Enterprises with 250 or less employees were deemed as SMEs. The table was constituted by using the Annual Industry and Service Statistics (AISS) for 2015. While AISS data takes as a complete inventory those companies with 20 and more employees (except for the sectors with the Nace Rev.2 codes 05, 06, 12, 35, 39, 51 and 91), enterprises with 20 or less employees are only included in the survey as a sample in the determined framework. Electricity and fuel expenses are calculated in a way to cover all SMEs by using the complete inventory companies and sample weights.



04.03 EGD'S STRATEGY FOR SMEs

In accordance with the goal of achieving a sustainable and digital Europe in parallel with the Industry Strategy, the EGD's Strategy for SMEs was adopted in March 2020 (European Commission, 2020d). The SMEs Strategy was built by the EU on a powerful infrastructure fed by different frameworks and support programs (Small Enterprise Law 2008, Start-up and Scale-up Initiative (2016), Competitiveness for Small and Medium Enterprises (COSME) Program and Horizon 2020 program).

The European 2020 Strategy, which is one of the most important elements of this infrastructure and which covers the period from 2010 to 2020, prepared an infrastructure for the EGD by setting various goals under the titles of climate policies and energy efficiency, for the purpose of making the EU a sustainable economy in the future. The EU's Strategy for SMEs provides a road map, taking into consideration the structure of SMEs ecosystem which differs considerably in breakdowns of business model, size, age, labor composition and sector. Taking into consideration the needs arising in parallel with these differences within the scope of the Strategy, it is sought to make SMEs competitive, sustainable and durable. The Strategy for SMEs, which was built in accordance with this goal, focuses on the titles of support for sustainability and digitalization, reduction of regulatory burden and improvement of access to market, and access to financing (Figure 2).

Figure 2: Action Plan for SMEs

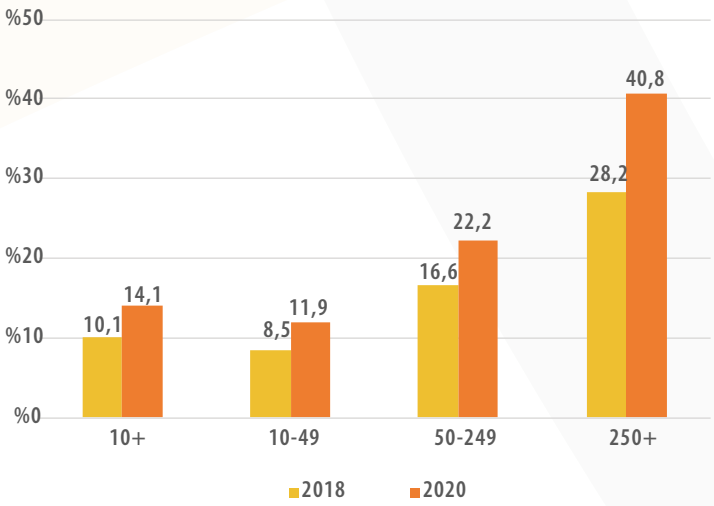
It is important to take a path in parallel with digitalization in ensuring sustainability. SMEs cannot yet fully make use of the strategies focused on data, which are a part of digital economy. Digitalization provides SMEs with great opportunities to increase both the efficiency of their production processes and their ability to renew their products and business models.

In Europe, compared to 54 percent of large companies, only 17 percent of SMEs successfully integrated digital technologies into their business. When we look at Turkey, the rate of making use of different digital technologies is considerably low in SMEs. When the prominent obstacles to digitalization are considered, financial resource insufficiencies and infrastructure deficiency come to the forefront in Turkey (Graphic 6).

Graphic 6: Obstacles to Digitalization

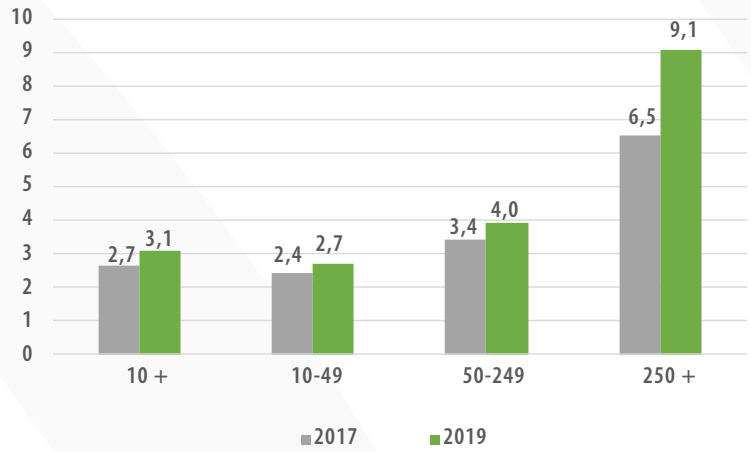
Reference: Flash Eurobarometer 486 (2020)

While advanced technologies such as artificial intelligence come to the forefront in large companies is an important issue, SMEs don't have this awareness. According to research covering 112 large companies in Turkey, although 80 percent of large companies consider artificial intelligence an important issue, 65 percent of them are still in the planning stage (Microsoft, 2019).



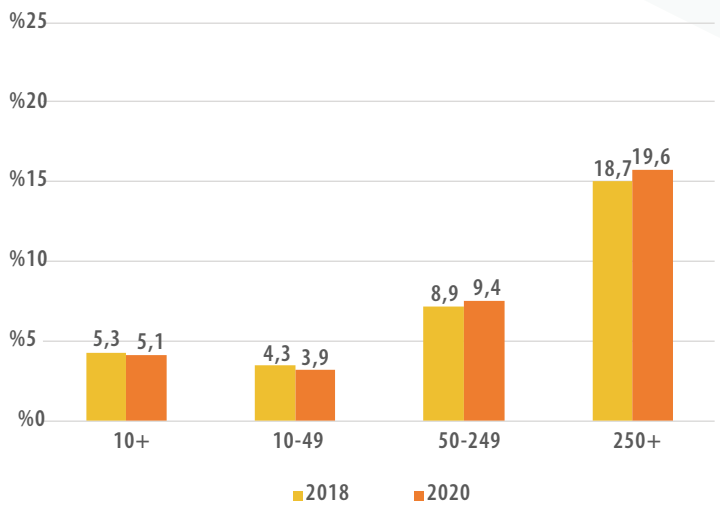
Graphic 7: Ratio of Enterprises Using Cloud Computing by Number of Employees, 2018, 2020

Reference: TURKSTAT's Research on the Use of Information Technologies in Enterprises (TURKSTAT, 2020b).



Graphic 8: Ratio of Enterprises Using 3-D Printers by Number of Employees, 2017, 2019

Reference: TURKSTAT's Research on the Use of Information Technologies in Enterprises (TURKSTAT, 2020b).



Graphic 9: Ratio of Enterprises Using Robot Technology by Number of Employees, 2018, 2020

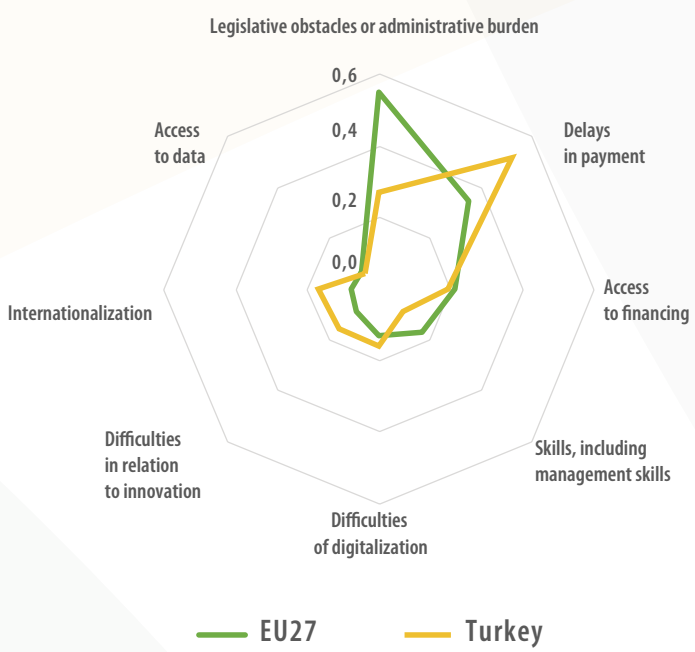
Reference: TURKSTAT's Research on the Use of Information Technologies in Enterprises (TURKSTAT, 2020b).

According to the results of Research on the Use of Information Technologies in Enterprises (TURKSTAT, 2020) which was made throughout Turkey, the ratio of use of paid cloud computing service reached a level of 40.8 percent in large companies in 2020. This ratio is at a level of 11.9 in small enterprises (Graphic 7). While 3-D printer use is 3.1 percent throughout Turkey, this ratio is 9.1 percent in large companies and 2.7 and 4 respectively in small and medium enterprises (Graphic 8). While only 5.1 of the enterprises use robot technology, this ratio is 19.6 percent for large companies, 9.4 percent in medium-sized companies and 3.9 percent in small companies (Graphic 9).

Another need to achieve the digitalization which was emphasized within the scope of the strategy of SMEs is highly skilled labor. The existing structure of labor should also adapt to this transformation. With digitalization and use of new technologies, the demand for a labor with digital skills will increase. While ensuring the adaptation of the existing labor, in addition to training and developing skills, an approach where skill and training differences between genders are observed for all the SME employees should be adopted.

Another goal of the EU's Strategy for SMEs is to reduce the regulatory burden on SMEs and to improve the access to international market. The degree of compliance with the directives, standards and regulations of SMEs is lower than large companies due to their limited resources. Only 17 percent of all the manufacturing sector SMEs in Europe are exporting in the EU market, and these companies see the legislation as complicated due to different procedures in the countries within the EU market.

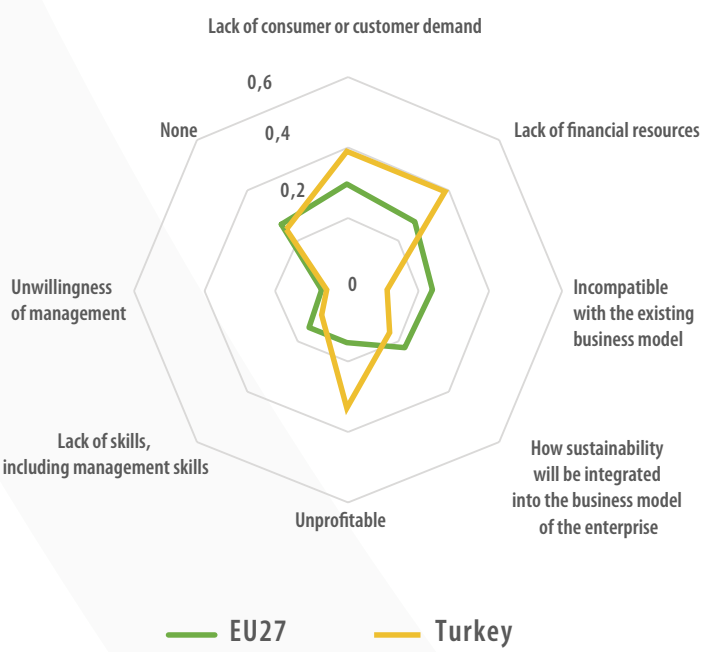
Graphic 10: Problems of SMEs



Reference: Flash Eurobarometer 486 (2020)

When we look at supply chain processes, primary customers of SMEs are large companies having the potential to create inequality in their bargaining power. Only 40 percent of the enterprises in the EU are paid in a timely manner. In this context, the commission puts emphasis on supporting the implementation of the Late Payment Directive by equipping it with powerful monitoring and implementation tools. Similarly, 52 percent of Turkish SMEs specify the delays in payment as one of the biggest three problems they encounter (Graphic 10).

Graphic 11: Sustainability Problems of SMEs



Reference: Flash Eurobarometer 486 (2020)

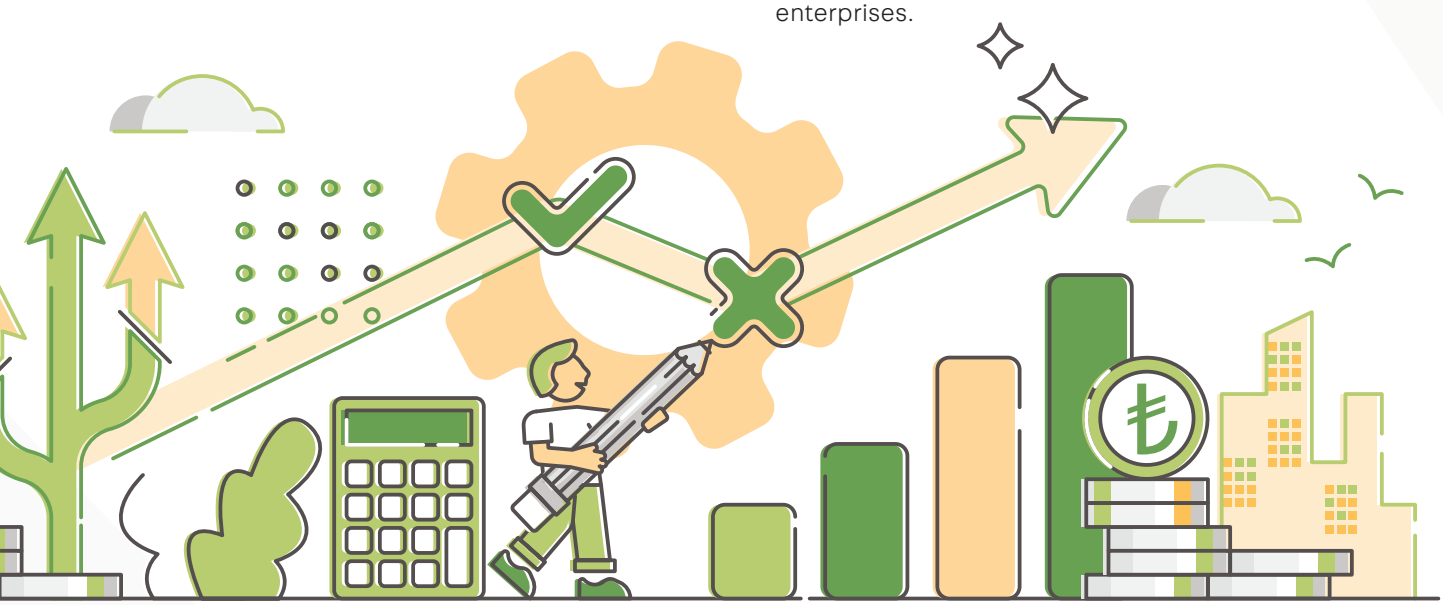
Access to financing is another issue which is prioritized in the strategy for SMEs. Problems in the access to financing is one of the biggest three problems of 21 percent of EU SMEs and 19 percent of Turkish SMEs (Graphic 10). Lack of financial resources also comes to the forefront as one of the most important obstacles to the enterprises in being sustainable (Graphic 11).

