

We are going through a period in which climate change, with its growing repercussions for multiple issue areas, has become one of the most critical agenda items in the world.

In this respect, we, as TUSIAD, espouse, as one of our strategic priorities, the Paris Agreement that represents a key consensus on climate change mitigation.

Awareness for the risks associated with climate change has reached a considerable level not only among governments but also among the business world. In today's world, there exists the need to resolutely put into perspective an economic transition that centres around climate change mitigation.

Circular economy offers feasible and scalable opportunities for abandoning unsustainable resource consumption patterns of today. Given the climate zone our country is located in, it is imperative to focus on policies that seek to enhance low-carbon development and climate change resilience. In this framework, all stakeholders should work on adjustments that would unravel the potential to integrate the ecosystems and business models of public and private sectors into an energy efficient, low-carbon economy.

With this understanding, we, as TUSIAD, unwaveringly support the process through which Turkey steadfastly develops national policies on climate change mitigation and effectively pursues their implementation. In this process, we believe it is of utmost importance that initiatives regarding Turkey's status under the Paris Agreement be resolutely continued with the contribution of all stakeholders.

***This Position Paper was prepared by the Task Force<sup>1</sup> established by the TUSIAD Board of Directors Resolution dated February 9, 2017, with the aim of sharing with the public TUSIAD's understanding of the key agenda items in the process of addressing climate change. This Position Paper was approved by the TUSIAD Board of Directors Resolution dated September 7, 2017.***

The outline of the Position Paper is as follows:

- A. Turkey's Position in International Platforms and Enhancement of its Negotiating Power
  1. Paris Agreement
  2. Enhancement of Negotiating Power
- B. Preparing for a Low-Carbon Future
  1. Monitoring, Reporting and Verification (MRV)
  2. Financial Sources and Support Mechanisms
  3. Managing the Carbon Economy
  4. Low-Carbon Energy Supply Portfolio
  5. Energy Efficiency

---

<sup>1</sup> Task Force members: Akçansa, Arçelik, Çimsa, Enerjisa, Garanti Bank, Koç Holding, OMV, OYAK,

Polat Energy, Sabancı Holding, TSKB, Turcas Petrol, TÜPRAŞ, TUSIAD, Yaşar Holding, Zorlu Energy

## A. Turkey's Position in International Platforms and Enhancement of its Negotiating Power

### 1. Paris Agreement

The Paris Agreement marks the beginning of a new era in the international climate regime. The principal feature of this new era is the stipulation that all state parties, both developed and developing, should take measures to reduce emissions in accordance with the Agreement's principle of "*common but differentiated responsibilities and respective capabilities*"<sup>2</sup>. On the other hand, however, uncertainty still prevails under the Paris Agreement regarding the status of Turkey, a country whose special circumstances had been recognized, after long negotiations, under the UNFCCC.<sup>3</sup>

Initiatives regarding Turkey's status under the Paris Agreement should be carried out determinedly with the contribution of all stakeholders. Moreover, Turkey should steadfastly develop, independently of the Agreement, national policies to address climate change, and implement these in an effective manner.

For the purpose of assessing the possible opportunities and risks involved for the business world, and in view of the fact that the

Agreement serves as a reference point in the international arena and that the issue at hand bears strategic importance, development of a new communication strategy, and simultaneous execution of associated legal, technical and diplomatic processes are called for.

In the event that such international trading criteria as the adoption of a carbon limit for exported goods, product labelling and energy efficiency standards are laid down in line with the developments in the international agenda, this may have an adverse impact on the international competitiveness of the private sector, given the latter's present infrastructure<sup>4</sup>.

The Paris Agreement restructures the existing components of the global climate policy, such as mitigation, adaptation, financing, and technology, while adding new components, including loss and damage. More importantly, the Agreement signifies a transition from absolute emissions delimitation or reduction targets that were binding only for the Annex-I countries under the UNFCCC to a new cooperation system where all parties specify their own contribution to emissions reduction on the basis of their respective national circumstances. With the implementation of this new structure, a new process has thus

---

<sup>2</sup> TUSIAD, "Addressing Climate Change from an Economic Policy Perspective", 2016, <http://tusiad.org/tr/yayinlar/raporlar/item/9388-ekonomi-politikalari-perspektifinden-iklim-deqisikliqi-ile-mucadele>

<sup>3</sup> TUSIAD, "Addressing Climate Change from an Economic Policy Perspective", 2016

<sup>4</sup> Ministry of Environment and Urbanization, "Final Assessment Report on International Climate Negotiations", 2017

been initiated to identify detailed implementing rules for ensuring the effective functioning of the system<sup>5</sup>. Undoubtedly, it is of utmost importance for Turkey to reinforce its role in the process by way of participating in the relevant negotiation mechanisms. To effectively pursue this process, Turkey should, in the first place, define independently of the Paris Agreement its post-2020 position with regard to low-carbon development, and devise strategies accordingly. Schemes for circular economy, resource efficiency and low-carbon development should be designed with the collaboration of all stakeholders, and an integrated approach should be given primacy. During these evaluation processes, growth targets should be revised, and concrete goals should be set for non-energy sectors as well.

It is deemed significant that a feasible road map and a joint scheme towards achieving sustainable development be prepared with the contribution of concerned parties, including the private sector<sup>6</sup>.

The need to harmonize national policies and practices with the “Intended Nationally Determined Contribution” document, which was submitted during the signing phase of the Paris Agreement, still persists. To improve the investment environment and the predictability of climate change policies from the private

sector perspective, it is crucial to ensure the coherence and consistency among all relevant existing and prospective position papers, and sectoral plans and policy documents, including those (to be) submitted to international organizations. Among these documents are the Tenth Development Plan, Turkey’s National Climate Change Strategy, Climate Change Action Plan, Industrial Strategy Paper, Energy Efficiency Strategy Paper, Electric Energy Market and Security of Supply Strategy Paper, and strategic plans of relevant ministries.

It is also important to conduct a thorough impact analysis on the basis of sectors and of the overall economic dynamics, and evaluate policy predictions in these areas while assessing the Paris Agreement.

Proposed policy instruments for addressing climate change and reducing emissions should secure the competitiveness of the Turkish economy and prove to be predictable. In this regard, a viable model policy set for Turkey should be built on the example of international “best” practices<sup>7</sup>.

On the other hand, effective implementation essentially requires designing of long-term and differentiated sector-based (energy, industry, transport, etc.) policies as part of the policy-making efforts to address climate change, and

---

<sup>5</sup> TÜSİAD, “Addressing Climate Change from an Economic Policy Perspective”, 2016

<sup>6</sup> TÜSİAD Opinions on the United Nations Framework Convention on Climate Change Notifications, March 9, 2017

<http://tusiad.org/tr/cevre-iklim-degisikligi-cg/item/9635-bmi-dc-s-bildirimlerine-ilis-kin-tu-si-ad-go-ru-s-leri>

<sup>7</sup> TÜSİAD, “Addressing Climate Change from an Economic Policy Perspective”, 2016

transparently sharing with the relevant stakeholders the predictions pertaining to these policies<sup>8</sup>.

## 2. Enhancement of Negotiating Power

Turkey demonstrated its resolve to address climate change by ratifying the Kyoto Protocol. On the other hand, climate change mitigation has also been linked, in today's world, to a new development model. It is important for Turkey to reap the benefits of this model in terms of climate change mitigation, and at the same time, protection of economic competitiveness. The environmental and economic policy framework should encourage businesses to plan their future on the basis of this new development model, and on the other hand, be designed in a way to enable Turkey to effectively convey to the global audience its determination to address climate change.

To demonstrate Turkey's resolve in combating climate change, adequate mechanisms should be put in place with a view to effectively sharing with relevant parties the policies pursued and the projects carried out, as well as the reports documenting efforts towards emissions reduction and adaptation. Revealing, through these endeavours, not only the ongoing projects but also the areas that require additional funds will also contribute to the

communication strategy pursued in international platforms dealing with climate change.

Turkey's arguments and demands at the negotiation table should be promoted and strengthened by preparing, with the participation of the private sector, academia, and non-governmental organizations, academic reports concerning Turkey's demand, among others, for access to international funds and to technology support<sup>9</sup>.

Studies conducted with the initiative of relevant stakeholders should be taken into consideration when developing issue-specific policy arguments. For instance, the report entitled "Addressing Climate Change from an Economic Policy Perspective", which was prepared by TUSIAD in collaboration with an extensive group of experts, examined the possible effects on priority sectors of policy instruments designed for climate change mitigation, and put forward a viable model policy set for Turkey.