SMEs should finance the investment they need for the requirements of green transformation. In

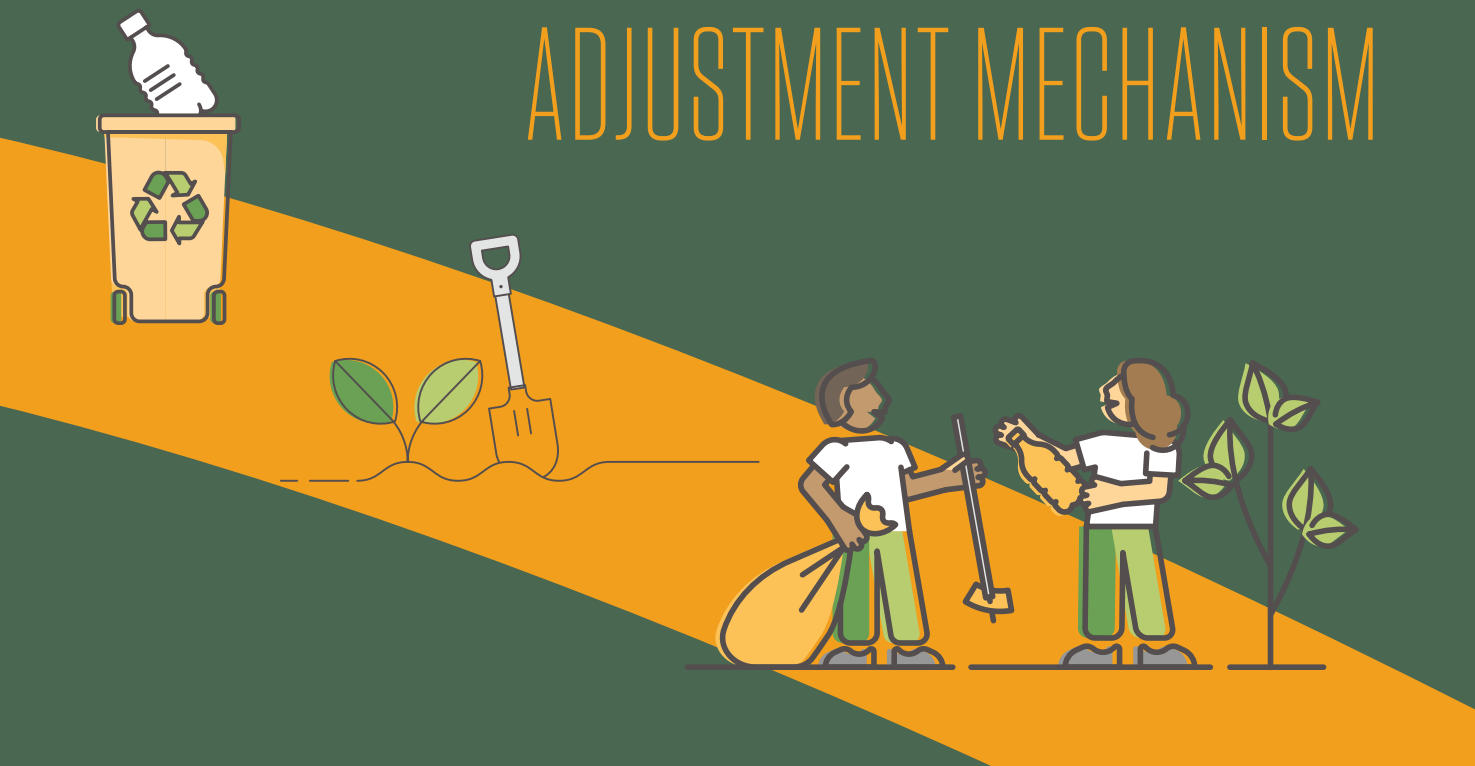
this framework, financial resources of SMEs need to be diversified.

Although the risk capital invested in the European countries increased by 13 percent and reached 8 billion Euro in 2018, this ratio is eight times lower compared to USA (European Commission, 2020d). Capital markets are an important financing resource for those SMEs with a growth potential. There are limited opportunities in Europe for SMEs for the financing created through capital markets by initial public offering (IPO). When we look at statistics, only 10 percent of European companies obtain financing from capital markets, and this ratio is at a level of 25 percent in USA. On the other hand, while only 11 percent of the enterprises in Europe classify the capital as an applicable financing option, only 1 percent of them use it. The EU's Strategy for SMEs puts emphasis on the financing of SMEs, on choices such as fintech solutions, loans provided by observing social gender equality, and increasing access by start-ups to equity financing. Financing of SMEs in Turkey is based upon bank loans mostly, like in the EU (European Commission, 2019a; OECD, 2020b). Loans to SMEs in Turkey have, except for the decrease of 1.6 percent in 2009, grown steadily throughout the period from 2007 to 2018 (OECD, 2020b). On the other hand, risk capital and private capital investments in Turkey are displaying an unforeseen trend (OECD, 2020b). Risk capital investments have, after having reached a peak in 2011, continued to be more stagnant until 2017. In 2018, an increase of 108 percent was observed in risk capital and private capital investments compared to 2017. As of 2018, the total value of risk capital and private capital investment funds is 1.5 billion TL (OECD, 2020b).

On the loan demand side, access to bank financing may be more difficult for smaller and younger SMEs due to insufficiency of guarantee provision and bilateral relationships with loan institutions. On the loan supply side, the risk avoidance tendency of banks limits the loan provision to smaller enterprises.



CARBON BORDER ADJUSTMENT MECHANISM



05 CARBON BORDER ADJUSTMENT MECHANISM (CBAM)

An important implementation of the climate strategy provided within the scope of the EGD is the CBAM. Taking into consideration the likelihood that the emission reduction goals may differ between countries, the CBAM aims to minimize the carbon leakage risk. Carbon leakage occurs due to the Emissions Trading System (ETS), which is one of the primary tools of the EU in combating climate change and which has been implemented since 2005 (see Box 1). The carbon pricing, which is implemented within the scope of the ETS system, is adversely affecting the costs of EU manufacturers and their level of competitiveness in international markets in parallel with this. As a result, in those sectors where the carbon emission is high, production is shifting to those countries where environmental policies are loose. The fact that carbon leakage and emissions in global scale have not been reduced endangers both the EGD goals and the goals of the Paris Agreement.

With the CBAM arrangement, it is hoped to make expensive those products with much carbon density and to make widespread the production of sustainable products in the EU and in other countries. This tool should be designed in a way to be in compliance with the rules of the World Trade Organization and other international obligations of the EU (European Commission, 2020a). The following options are considered for the CBAM.

» The expansion of the ETS implemented in the EU in a way to cover the import, and in this framework, the purchasing of an emission right by foreign manufactures within the EU's emission trading system
» Import tax levied upon the products produced in those sectors bearing carbon leakage risk
» A consumption tax to be levied upon the products (produced in or imported to EU) in those sectors with carbon leakage risk

It is considered that the maximum likelihood among these options is the expansion of the ETS in a way to cover the import (TÜSİAD, 2020). The European Commission started an open public consultation process in relation to the CBAM, and this consultation ended on October 28, 2020. The draft is expected to be submitted in June 2021 and to start to be implemented in 2023 at the latest.

The country opinion which was reported to the EU Commission by the Ministry of Trade emphasizes that, instead of focusing on the protective measures in the transition of the EU to green economy, creating partnerships which will contribute to the EU's strategic vision should be focused on. The country opinion reiterated the obligations of Turkey within the scope of the Customs Union, World Trade Organization and UNFCCC, and emphasized Turkey's

different position decoupling from third countries as required by its position as a partner to the Customs Union. Turkey also emphasizes that gradual implementation, which will provide third countries with the time necessary to increase their local climate policy efforts, is necessary. While the CBAM will directly or indirectly affect all the industry sectors exporting to the EU, it will also affect the supply decisions throughout the value chain of those EU-based manufacturers using import inputs (BCG, 2020).

Within Phase 4 covering the period from 2020 to 2030, the sectoral scope of ETS was determined by considering the Energy Intensive Trade Open (EITO) sectors with carbon leakage risk. With the implementation of ETS outside of the EU as well, the protection method implemented through free emission rights granted to the Energy Intensive Trade Open (EITO) sectors with carbon leakage risk, operating within the EU, will not be needed (TÜSİAD, 2020). In addition, the likelihood that the ETS may cover non-EITO sectors, is also considered.

Within the EU's ETS system, the existing emissions cover the emissions which arise during the production process of the company (scope 1). Carbon emission is also made through scope 2 and scope 3. Scope 2 covers the emissions caused by the electricity input outsourced by the company, and scope 3 covers the emissions caused by the inputs other than electricity (for example, raw materials). The fact that only scope 1 is taken into consideration in the existing system is for the purpose of preventing double taxation, because the prices of scope 2 and scope 3 emissions are mostly paid in the production phase within the EU. For the countries outside of EU27 like Turkey, where carbon pricing is insufficient, scope 2 and 3 emissions are also expected to be included in the calculation.

Box 1: The EU Emissions Trading System (ETS)

The EU ETS, which was established in 2005 and which is the first and largest carbon market of the world, is one of the primary tools of the EU in combating climate change. The emissions arising from the facilities within the scope of the ETS constitute 40 percent of total emissions. Thanks to the ETS, a reduction of approximately 35 percent was achieved in greenhouse gas emission from 2005 to 2019.

The EU ETS was put into practice in phases, and more sectors and gas were included in the ETS in time. Petroleum and refinery products, paper products, glass/ceramic/cement, iron-steel, electricity, chemical products and airline transport are covered by the ETS.[4]

In order to achieve the intermediate goal of minimum 55 percent of net reduction in the greenhouse gas emissions until 2030, in the phase four which is in practice in the period from 2020 to 2030, the Commission proposes to review the scope of the ETS and to expand it in a way to probably include the new sectors.

The EU ETS works in accordance with the principle of "cap and trade". An upper cap is determined for the total amount of greenhouse gases that may be emitted by those facilities included in the ETS system, and this upper cap is continuously decreased. In the ETS system, the Energy Intensive Trade Open (EITO) sectors with carbon leakage risk are determined according to the "carbon leakage indicator". These sectors are allocated a free pollution right for the emission of a certain amount of greenhouse gas, in order that they can maintain their competition level. Those companies with less emission may sell their export surplus rights, and those producing emissions above the limit may continue their production by purchasing additional quota.

[4] https://ec.europa.eu/clima/policies/ets_en

In the Phase 4 period from 2020 to 2030, the ETS system was revised within the scope of both the EU's emission reduction goals for 2030 and the contribution declaration of the Paris Agreement. In this context, it was planned

1) To increase the annual reduction rate in the allowances to 2.2 as of 2020.
2) To continue with free allocation of the pollution rights for the international competitiveness of those sectors with carbon leakage risk, and to ensure that the rules for determination of pollution right will also reflect the technological progress.
3) To support with financing mechanisms the innovation and investment difficulties faced by the industry and electricity sector within the scope of the transition to low-carbon production.

Sectoral Analysis for Turkey

Under the scenario of expanding to outside of the EU the existing ETS system in Turkey, the degree to which companies will be affected by this new mechanism can be considered by taking into consideration two dimensions:

1) The ratio to total turnover of the export made to the EU27 countries on a sectoral and scale basis,
2) The tax rate implied by the carbon amount contained in the sectoral export to the EU
The cost effects to arise as a result of the implementation of the EU ETS for the sectors (and scales) where these two parameters are high are expected to be excessive.

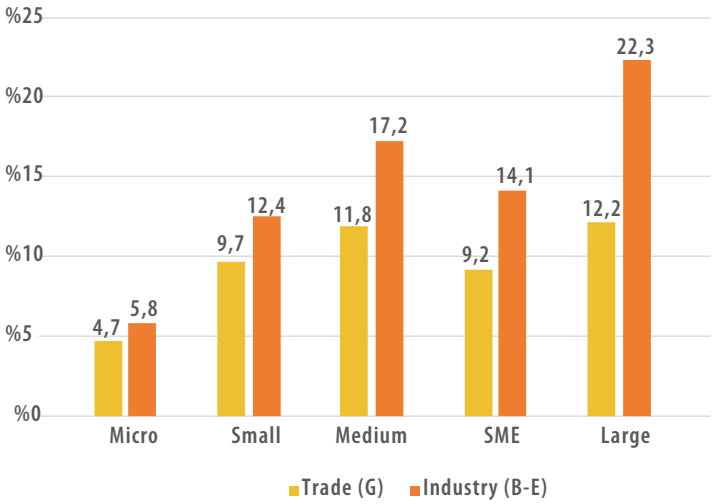
First Dimension: Share of EU in Sectoral Export

By using TURKSTAT's data, the share of the export by micro, small, medium and large companies to the EU27 market in their total turnover was calculated at the sectoral level (NACE 2. Rev.2).[5]

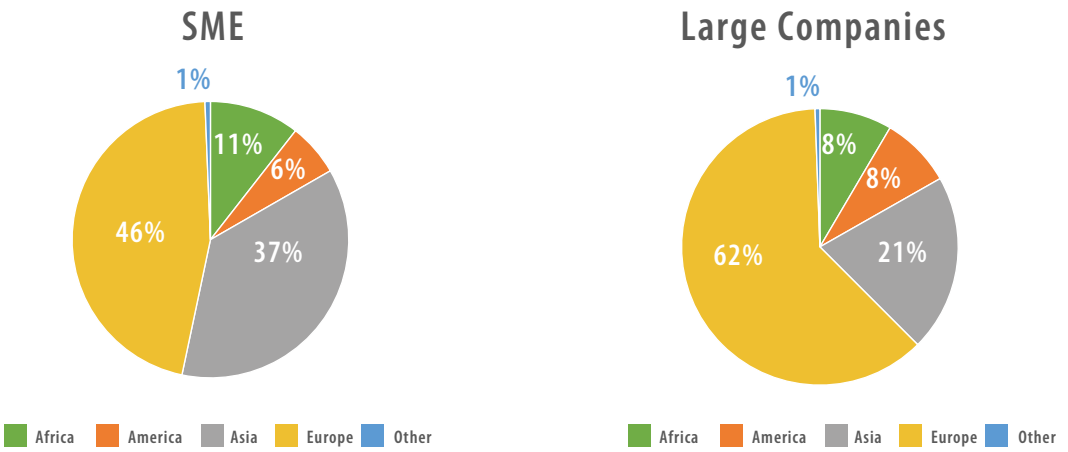
In order to carry out export activities, companies are subject to cost items such as the cost of acquisition of knowledge specific to the target markets to which the export is made, the establishment of distribution network and product diversification aimed at target markets. As a result of this, only those companies having a productivity above the "threshold productivity" which is described as minimum productivity, may carry out export (Melitz, 2003). Standard findings of the foreign trade literature report that exporters operate in larger, more productive and capital intensive

[5] TURKSTAT's annual industry and service statistics, business records data and foreign trade data were used. Only the data in relation to export of goods were used in calculations.

sectors due to these costs.(Bernard et al, 2007). In parallel with this, the share of export of SMEs in their total turnover is low compared to that of large companies (Graphic 12). SMEs constitute 37 percent of total exports (micro 3.8 percent, small 14 percent, medium 18.7 percent). When we look at the breakdown of the export markets of SMEs, it is observed that 46 percent of their total export is directed towards the EU countries, and this ratio is at a level of 62 percent in large companies (Graphic 13).



Graphic12: Export/Turnover **Reference:** The Report on the Statistics of Turkish SMEs 2019 (TURKSTAT, 2020b)



Graphic13 : Export Market Distribution **Reference:** The Report on the Statistics of Turkish SMEs 2019 (TURKSTAT, 2020b)

Second Dimension: Carbon amount contained in the sectoral export and the cost thereof

Within the scope of the second dimension, the cost that Turkey will face in the scenario of expanding the EU ETS export in a way to cover the export is calculated. For this, first of all the input-output tables created by OECD for 2015 were used. The input parameters contained in the input-output tables serving to measure the inter-sectoral flow of goods and services reflect the inter-sectoral interaction. The lines appearing in the table presents the use by other sectors of the output produced by a certain sector and the final demand (consumption, investment, export). The columns in the table on the other hand show the breakdown of the inputs necessary for the creation of the output of any sector and the added value.[6]

The greenhouse gas emissions contained in the export were calculated for 33 sectors by using the input-output tables (See Annex 2). While making this calculation, the costs of scope 2 and scope 3 were also taken into consideration in addition to the cost of scope 1. For sectoral emissions, the Air Emission Accounts database issued by OECD was used and this table was consolidated based on the sectoral decoupling in the input-output tables. The sectoral carbon emission arising from export in relation to the sector i (Ci) can be calculated based on the following equation.

$C^i = C^d \times (I-A)^{-1} E$

Here, C^d refers to the sectoral emissions emitted per unit of supply, (I-A)-1 refers to the inverse Leontief matrix and E refers to the sectoral export.[7] The results in relation to the carbon emission contained in the export, calculated as a result of this, are presented in Graphic 14. Total CO_2 emissions emitted in 2015 is 393.4 million tons, and our export contains 77.8 million tons of CO_2.

After having calculated sectoral carbon emissions, the carbon cost (CC) to be paid per ton for the export products while crossing the EU border was calculated according to two scenarios at 30 Euro, which is the existing value, and at 50 Euro, which it is expected to rise after the CBAM based on the following formula:

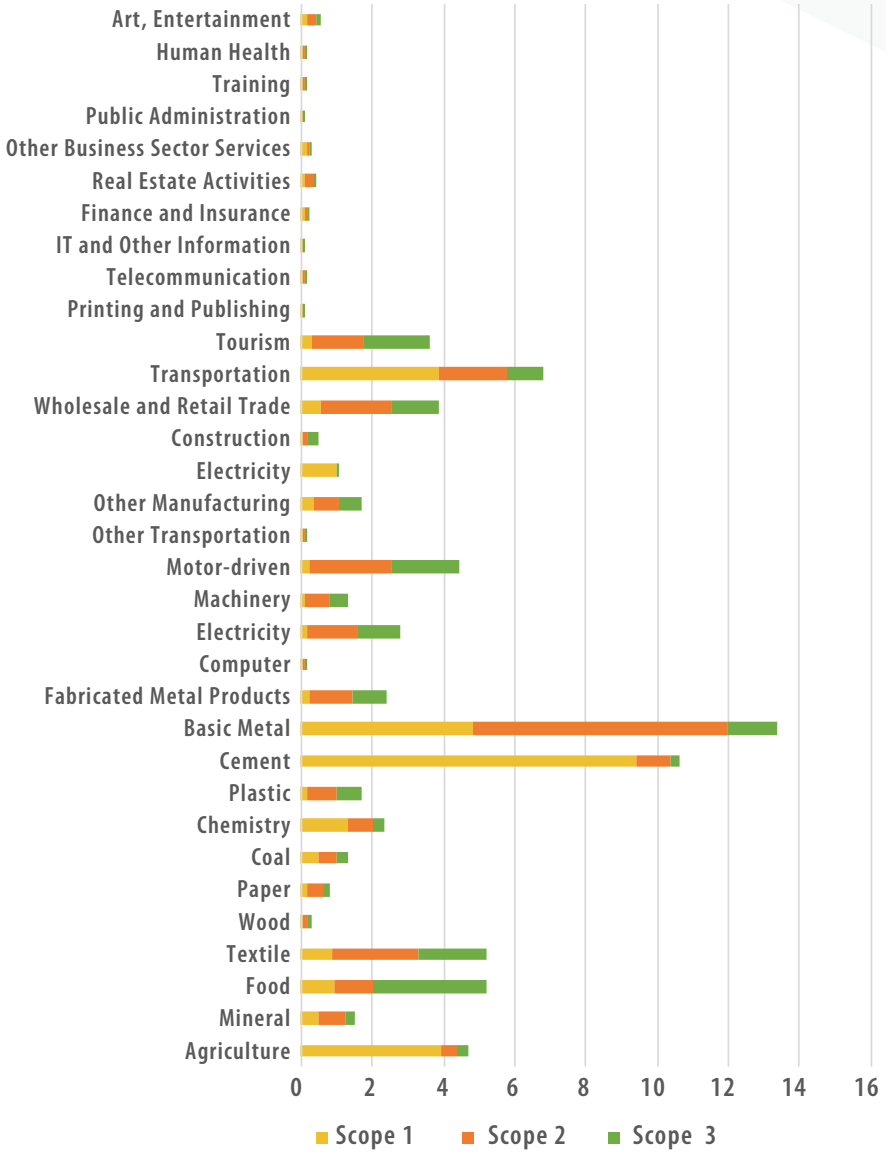
$CC_i = (30 \text{ veya } 50 \text{ Euro/ton } CO_2) \times C^i$

While making this calculation, the emission amount emitted from the facilities during production was assumed to be above the reference values determined by the EU. After having calculated the emission cost, the ratio of this cost to the sectoral export value in 2015 approximately shows the tax to which this cost corresponds. (Graphic 15).

It is seen in the analysis made that the highest tax rate belongs to the electricity sector with 19.8 percent. Cement sector (Nace Rev2. 23), agriculture (Nace Rev2.1-3) and the basic metal industry (Nace Rev2. 24) may be exposed to a cost corresponding to a tax rate of 18.3 percent, 5.1 percent and 4.8 percent respectively. (See Annex-3)

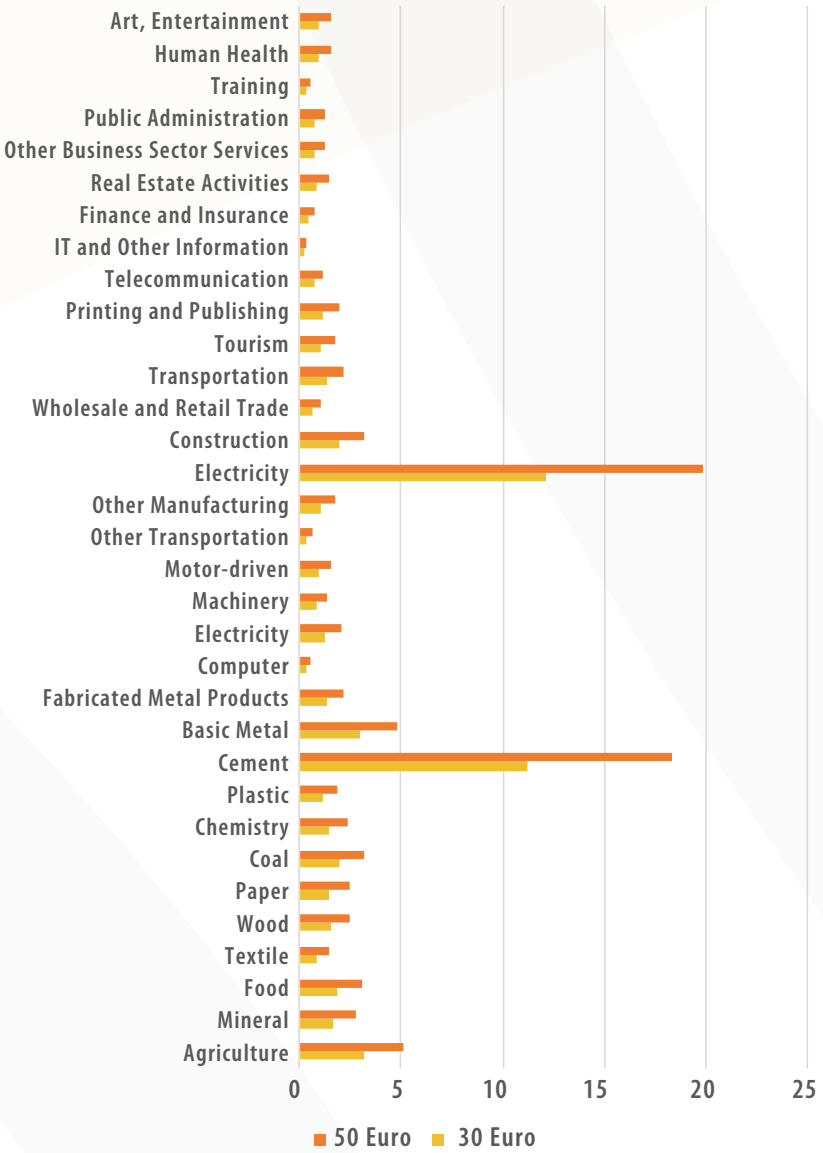
[6] The input-output tables issued by TURKSTAT are not issued at frequent intervals, and they were last issued in 2012. While change of existing production structure and inter-sectoral connections can be in question, the last sound data belongs to 2012. Tables of 2012 also constitute the infrastructure of the up-to-date studies on Turkey (see Ozcan Tok and Sevinc, 2019). Within the scope of our study, the input-output table in relation to 2015, which was created by updating of the TURKSTAT 2012 table by OECD, was used.

[7] While the elements of Cd and Ediagonal contain the sectoral emissions emitted per unit of supply and the export values, they are in 33X33 matrix form which is 0 in other places.



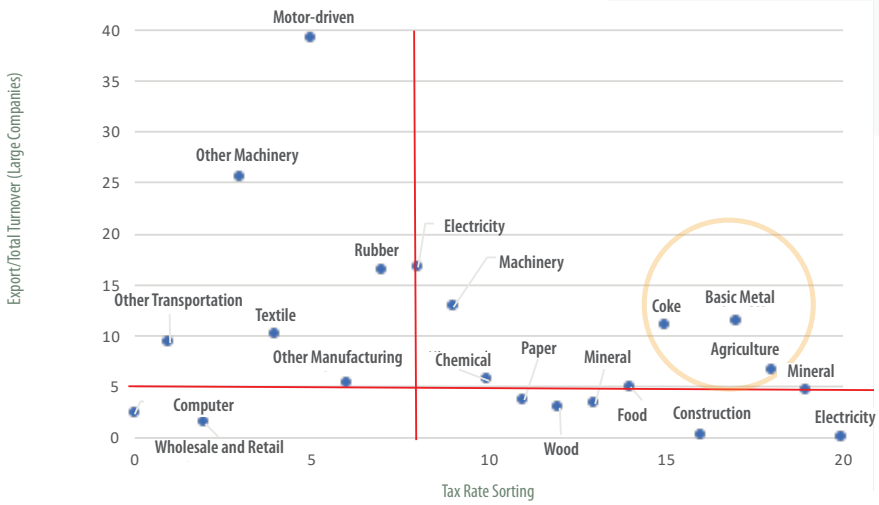
Graphic 14 : Carbon Emissions Contained in the Export (Scope 1-2-3) (million tons CO_2)[8]
Notes: Scope 1 (S1) covers the emissions which arise during the production process of the company, scope 2 (S2) covers the emissions caused by the electricity input outsourced by the company, and scope 3 (S3) covers the emissions caused by the inputs other than electricity (for example, raw materials).