In the current situation, the private sector in Turkey is developing many successful practices that will reinforce public policies towards climate change mitigation. These success stories and emissions reduction gains should

---

<sup>8</sup> TUSIAD Opinion on the Intended Nationally Determined Contribution Document regarding Turkey's post-2020 climate change mitigation efforts <http://tusiad.org/tr/cevre-iklim-degisikligi-cq/item/8973-turkiyenin-2020-yili-sonrasina->

[yonelik-iklim-degisikligiyle-mucadeleye-iliskin-ulusal-katki-niyet-belgesi](#)

<sup>9</sup> Ministry of Environment and Urbanization, "Final Assessment Report on International Climate Negotiations", 2017

be made use of in negotiations, in relevant international platforms and in communication strategies<sup>10</sup>.

Meetings for climate negotiations assessment should be organized at the national level on a regular basis, with the participation of representatives from the private sector, academia, and NGOs. In these meetings, Turkey's negotiation position and arguments should be reviewed on the basis of the contributions of all relevant stakeholders and of current conditions. The development of the communication strategy, an essential component of the negotiation process, should involve the establishment of a committee consisting of representatives of all stakeholders in order to be able to present every single aspect of Turkey's arguments in a thorough manner.

## B. Preparing for a Low-Carbon Future

Low-carbon development entails legislative amendments that should accommodate sectoral practices and international competitiveness. Undoubtedly, these arrangements should incorporate measures to ensure energy supply security and energy resource diversity, given Turkey's growing energy demand<sup>11</sup>.

Becoming a country where new technologies are developed by improving the innovation and research-development capacities is the only way to achieve a viable and sustainable transition to a low-carbon economy<sup>12</sup>. In addition, mechanisms to produce and disseminate new technologies that will expedite Turkey's transition to low-carbon development should be worked on and developed in all aspects<sup>13</sup>.

Raising awareness among all stakeholders and putting into practice policies and incentive mechanisms to promote low-carbon investments will play a significant role in achieving a low-carbon future. During these stages, a close dialogue to be forged between the public and private sectors will prove profoundly instrumental for effective implementation.

Raising public awareness is also of key importance for addressing the issue of climate change. Awareness-raising projects and activities will enable the public to assume a more active role in fighting climate change.

These efforts will not only contribute to the fight against climate change, but also further our country's development, reinforce its innovative attitude, and reduce external

---

<sup>10</sup> Ministry of Environment and Urbanization, "Paris Agreement and Private Sector Workshop Final Report", 2017

<sup>11</sup> TÜSIAD, "Addressing Climate Change from an Economic Policy Perspective", 2016

<sup>12</sup> Ministry of Environment and Urbanization, "Final Assessment Report on International Climate Negotiations", 2017

<sup>13</sup> Ministry of Environment and Urbanization, "Paris Agreement and Private Sector Workshop Final Report", 2017

dependence with the use of efficient technologies.

#### **Addressing Climate Change: Examples from TÜSIAD Members**

TÜSIAD members account for 38 out of the 50 firms reporting from Turkey for the 2016 Global Climate Change Report prepared within the scope of the Carbon Disclosure Project (CDP), one of the world's most reputable environmental initiatives.

The two Turkish firms that qualified to be included in the CDP's "Global A List" of the 2016 Global Climate Change Report that identified pioneer firms in the fight against climate change were TUSIAD members.

Science Based Targets is a global initiative that aims to encourage firms to espouse more vigorous, science based targets. TÜSIAD members constitute 5 out of the 290 firms that committed to set science based targets on the global scale.

In the period between November 2016 and October 2017, TUSIAD members accounted for 34 out of the 42 firms that were included in the BIST Sustainability Index.

TÜSIAD members' undertakings towards addressing climate change can be reached here:

<http://url.tusiad.org/iklimgg>

## **1. Monitoring, Reporting and Verification (MRV)**

It is essential to harmonize the methods used for determining greenhouse gas emission values to be presented to international organizations with the methods employed for calculating sectoral emissions. Studies to be conducted on the economy, energy and emission models should be based on standardized, official and reliable information and data.

Preparing guiding documents and offering technical training to relevant sectors will be instrumental in ensuring the compatibility of the above-mentioned calculations with international standards<sup>14</sup>.