[8] See Annex-2

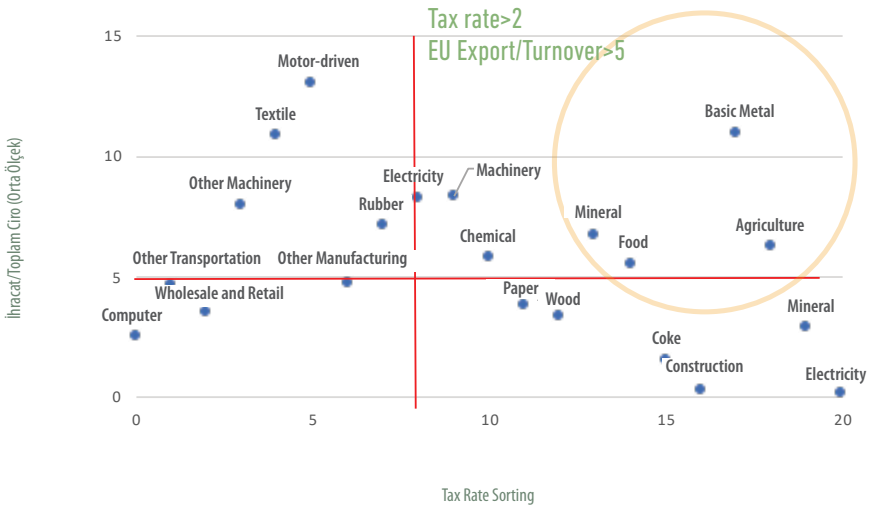


Graphic 15 : Sectoral Tax Rates (%)[9]

[9] See Annex-3



Graphic 16a : Relatively Risky Sectors (Large Companies)



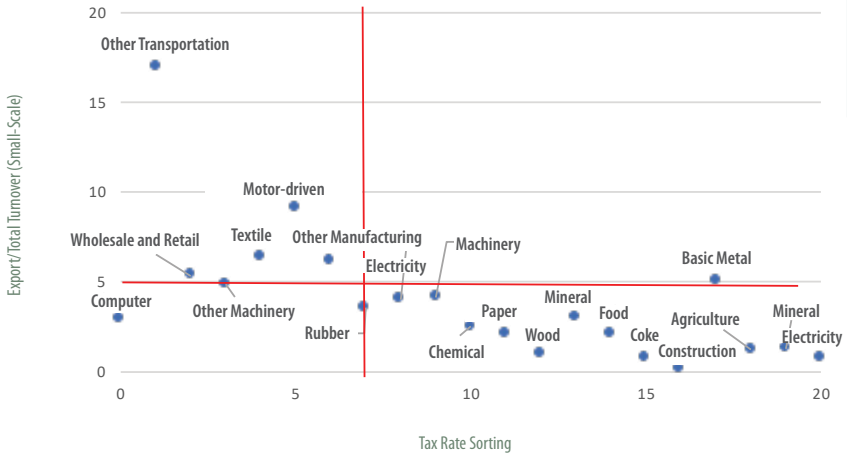
Graphic 16b : Relatively Risky Sectors (Medium-Sized Companies)

Notes: Service sector activities were excluded from the scope of sectors. These sectors are listed as transportation and storage; accommodation and food services; publishing activities; telecommunication; information technologies and other information services; finance and insurance activities; real estate activities; other business sector services; public administration and defense, mandatory social security; training; human health and social service activities; art, entertainment, recreation and other service activities. The tax rate sorting shows the ascending sorting of the tax rate implied by the CBAM in the sectors other than the service sector, and export/turnover shows the share in total turnover of exports to the EU (%) by sector and scale.

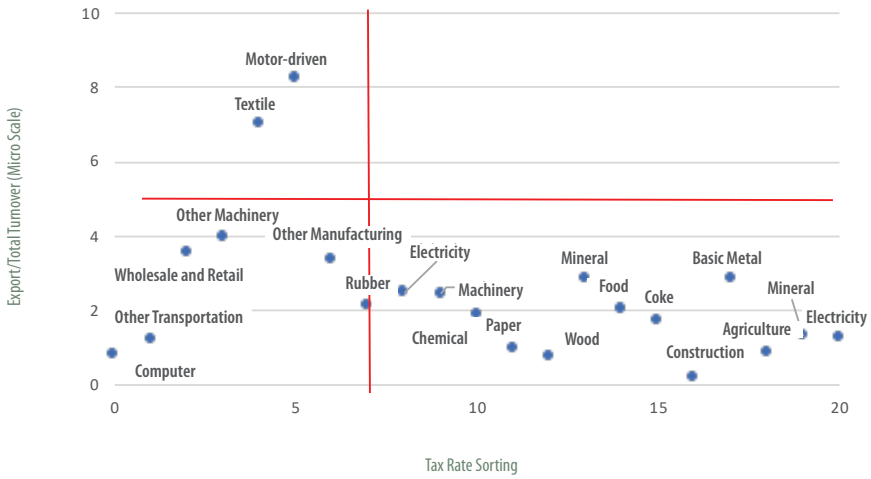
Finally, by using the threshold values for the share in turnover of the export to the EU and sectoral tax rates, relatively risky sectors were determined by scale and sector. The threshold values were determined as 2 percent for the tax rate and 5 percent for the export/turnover ratio. The sectors which were found to be above the determined threshold values are described as a "relatively risky sector".

Risky sectors differ on basis of scale. In the early stages of CBAM, medium and large enterprises operating in the basic metal (Nace Rev2. 24) sector are considered "relatively risky". It is expected that, under the projection that CBAM will cover all sectors when it matures, it seems possible that agriculture, mining (Nace Rev2. 5-9) and food sectors (Nace Rev2. 10-12) will be affected in medium scale and coke (Nace Rev2. 19) and agriculture (Nace Rev2. 1-3) sectors will be affected in large scale. For micro and small businesses, the effects of CBAM are limited due to their low export density to the EU (Graphics 16c ve 16d).

Since the average export values of the sector are used in these calculations, it should not be forgotten that, for those companies, export to the EU of which differs, the risk level may change according to the ratio of exporting more or less to the EU. In determination of the impact area of the CBAM implementation, issues such as the status of the stakeholders in the value chain and the procedures for calculation and verification of the carbon footprint of products should be clarified. While the impact on micro and small enterprises seems to be limited at the first stage, CBAM is likely to influence procurement decisions across the value chains of manufacturers operating on a large and medium scale. As a result, micro and small businesses that are suppliers of larger companies are likely to be affected indirectly by the CBAM.



Graphic 16c : Relatively Risky Sectors (Small-Sized Companies)



Graphic 16d : Relatively Risky Sectors (Micro-Sized Companies)

Notes: Service sector activities were excluded from the scope of sectors. These sectors are listed as transportation and storage; accommodation and food services; publishing activities; telecommunication; information technologies and other information services; finance and insurance activities; real estate activities; other business sector services; public administration and defense, mandatory social security; training; human health and social service activities; art, entertainment, recreation and other service activities. The tax rate sorting shows the ascending sorting of the tax rate implied by the CBAM in the sectors other than the service sector, and export/turnover shows the share in total turnover of exports to the EU (%) by sector and scale.

THE ROLE OF SMEs IN GREEN GROWTH

06 THE ROLE OF SMEs IN GREEN GROWTH

There are 3.2 million SMEs in Turkey operating in the industry and service sectors, compared to 7,000 large companies (TURKSTAT, 2020b). SMEs have many collective effects although their environmental footprint is relatively less. For example, SMEs are responsible for approximately 64 percent of total environmental impact created by enterprises in the EU (Calogirou et al, 2010). When we take into consideration that SMEs cause a significant part of total environmental impact, they constitute a potential to adopt resource efficiency and circular economy implementations in the process of transition to low-carbon economy and to become a catalyst of this transformation.

Resource efficiency aims to use resources in a sustainable way by minimizing their effects on the environment and by producing more output with less input. Circular economy is an important strategy within the scope of resource efficiency. Circular economy aims to reduce the use of raw materials and energy, to control waste formation and to minimize energy loss. A study which was carried out recently estimates that the implementation of the circular economy principles in the EU's economy has the potential to increase the EU's GDP by 0.5 percent until 2030, and that it will create approximately 700,000 new jobs (Cambridge Econometrics, 2018). It is calculated that, thanks to their implementations such as preventing the wastes of circular economy, eco-design and reuse, companies in the EU member states can be provided with a net earnings of 600 billion Euro (8 percent of their turnover) and a decrease of 2 to 4 percent in greenhouse gas emissions (European Commission, 2020b).

In the circular economy, business models where inter-sectoral cooperation is strengthened by "industrial symbiosis", in other words, waste created in a company is used as the input of a production process, can be built. The forms of understanding in relation to this concept may differ between countries. For example, while what is meant by circular economy model in China is how the increased economic growth can be decoupled from environmental damages, different from China, resource efficiency within the scope of circular economy is positioned in the European Union as an additional strategy ensuring growth (McDowall et al, 2017). In the example of Turkey, the Material Marketplace which was carried out with the support of the EBRD is a good example of these networks created within the scope of circular economy efforts. While the number of transactions carried out in the platform is still limited in the development of such cooperations in a

way to include SMEs, business associations like TÜRKONFED play a key role in the direct communication with SMEs. (See Box 2)

In order that SMEs can make use of a circular economy, it is necessary to increase their level of training and skill through eco-design and digitalization channels, to create such platforms where SMEs can learn from the best practices currently successful in the market, and to encourage different stakeholders to work together for the purpose of increasing the number of industrial symbiosis (SME United, 2020a). Another mechanism of making SMEs environment-friendly is the pressure and guidance of larger companies throughout the supply chain (OECD, 2018b). In this context, for example, the Korean government allowed SMEs to get access to the environmental knowledge of the large companies to which they make sales by establishing an efficient environmental monitoring mechanism throughout the supply chain, and accelerated the adoption of environment-friendly approaches among SMEs in this process.

Box 2: Turkish Materials Marketplace (TMM)

Turkish Materials Marketplace (TMM) is a platform which was established in partnership of the Ministry of Environment and Urbanization and the Ministry of Science, Industry and Technology and which is supported by EBRD and the EU. Companies participating in the TMM platform share the data in relation to the materials used during production or remained from operations. Taking into consideration the "best innovative practices" developed in relation to the opportunities for the reuse of materials, the TMM team provides support to companies in determining the potential partnerships between platform members. The platform provides users with economic benefit by allowing them to purchase industrial by-products, waste or alternative raw materials at a reasonable price. Sellers, on the other hand, find the opportunity both to sell their waste and decrease their storage costs. Thanks to the platform, it is hoped to contribute to waste management and increase environmental performance. Certain cooperation made on this platform is presented in Table 3.

Buyer	Seller	Product	Transaction
Sütaş	Anadolu Etap	Treatment sludge (40 tons)	Processed and transformed into renewable energy at the Solid Waste Disposal and Biogas Production Plant of Sütaş
Exitcom	Legrand	Electronic waste (426 kg)	Transformed into secondary raw materials at the electronic recycling plant of Exitcom.
MGM Marmara Geri Dönüşüm	P&G	Non-standard product (detergent, soap, toothpaste, etc.) (7 tons)	Non-standard products were transformed into a new product aimed at carpet/car washing, etc.
Pepsico.	Aromsa	Organic Waste (20 tons)	Used by Pepsico in production of energy.
Akçansa	Organik Kimya	Treatment sludge	Used as an alternative fuel in cement production of Akçansa.
Arkim	Anako	Egg shell	Anako's egg shell was utilized by Arkim as a new generation food supplement.

Table3: Cooperation With Turkish Materials Marketplace (TMM)

An important impact channel of SMEs is their potential to create employment. In most of the countries, enterprises with 5 to 99 employees constitute more than 50 percent of total net employment (OECD, 2018b). In Turkey, 48 percent of the employment increase recorded in the period from 2009 to 2019 was created by SMEs with 50 and less employees. SMEs have the potential of being the driving force in creating employment by taking advantage of the opportunities offered by the green transformation, thanks to their innovative capacities and motivations.

A worry in relation to the labor market is the employment losses to arise as a result of the shrinkage of the fossil fuel sector in the transition period. A study carried out by ILO anticipates that approximately 7.5 million job losses will occur in Latin America by 2030 in the transition to a low-carbon economy in sectors related to fossil fuel and production of food of animal origin. On the other hand, by creating 22.5 million jobs in the agricultural and plant-based food production, renewable electricity, forestry, construction and manufacturing sectors, it is expected to compensate lost jobs with new employment opportunities and create new jobs. (ILO, 2020).

In the process of transition to a low-carbon economy, the skill level of existing labor should

also be compatible with newly created jobs. The change in production will change the demands aimed at professions. As a result of this, new job descriptions will emerge and new skills will be needed.

The studies which were carried out show that skill and talent requirements of jobs created in the process of transition to a low-carbon economy are not different from those of existing jobs, and that most of the time the skills required by new jobs can be gained through on-the-job training programs (Bowen et al, 2018). In this framework, the process of transition of employees to green jobs can be achieved by the investments made in the training of labor. Taking into consideration that one of the existing vulnerabilities of SMEs is low training and skill levels, it is important to provide the necessary training taking into consideration regional skill difference problems, in order to support them in keeping pace with this change.

OPPORTUNITIES FOR AND OBSTACLES TO THE TRANSITION TO A GREEN ECONOMY IN RESPECT OF SMEs

07 OPPORTUNITIES FOR AND OBSTACLES TO THE TRANSITION TO A GREEN ECONOMY IN RESPECT OF SMEs

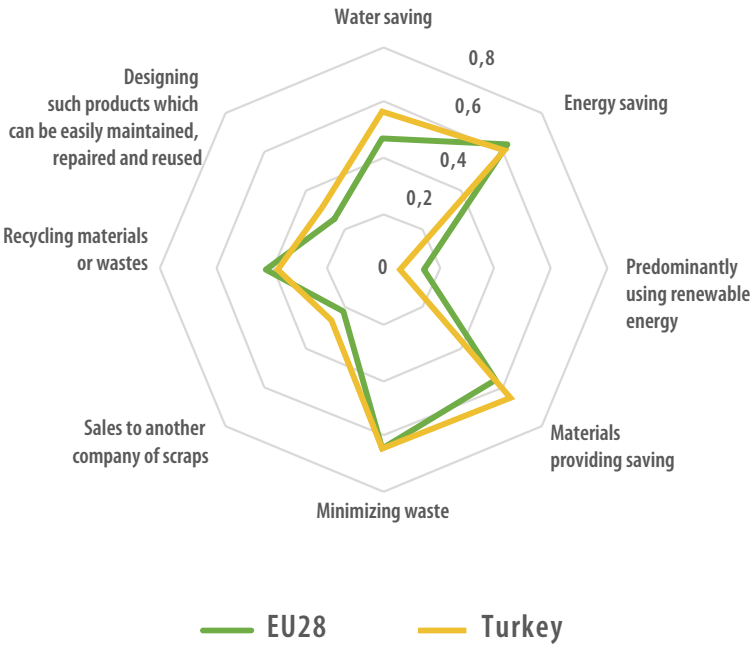
The obstacles that SMEs face in the transition to the green economy are listed as the uncertainty of the proceeds of the investment they will make, financial constraints, insufficiency of qualified labor and deficiencies in relation to awareness. On the other hand, resource efficiency and participation in green markets contribute to SMEs in increasing their productivity and competitive power and come to the forefront as important opportunities in the process of adaptation to a green economy. The Flash Eurobarometer Survey which was conducted in 2017 with regard to SMEs covers 37 countries including the European Union (EU28) and Turkey. The survey, which addressed resource efficiency and access to green product markets, allows Turkey to compare its performance with other countries.

Within the scope of resource efficiency, the survey specifies the minimization of waste and energy saving as the most prevalent resource efficiency actions taken by SMEs. When we look from a sectoral point of view, it is observed that industry companies plan to take more actions in resource efficiency compared to other sectors (B, D, E, F). The resource efficiency displays an inversely proportional relationship with the company's age, and turnover displays a directly proportional relationship with it. In Turkey, while the ratio of SMEs saving water, materials and energy is close to the EU average, Turkish SMEs display a performance below the EU average in the category of use of sustainable energy and in recycling ratios (Table 4, Graphic 17a).

Resource efficiency actions considerably differ between countries. For example, while only 7 percent of the companies in Lithuania recycle their materials or waste by reusing them within the company, this ratio can increase to a level of 70 percent in Ireland, Portugal and England. In Turkey, the ratio of recycling of materials and waste within the company is below the EU28 average of 42 percent, at 38 percent.

Graphic 17a

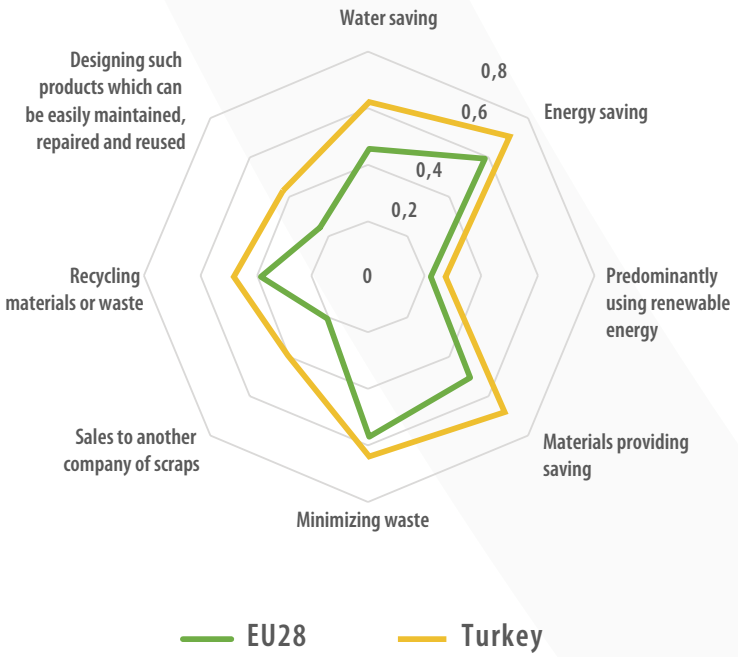
Which actions/performances are assumed by your company to make resources more efficient?



Reference: Flash Eurobarometer 456 (2018)

Graphic 17b

What are the extra resource efficiency actions that your company is planning to take within the next two years?



Reference: Flash Eurobarometer 456 (2018)

	EU (average)	Minimum	Maximum	Turkey	Turkey (Ranking)	Non-EU Countries (min)	Non-EU Countries
Water Saving	47	8	68	57	3	8	51
Energy Saving	63	21	75	61	13	22	70
Predominantly using renewable energy	14	3	35	6	27	4	18
Material Saving	57	15	75	65	4	20	67
Minimizing Waste	65	7	84	65	10	7	76
Sales to another company of scraps	21	3	30	26	10	3	30
Recycling materials or waste by reusing them within the company	42	7	71	38	14	9	65
Designing such products which can be more easily maintained, repaired or reused	25	3	42	31	7	3	42

Table 4: Ratio of SMEs which Took Resource Efficiency Actions (%) (Flash Barometer 456, 2018)

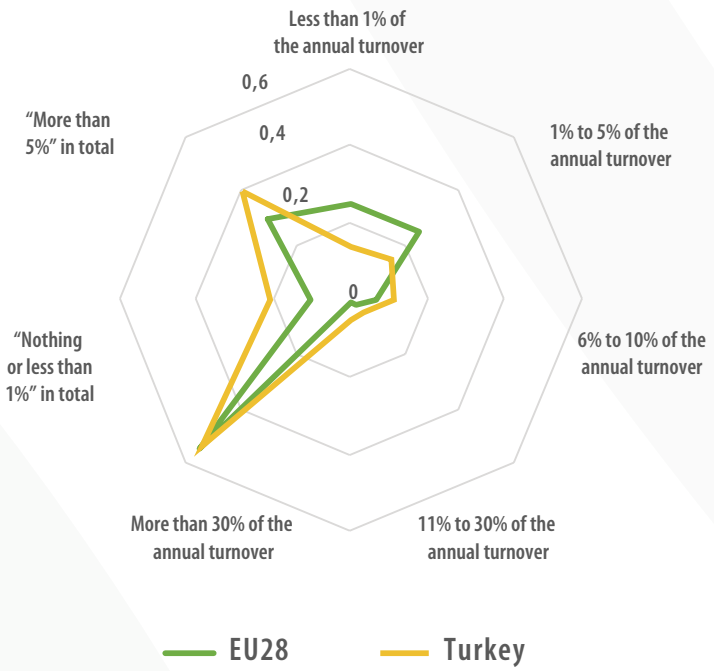
Notes: 37 countries were used in the study.

07.01 OBSTACLES TO THE TRANSITION TO A GREEN ECONOMY

Like every company thinking from a competitive point of view, SMEs also think that the investments to be made in resource efficiency will not yield proceeds in short and medium term, and exhibit an abstaining attitude in investing in this area. As a result, companies change their existing production processes with an environment-friendly approach only when new regulations are made. A view where SMEs are not active in investing in resource efficiency comes to the forefront in the survey. Within the scope of the EU, while 30 percent of SMEs made no investment in resource efficiency, approximately half of them allocated less

Graphic 17c

How much of a yearly average investment did you make in the last two years to use the resources more efficiently?



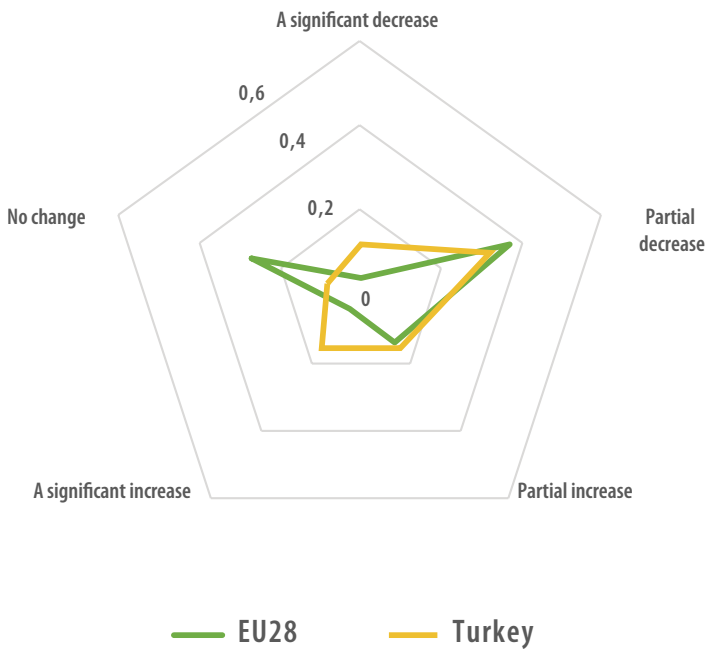
Reference: Flash Eurobarometer 456 (2018)

than 5 percent of their turnover to resource efficiency.

It was observed that 40 percent of Turkish SMEs made no investments in improving resource efficiency, while 29 percent devoted less than 5 percent of their turnover to resource efficiency. (Graphic 17c).
16 percent of Turkish SMEs specify that resource efficiency "significantly increased" their production costs. This ratio comes to the forefront as the highest ratio in the survey. For example, in Lithuania, which is among the countries ranked below Turkey, 8 percent of SMEs say that resource efficiency increased their production costs. This circumstance shows that there is a need for guidance to SMEs on the positive effects on the production cost of the resource efficiency investments. (Graphic 17d).

Graphic 17d

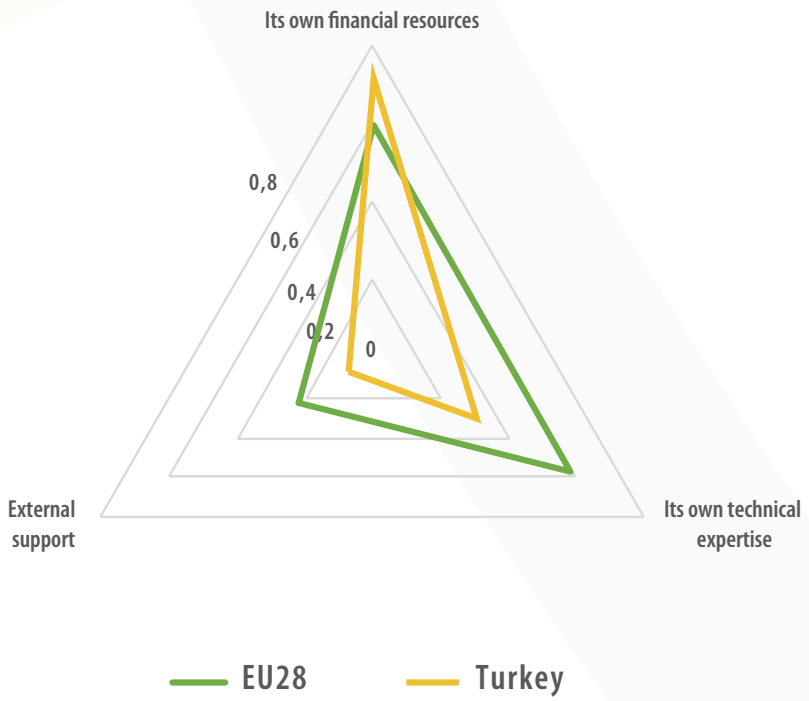
How did the resource efficiency actions assumed affect production costs in the last two years?



Reference: Flash Eurobarometer 456 (2018)

Graphic 17e

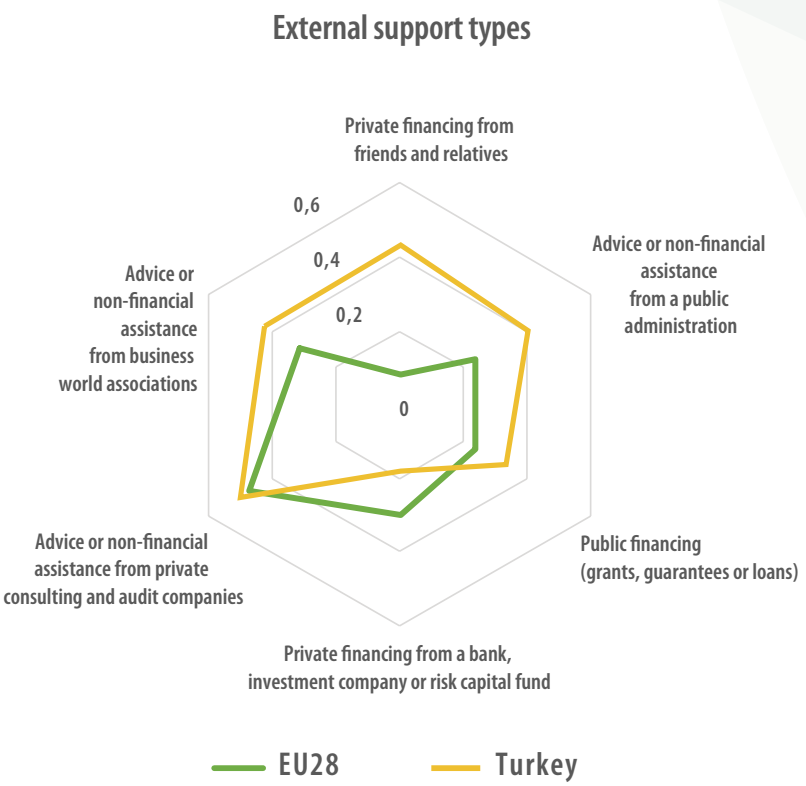
What kind of a support does your company rely on in its efforts to use resources more efficiently?



Reference: Flash Eurobarometer 456 (2018)

The tendency to receive external support in resource efficiency is lower in Turkish SMEs (7 percent) compared to other countries and the EU28 (22 percent). It is observed that Turkish SMEs use their own financing and technical resources rather than external support, in other words, that they act with "internal support". The support received is viewed under two categories, namely finance and non-finance. Funding by private sector within the scope of financial external support is well below the EU28 average of 30 percent, at 18 percent (bank, investment company or risk capital).

Graphic 17f

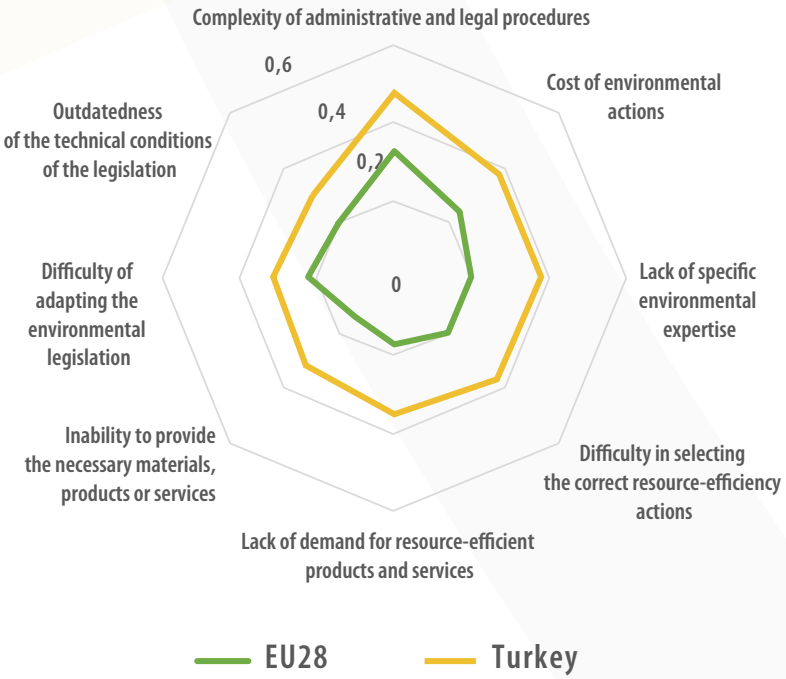


Reference: Flash Eurobarometer 456 (2018)

The primary source of the financial external support consists of funds received from relatives and friends (43 percent). This rate is higher than all the countries participating in the study. While the state, business world associations and private-sector companies are specified as the primary providers within the scope of consultancy and non-finance support, support received from business world associations and the public in the category of non-financial assistance or advice is above the EU28 average (Graphic 17f).

Graphic 17g

Has your company faced any of the following difficulties while endeavoring to create its resource efficiency actions?



Reference: Flash Eurobarometer 456 (2018)

39 percent of the SMEs in the EU28 specified that they had no difficulty while taking actions in relation to resource efficiency. In Turkey, the ratio of SMEs which had no difficulty is 26. It comes into view that SMEs in Turkey have more difficulty in every category, compared to the EU28 average, in putting into practice their actions for resource efficiency. The most prevalent difficulties that SMEs within the scope of the EU28 have in creating their resource efficiency actions are listed as complex administrative or legal procedures (33 percent), cost of environmental actions (24 percent) and difficulty adapting the environmental legislation to the company (22 percent).

The primary difficulties which come to the forefront in Turkish SMEs are listed as complex administrative or legal procedures (48 percent), cost of environmental actions and lack of specific environmental expertise (38 percent), difficulty in selecting the correct resource efficiency actions (37 percent) and lack of demand for resource-efficient products and services (35 percent) (Graphic 17g).

Graphic 17h

Reference: Flash Eurobarometer 456 (2018)

When SMEs are asked about what kind of support will serve them in relation to resource efficiency, while the most important support mechanisms for the SMEs within the scope of the EU28 are the grants and subsidies provided by the state, the financing opportunities in relation to resource efficiency and advice on financial planning come to the forefront for Turkish SMEs.

In addition to this, strengthening the cooperation between companies to develop new processes for the purpose of reusing waste, consultancy on resource efficiency, the need for a database involving the benefits of resource efficiency, informing about new technologies or processes to increase resource efficiency, and grants and donations are presented as other demands (Graphic 17h).

07.02 OPPORTUNITIES

In the transition of SMEs to the green economy, the cost advantages gained by resource efficiency, access to green markets and eco-innovation come to the forefront as important opportunities. Within the scope of increasing resource efficiency, it is sought to use more efficiently the resources used in production, such as raw materials, energy and water, to decrease waste production and recycle this waste for reuse. Ensuring resource efficiency through different channels, such as waste management and recycling, is an important factor increasing the profit and efficiency of companies through cost.

As was noted before, while approximately 16 percent of SMEs in Turkey say that resource-efficiency actions significantly increases production costs, 44 percent of them say that resource efficiency decreases production costs. 12 percent of Turkish SMEs consider resource efficiency actions to be a factor that "significantly" reduces the cost of production, and 32 percent consider it a factor that partially reduces the cost of production.

Almost one fourth of the SMEs in Europe play an active role in green growth by providing green products or services.[10]

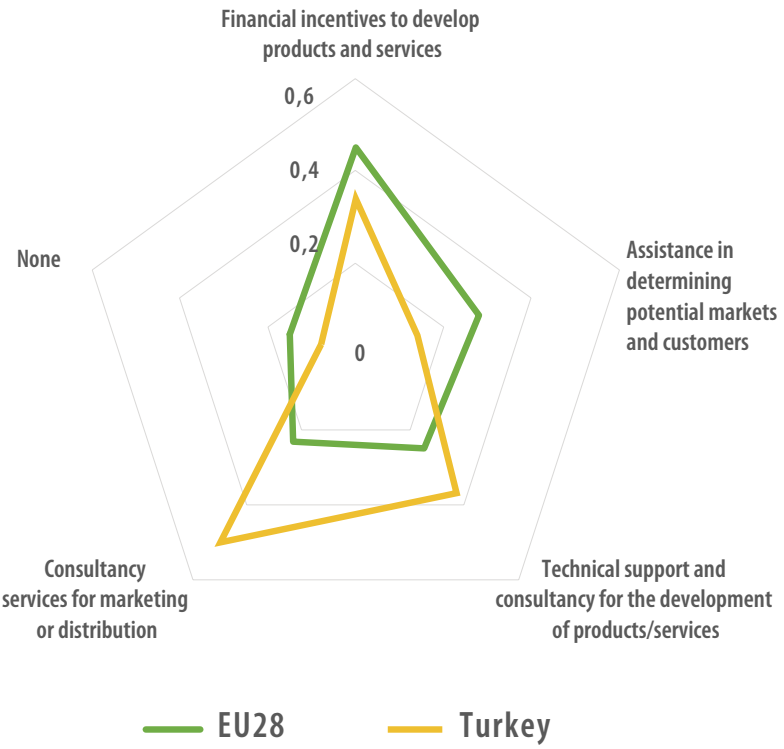
This ratio differs when we look at the scale of SMEs. Large-scale SMEs provide more green products or services compared to micro SMEs. There is no distinction of scale of SMEs in relation to planning to provide environment-friendly products or services in the short term. In addition, the more SMEs carry out resource efficiency actions, the more they tend to provide environment-friendly products or services. 78 percent of the SMEs which carried out no resource-efficiency actions and 50 percent of the SMEs which carried out an action reported that they would not carry out any action in relation to providing green products and services in the two-year period following the survey (2018-2019). When we look at Turkey, while approximately 13 percent of SMEs provided green products and services as of September 2017, the ratio of those considering actions in this regard in the next two years is above the EU28 average of 9 percent, at 14 percent.

When we look at the share in turnover of green products sold, for approximately 40 percent of them in Turkey and 41 percent of them in the EU28, the share in their total turnover of green products and services is above 10 percent. On the other hand, while the ratio of those companies in Turkey with a share of more than 50 percent in their total turnover of green products and services stands at 32 percent, which is above the EU28 average of 20 percent. In the period of selling environment-friendly

[10] The green products and services within the scope of the survey are those products aimed at reducing environmental risk and minimizing pollution and resource utilization. These products also include those products produced organically, having an eco label, having significantly recycled content or having eco-design characteristics.

products or services, it is observed that EU28 countries started to sell products in this sector earlier. For example, while 33 percent of the SMEs in Turkey are selling green products and services for a period less than one year, this ratio is at a level of 6 percent in the EU28 countries. Approximately 90 percent of green products are sold both in the EU28 and in Turkey in the national market. The most important export market for Turkey is the EU28 countries. With regard to support for production of environment-friendly products or services, it is specified that Turkish SMEs rely on their own financial resources and technical expertise rather than external support, like in their resource-efficiency actions. Turkish SMEs specified that, to expand their range of green products or services, they mostly need consultancy services for marketing or distribution, and financial support and consultancy services for the development of products/services (Graphic 18a). On the other hand, in order to start providing environment-friendly products or services, those SMEs not providing green products and services mostly need financial incentives to develop products/services, assistance in determining potential markets and customers, and technical support and consultancy for the development of products/services. (Graphic 18b).

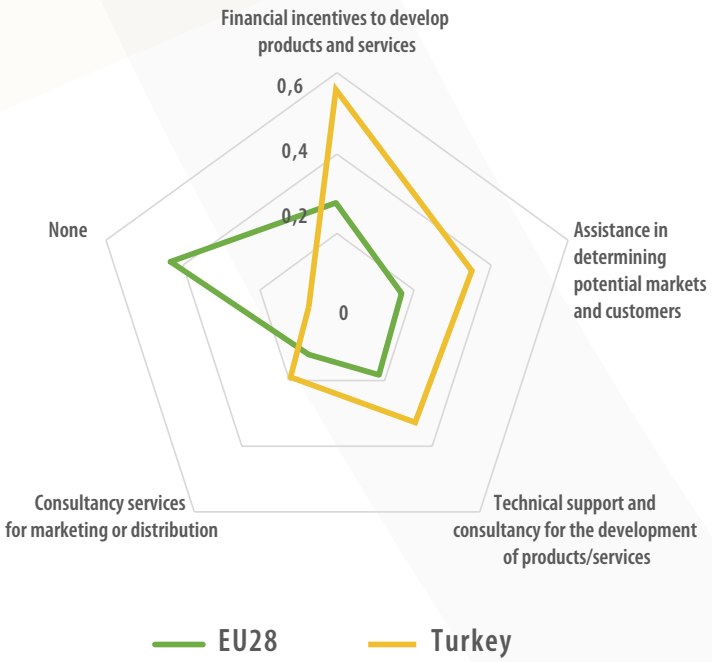
Graphic 18a



Reference: Flash Eurobarometer 456 (2018)

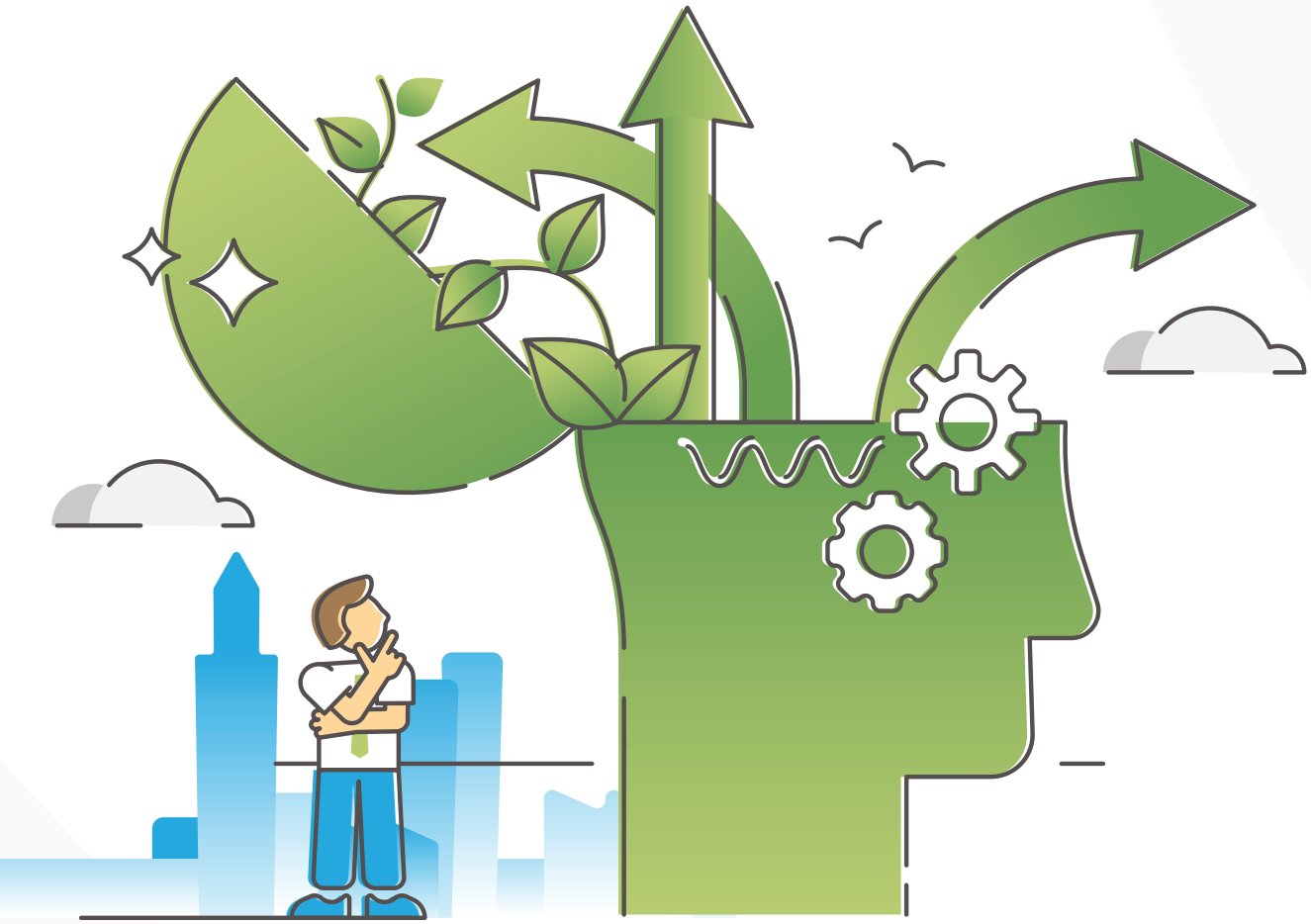
Graphic 18b

What kind of support can most assist you in starting your range of green products or services?



Reference: Flash Eurobarometer 456 (2018)

It is an important opportunity to encourage eco-innovation and to limit the environmental effect of SMEs. It is possible, by taking advantage of the dynamic structure of SMEs, to create environment-friendly business models aimed at decreasing resource intensity through eco-innovation. The policy frameworks supporting creative solutions aimed at the environment are useful in encouraging eco-innovation. While Turkey has many programs for encouraging innovations, it does not have any holistic approach accommodating such policies with goals aimed at commercialization and export (OECD, 2019c). It is important to support environmental R&D expenditures to increase eco-innovation. The share in total environmental R&D expenditures of the state in Turkey is small compared to the other OECD countries (OECD, 2019c). Demand elements speed up eco-innovation, and in this framework, eco-labeling supports the development of public awareness. While the environmental label regulation, which was issued in Turkey in 2018, covered textile, ceramic and paper products at the beginning, it is planned to expand its sectoral scope in the upcoming period.



POLICIES FOLLOWED IN RELATION TO SMEs AND GREEN GROWTH

08 POLICIES FOLLOWED IN RELATION TO SMEs AND GREEN GROWTH

The green growth of SMEs in Turkey is addressed mostly within the framework of energy efficiency. The Energy Efficiency Strategy Document is aimed, for the purpose of increasing energy efficiency in industry, at "supporting training, research and consultancy services aimed at SMEs in relation to energy efficiency". In addition, "information aimed at SMEs on energy efficiency and limitation of greenhouse gas emissions, and supporting implementations for energy efficiency by developing financing models aimed at SMEs" are included among the goals of the Climate Change Action Plan. In this context, KOSGEB's support programs in relation to energy efficiency also set an example.

The SMEs Strategy and Action Plan for the period from 2015 to 2018 lays emphasis on the concept of green growth and underlines the need to increase the ability of SMEs to comply with national and international legislation. The KOSGEB's SMEs Strategic Plan covering the period from 2016 to 2020 also mentions green growth and energy efficiency in parallel with the 10th development plan. Although the KOSGEB's Strategic Plan (2019-2023) does not list green growth as a direct strategic goal, it mentions various performance indicators (efficiency, cooperation, export) in line with this goal.

The SMEs Policy Index study, which was created by the OECD, provides the opportunity to assess the environmental policies and actions of governments specific to SMEs (OECD, 2019b). The study reviews the goals specific to SMEs of existing environmental policies, and to what extent the environmental goals in national SMEs strategic documents are environment-friendly. In addition, the contents of these documents investigate how eco-innovation is supported and whether there are sector-specific policies, such as construction, transportation and agriculture. The study also assesses the incentives and tools complementing environmental policies, and how effectively these tools are implemented.

It was observed, as a result of the assessment made within the scope of the SMEs Policy Index, that while targets for SMEs and green growth are presented in environmental policy documents in Turkey, the policies for their implementation in SMEs are more limited. In addition, it comes to the forefront that there are no sector-specific policies aimed at SMEs within the scope of green growth.

Table 5: Cooperation with Private Sector, Public Sector and Business World Associations Supporting Green Growth

Organization	Purpose	Action
Northern Macedonia (Public-Private Partnership)	Waste Management and Circular Economy	Provision by private sector representatives to SMEs of concrete advice and guidance to reduce wastage and to make widespread the circular economy implementations.
Montenegro Government and Montenegro Chamber of Commerce	Energy Efficiency	Holding meetings aimed at raising awareness of opportunities created by energy-efficiency implementations both for enterprises and society
Serbian Chamber of Trade and Industry (CCIS) - Serbian Government	Eco-innovation	Providing newly established companies and entrepreneurs with the training and grant support to develop green business ideas
Serbian Chamber of Trade and Industry (CCIS)	Circular Economy	Providing SMEs with assistance in the transition to a circular business model
Northern Macedonia (Government and environmental organizations)		Supporting SMEs to ensure that they can obtain environmental licenses
Ireland Environmental Protection Agency, Ireland Clean Technology Center	Resource Efficiency (energy, waste and water)	Allowing SMEs to see resource-efficiency implementation methods through an online platform/providing free consultancy services on how costs can be reduced by resource-efficiency practices

Reference: OECD (2019b)

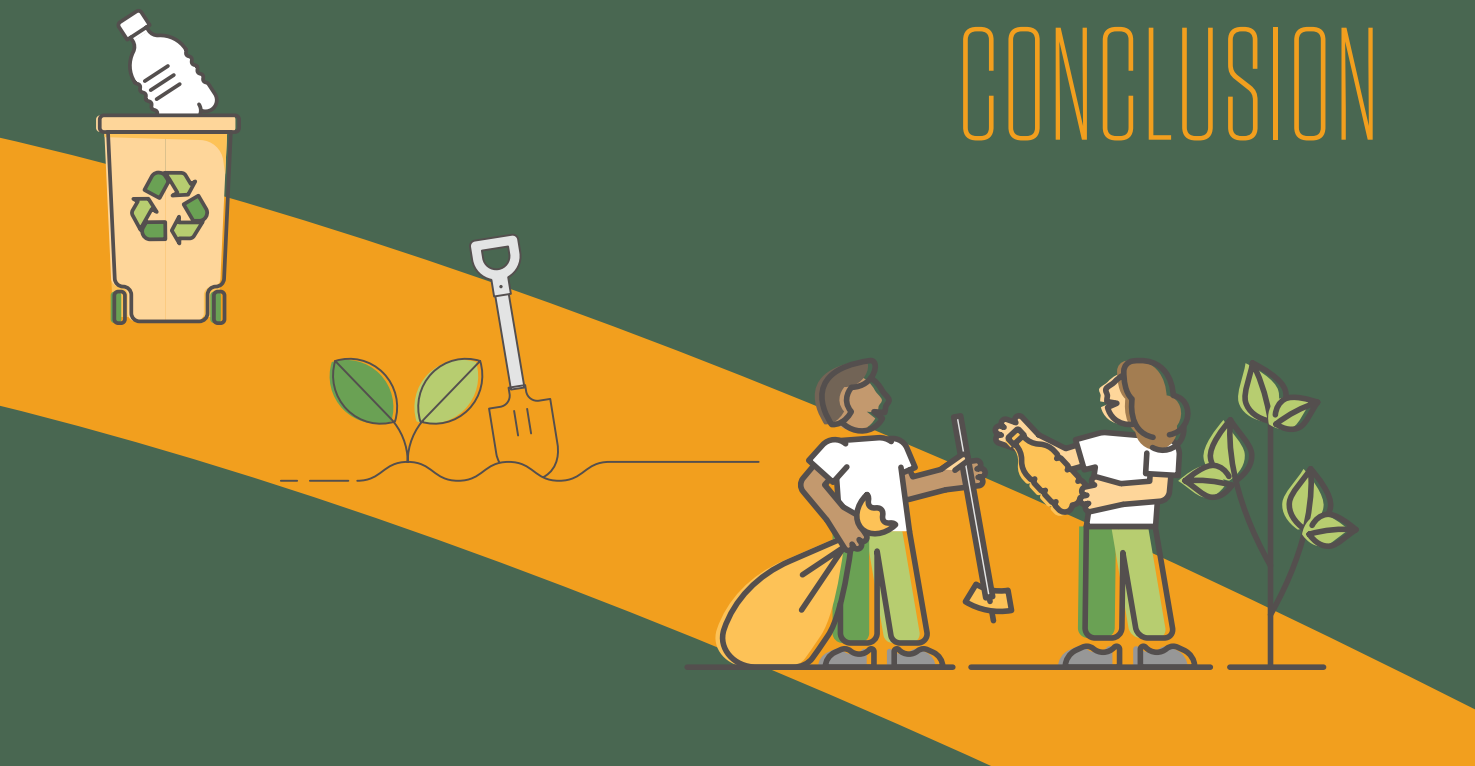
Small and Medium Enterprises Development Organization (KOSGEB) is the main implementation body, but progress must be made in coordinating related activities within the scope of green growth. For example, the existence of different structures responsible for carrying out projects in relation to energy efficiency increases concerns about the efficiency of policies, and, accordingly, it is important to ensure coordination between organizations.

Incentives and regulations that accelerate this process are as important as the policies planned for the transition of SMEs to the green economy. Since SMEs may be unaware of the adverse effect on the environment of the production made by them, activities carried out by the state in this respect aimed at informing and creating awareness through cooperation with both business world organizations and the private sector are important (Table 5). It is seen in the SMEs Policy Index assessment that Turkey has made progress in green growth policies aimed at SMEs on incentives. Especially within the scope of financial incentives, various funds are distributed by KOSGEB, energy efficiency being in the first place.

Like every company thinking from a competitive point of view, SMEs also think that investments to be made in resource efficiency will not yield proceeds in the short- and medium-term, and exhibit an abstaining attitude in investing in this area. In this framework, companies change their existing production processes with an environment-friendly approach only when new regulations are made. Creating a standardized structure in environmental implementations provides SMEs with a clear framework and reduces the administrative burden on them (OECD, 2018b). For example, the Regulation on the Control of Packaging Wastes, which is implemented in Turkey, imposed an obligation on package manufacturers to use recycled raw materials. Thus, it is aimed at increasing recycling ratios by encouraging the use of recycled raw materials. In addition to this, within the scope of the zero waste project, shopping malls and organized industrial zones switched to the zero waste system in 2021.

Turkey falls behind the OECD economies of similar size in relation to environment management system certifications, and the number of certificates granted decreased in the period from 2008 to 2016 (OECD, 2019c). Turkey has important potential to increase energy efficiency, especially in the industrial sector. It is a positive step that as a result of the amendment made in 2020 to the energy efficiency regulation, an obligation was imposed upon many areas, such as commercial and service buildings, industrial facilities and organized industrial zones, to establish an ISO 50001 Energy Management System (EMS) by 2023. In this context, incentives aimed at promoting resource-efficiency implementations are also important. In some European countries, companies which received an EMS certificate are granted an exemption (for example; electricity tax exemption in Germany) (OECD, 2019c). Resource and energy efficiency can be supported with such incentives.

CONCLUSION



09 CONCLUSION

With the EGD, a radical transformation process involving different policy areas and sectors was started in accordance with the goal of transforming Europe into a climate-neutral continent. This process is of particular concern to EU countries, as well as all countries having a commercial relationship with the EU.

A channel of the transformation to be carried out with the EGD is the CBAM mechanism, which was planned to be implemented for the purpose of preventing carbon leakage in combating climate change. Implementation of this mechanism is expected to start in 2023 at the latest and to affect exporters who operate in carbon-intensive sectors through the cost channel. The details and sectoral coverage of this arrangement are not clear, but the likelihood that the CBAM will be in the form of international implementation of the ETS, which is the EU's main tool for combating greenhouse gas emissions, is considered.

According to the results of the study, taxes to be exposed with the CBAM may be an important cost element in the upcoming period, especially for large-scale companies. In parallel to lower exports to sales ratios (in comparison to large companies) prevailing in SMEs, the cost impact, which is expected to occur with ETS, may be limited.

In the early stages of CBAM, medium and large enterprises operating in the basic metal sector (Nace Rev2. 24) are considered "relatively risky". It is expected that, under the projection that CBAM will cover all sectors when it matures, medium-sized companies in the agriculture, mining, and food sectors, as well as large-scale companies operating in the coke and agriculture sectors, will also be affected. For micro and small businesses, the effects of CBAM are limited due to their low export density to the EU. On the other hand, CBAM is likely to influence procurement decisions across the value chains of manufacturers operating on a large and medium scale. As a result, micro and small businesses that are suppliers of larger companies are likely to be affected indirectly by the CBAM.

Although the individual effects of SMEs in ensuring the transformation triggered by the EGD are limited, their cumulative effects are numerous. In the transition to a low-carbon economy, important opportunities appear for SMEs in the areas of resource efficiency and circular economy. Resource efficiency constitutes one such potential through energy efficiency, especially in the industrial sector. Circular economy, which is also brought forward as

a policy tool within the scope of the EGD, is a strategy complementing the concepts of green growth and sustainable development.

Within the scope of green growth strategies, it is important to develop coordination between enterprises and build circular economy models. It is important for states to support, in accordance with this g oal, the creation of business networks between large companies and the suppliers of companies carrying on business on a smaller scale, along with a mutual learning process.

In this transformation process, it is important to provide SMEs with a sufficient transition period which will assist them in adapting to the new needs to arise as a result of the policies to be implemented, along with the necessary support. Considering the current vulnerabilities of SMEs, it is necessary to adapt to this process with a complementary approach to climate, environment and employment policies. In addition to this, it should not be forgotten that the environmental implementations of SMEs are not sustainable, since they have insufficient internal resources. In this framework, external stakeholders should provide SMEs with support in showing a proactive approach for entering into environment-friendly processes. Within the scope of the new arrangements to be put into practice within the framework of the EGD, it is of key importance to create actions for SMEs aimed at creating awareness and developing capacity in coordination with ministries and other stakeholder institutions/organizations.

Annex 1: EGD's Policy Areas and Primary Actions

Policy area	Strategy/Actions	Expected/Actual Date	Purpose
Climate	Draft Climate Law	March 2020	Ensuring through a legal framework that the policies implemented will contribute to the climate-neutral goal
	Climate Treaty		Enabling citizens and stakeholders to play a role in the process of designing new climate actions (in sharing information and developing solutions)
	Climate Goal Plan	September 2020	The Commission's proposal of reducing greenhouse gas emissions by a minimum of 55% by 2030
	Relevant Legislation for the New Goal of 2030 Revisions	June 2021	Necessary revisions for the goal of 2030, which was declared in September 2020
	Energy Taxation Directive	June 2021	Revision of taxation to ensure its compliance with climate policy
	Carbon Border Adjustment Mechanism	2021	Reducing carbon leakage risk
	The New EU Strategy on Adaptation to Climate Change		
Sustainable Industry	European Industrial Strategy	March 2020	Twin goal of green and digital transformation
	Circular Economy Action Plan	March 2020	The policy of 'sustainable products', which will assist in modernizing the EU's economy and ensuring that it can take advantage, locally and globally, of circular economy opportunities (especially resource-intensive sectors, such as textiles, construction, electronics and plastics, are focused on).
	European Battery Alliance	December 2020	Developing an innovative, competitive and sustainable battery value chain in Europe.
	Proposal to Support Zero Carbon Steel Production	2021	

Policy area	Strategy/Actions	Expected/Actual Date	Purpose
Zero Pollution	Sustainable Chemicals Strategy	October 2020	Encouraging innovation to develop reliable and sustainable alternatives to environmentally hazardous chemicals.
	Zero-Pollution Action Plan for Water, Air and Soil	2021	» Better monitoring and reporting of pollution » Revision of air quality standards to be in concordance with the proposals of the World Health Organization » Proposals in relation to new and toxic chemical pollution resources, such as micro-plastics and pharmaceuticals » Addressing the effects of different pollutants
	Revision of Measures Aimed at Pollution Arising from Large Industrial Facilities	2021	» Ensuring compliance with climate, energy and circular economy policies » Cooperation for preventing industrial accidents
Biodiversity Strategy	Biodiversity Strategy of 2030	May 2020	Expanding the coverage of protected areas, increasing organic agriculture, and planting three billion trees by 2030
	New Forest Strategy of the EU	2021	Measures aimed at effective forestation and forest protection and improvement
	Measures Aimed at the Main Reasons for Loss of Biodiversity	2021	
From Farm to Dining Table	The Strategy of From Farm to Dining Table	May 2020	» Measures aimed at reducing the use of chemical pesticides, as well as fertilizers and antibiotics » Circular Economy implementations » Facilitating the selection of healthy and sustainable products / making food labels obligatory » Accelerating the fight against food wastage
	Revision of Common Agricultural Policy	2022	
Sustainable Transportation	Sustainable and Smart Mobility Strategy	December 2020	» Promoting different transportation alternatives » Digitalization (more efficient and cleaner transportation focused on automated mobility and smart traffic management systems) » Prices reflecting the impact on the environment (end of fossil fuel subsidies, expansion of the ETS to the maritime sector, decrease of free quotas allocated to airlines)
	Revision of Combined Transportation Directive	2021	Building an effective tool aimed at supporting multimodal loading operations involving railway and seaway transportation
	Revision of Alternative Fuels Infrastructure Directive and Ten-T (Trans-Europe Transportation Network) Regulation	2021	» Reducing the supply of sustainable alternative transportation fuels » The goal of approximately one million public refueling and fuel supply stations by 2025 » Speeding up the widespread use of zero and low emission vehicles and vessels
	Revision of the Legislation on Carbon Emission Performance Standards for Automobiles and Pickup Trucks	2021	» Measures to be taken within the framework of the prevention of air pollution (stricter standards for pollution arising from cars), » Reducing pollution in and around the EU's ports and airports » Assessing implementation of the European emission trade system in land transportation
Construction and Renovation	Renovation Wave	October 2020	» Reducing energy costs and decreasing energy poverty with renovation » Carrying out research on the likelihood of including emissions arising from buildings in the ETS » Strictly implementing rules in relation to energy performance » Carrying out renovation efforts to take advantage of financing conditions and scale economies, starting from large blocks
	Review of the Building Products Regulation		Ensuring compatibility of building design with the needs of circular economy, and increasing digitalization
Clean Energy	Review of the Trans-Europe Energy Networks (Ten-E) Regulation	2020	Review of the regulatory framework for energy infrastructure to ensure that it is consistent with the goals of climate neutrality
	EU Energy System Integration Strategy	July 2020	» Building a more efficient and circular system where waste energy is collected and reused » Speeding up the use of electricity produced from renewable resources » Encouraging renewable and low-carbon fuels, including hydrogen, for those sectors which are difficult to de-carbonize
	Methane Strategy	October 2020	
	Offshore Wind Energy Strategy	November 2020	Increasing the EU's offshore wind energy capacity by five times in the next 10 years, and by 25 times by 2050
	Smart Sector Integration Strategy	July 2020	» Ensuring integration of different energy sectors in the EU (electricity, gas, buildings, transportation and industry) to assist them in decreasing their carbon emissions » Replacing fossil fuels with renewable electricity or other renewable and low-carbon fuels, and ensuring security and a cost-effective structure in energy

Reference: European Commission (2019b)

Annex 2: Sectoral carbon emissions

ISIC rev. 4 Name of Sector	ISIC rev. 4 Sector Code (Section)	ISIC rev. 4 Sector Code (Part)	Total Carbon Emissions (tons of CO_2)	CO_2 Produced per Unit Output	Carbon Amount Contained in Exports (million tons of CO_2)			
					K1	K2	K3	Total
Agriculture, forestry and fishery	A	1-3	65.895.266	582,00	3,90	0,50	0,30	4,70
Mining and quarries	B	5-9	3.513.481	290,90	0,50	0,70	0,30	1,50
*Production of food products *Production of beverages *Production of tobacco products	C	10-12	6.366.121	550,00	0,90	1,10	3,20	5,20
*Production of textile products *Production of garments *Production of leather and relevant products	C	13-15	2.696.529	6787,10	0,90	2,40	1,90	5,20
*Production of wood, wood products and cork products (except for furniture); Production of articles by knitting from withe, chaff and similar materials	C	16	281.997	3,10	0,00	0,10	0,10	0,30
*Production of paper and paper products *Printing and duplication of recorded media	C	17-18	1.396.783	14,70	0,20	0,40	0,20	0,80
*Production of coke and refined petroleum products	C	19	5.693.042	738,10	0,50	0,50	0,30	1,30
*Production of chemicals and chemical products *Production of basic pharmaceutical products and pharmacy materials	C	20-21	9.923.036	545,90	1,30	0,70	0,30	2,30
*Production of rubber and plastic products	C	22	603.875	18,00	0,10	0,90	0,70	1,70
*Production of other non-metallic mineral products	C	23	69.093.735	1344,10	9,4	1,0	0,3	10,6
*Basic metal industry	C	24	17.238.974	615,50	4,80	7,10	1,40	13,40
*Production of fabricated metal products except for machinery and equipment	C	25	975.129	32,50	0,2	1,20	1,00	2,40
*Production of computers and electronic and optical products	C	26	232.755	3,10	0,00	0,10	0,10	0,20
*Production of electrical equipment	C	27	450.644	14,10	0,10	1,40	1,20	2,80
*Production of machinery and equipment not classified elsewhere	C	28	603.009	33,30	0,10	0,70	0,50	1,30
*Production of motor road vehicles, trailers and semi-trailers	C	29	673.695	22,30	0,20	2,30	1,90	4,40
*Production of other transportation vehicles	C	30	216.870	5,90	0,00	0,10	0,10	0,20
*Production of furniture *Other products *Installation and repair of machinery and equipment	C	31-33	1.848.944	36,50	0,40	0,70	0,60	1,70

ISIC rev. 4 Name of Sector	ISIC rev. 4 Sector Code (Section)	ISIC rev. 4 Sector Code (Part)	Total Carbon Emissions (tons of CO_2)	CO_2 Produced per Unit Output	Carbon Amount Contained in Exports (million tons of CO_2)			
					K1	K2	K3	Total
*Production and distribution of electricity, gas, steam and ventilation systems *Water supply; sewerage, waste management and improvement activities	D,E	35-39	149.365.540	14445,50	1,0	0,00	0,00	1,00
Construction	F	41-43	3.345.427	101,90	0,00	0,10	0,30	0,50
Wholesale and retail trade; repair of motor vehicles and motorcycles	G	45-47	4.283.381	51,6	0,50	2,00	1,30	3,80
Transportation and storage	H	49-53	26.750.626	158,90	3,90	1,90	1,00	6,80
Accommodation and food service activities	I	55-56	1.016.668	5,60	0,30	1,50	1,90	3,60
Information and Communication (broadcasting activities/production of cinema films, videos and television programs, sound recording and music broadcasting activities/programming and broadcasting activities)	J	58-60	897.237	5,60	0,00	0,00	0,00	0,10
Information and communication (Telecommunication)	J	61	250.503	5,20	0,00	0,10	0,00	0,20
Information and Communication (Computer programming, consultancy and relevant activities, Information service activities)	J	62-63	235.761	41,10	0,00	0,00	0,00	0,00
Finance and insurance activities	K	64-66	1.910.073	90,20	0,10	0,10	0,00	0,20
Real estate activities	L	68	3.824.888	435,60	0,10	0,30	0,10	0,40
Occupational, scientific and technical activities Administrative and support service activities	M-N	69-82	6.153.415	138,30	0,10	0,10	0,10	0,30
Public administration and defense; mandatory social security	O	84	2.118.681	23,20	0,00	0,0	0,00	0,10
Training	P	85	1.715.707	24,90	0,00	0,00	0,00	0,10
Human health and social service activities	Q	86-88	1.835.176	29,80	0,00	0,10	0,00	0,10
Culture, art, entertainment, recreation and sports Other service activities	R	90-96	1.798.906	44,60	0,10	0,30	0,10	0,60

Notes: Scope 1 (S1) covers the emissions which arise during the production process of the company, scope 2 (S2) covers the emissions caused by the electricity input outsourced by the company, and scope 3 (S3) covers the emissions caused by inputs other than electricity (for example, raw materials).

Annex 3: Sectoral Tax Rates Implied by the CBAM

	Tax Rate (30 Euro)	Tax Rate (50 Euro)
Agriculture, forestry and fishery	3.1	5.1
Mineral	1.7	2.8
Food products, beverages and tobacco	1.9	3.1
Textiles, garments, leather and relevant products	0.9	1.4
Wood, wood products and cork products (except for furniture)	1.5	2.5
Paper products and printing	1.5	2.5
Coke and refined petroleum products	1.9	3.2
Chemicals and pharmaceutical products	1.5	2.4
Rubber and plastic products	1.2	1.9
Other non-metallic mineral products	11.2	18.3
Production of basic metal	3.0	4.8
Fabricated metal products except for machinery and equipment	1.4	2.2
Computers, electronic and optical products	0.3	0.6
Electrical equipment	1.3	2.1
Machinery and equipment not classified elsewhere	0.8	1.4
Motor vehicles, trailers and semi-trailers	1.0	1.6
Other transportation equipment	0.4	0.6
Other products; repair and installation of machinery and equipment	1.1	1.8
Electricity, gas, water provision, sewerage, waste and improving services	12.2	19.8
Construction	2.0	3.2
Wholesale and retail trade; repair of motor vehicles	0.7	1.1
Handling and storing	1.4	2.2
Accommodation and food services	1.1	1.7
Broadcasting, audio-visual and broadcasting activities	1.2	1.9
Telecommunication	0.7	1.2
IT and other information services	0.2	0.3
Finance and insurance activities	0.5	0.8
Real estate activities	0.9	1.5
Other business sector services	0.8	1.2
Public administration and defense; mandatory social security	0.7	1.2
Training	0.4	0.6
Human health and social service	1.0	1.6
Art, entertainment, recreation and other service activities	1.0	1.6

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Refik Saydam Caddesi Akarca Sokak N:41 Tepebaşı, Beyoğlu / İstanbul
+90 212 251 73 00 / +90 212 251 58 77 www.turkonfed.org / info@turkonfed.org