In this regard, it is also important that the monitoring, reporting and verification activities undertaken within the scope of the "Regulation on the Monitoring of Greenhouse Gas Emissions" be completed on the part of all sectors and firms involved.<sup>15</sup>

First reporting activities related to greenhouse gas emissions began in 2017. The process of the verification of reports by verifying institutions and submission of verified reports to the Ministry of Environment and Urbanization is still in progress. Turkey's

<sup>14</sup> TÜSIAD Opinions on the United Nations Framework Convention on Climate Change Notifications, March 9, 2017 <http://tusiad.org/tr/cevre-iklim-deqisikliqi-cq/item/9635-bmi-dc-s-bildirimlerine-ilis-kin-tu-si-ad-go-ru-s-leri>

<sup>15</sup> TÜSIAD Opinions on the United Nations Framework Convention on Climate Change Notifications, March 9, 2017 <http://tusiad.org/tr/cevre-iklim-deqisikliqi-cq/item/9635-bmi-dc-s-bildirimlerine-ilis-kin-tu-si-ad-go-ru-s-leri>

position vis-à-vis the new climate agreement will have to be shaped, after a three-year transition period envisaged for relevant sectors, by taking into account greenhouse gas emission estimates to be verified as from 2017 and the greenhouse gas emissions data that are included in the national reports submitted to the United Nations Framework Convention on Climate Change (UNFCCC) Secretariat. Maintaining competitiveness also requires that assessments be made on the basis of verified data submitted to the UNFCCC.

#### **AKÇANSA**

**Reduction:** The 15 MW power plant that was established within the scope of the “Waste Heat Recovery Project” conducted at the Çanakkale Factory meets one third of the factory’s total annual power demand. Power generation at the plant has grown over the years, the amount of recovered energy reaching 346 thousand GJ and the amount of reduced emissions 51.4 thousand tonnes of CO<sub>2</sub>e as of 2015.

The 2.35 MW wind turbine that started operating at the Çanakkale Factory in 2016 annually produces 7,844 MWh of electricity. This amount meets 1.8% of the factory’s total annual power consumption.

**R&D and Innovation:** Within the scope of a project developed in collaboration with Çanakkale Onsekiz Mart University, microalgae are produced at a pilot plant set

up at the Çanakkale establishment. Microalgae are microorganisms that contain carbohydrates, proteins, lipids and vitamins. They consist of around 15-77% lipids in varying degrees and use CO<sub>2</sub> as the inorganic carbon source they require for growing and accumulating lipids in their bodies. Benefiting from this feature of microalgae, this system is unprecedented in the cement sector. The system allowed for feeding microalgae repositories with the flue gas from the clinker production line. In this way, it became possible to eliminate the flue gas emissions, and at the same time, to produce microalgae, an asset with multiple uses, in an economical way. The pilot plant aims to produce 5 kg of microalgae daily and as a result, to eliminate 25,360 kg of CO<sub>2</sub> emissions annually.

## **2. Financial Sources and Support Mechanisms**

While Turkey’s transition to the low-carbon development model will create new economic and employment opportunities, capacity- and technology-building investments will require considerable financial sources. Access to global funds (including GCF, GEF, and MDB) will certainly play a critical role as it will facilitate the preferential transfer of large sums of funds and provide an impetus for investors. In this process, the size of the investment portfolio

required for achieving emissions reduction and climate change adaptation will constitute an essential element of the communication strategy that needs to be elaborated on relevant public and business platforms. However, given the possible constraints regarding international funds and MDB's, it is important that financial agencies in the public and private sectors develop models for funding low-carbon investments.

Turkey needs to realize its energy efficiency potential to the fullest<sup>16</sup>, and the incentives mechanisms to be introduced should be oriented towards addressing climate change, contribute to national plans and programmes, and stimulate stakeholders' will to take part in these efforts.

Restructuring incentives and devising long-term policies will considerably boost the transition of businesses to the low-carbon development model, and increase their appetite for investing. Resting these support mechanisms on the principles of competitiveness and sustainability and framing them in a complementary fashion so as to enable basic and supporting industries to further develop are key elements for coherence and efficiency.

Among the major instruments already available in Turkey for promoting the transition

to a low-carbon economy are the allocation of tax revenues for climate change mitigation, the renewable energy subsidy system, the supports provided for energy efficiency projects, and the legislation regulating energy efficiency in buildings.

Having said that, relatively high taxes in Turkey charged particularly per unit price of electricity and fuel, a practice also included in the financial regulations on environmental protection, do not serve to bring about a substantive progress in reducing carbon emissions. The failure to allocate the said tax revenues for environmental support mechanisms can be cited as another drawback.

Here, the main source of the problem is the inability, despite taxation, to develop alternative technologies to replace energy-intensive and resource-inefficient processes. In a situation where alternatives to contaminating industrial processes are not promoted, the only outcome of high taxation will be increased production costs, in addition to additional revenues for the Treasury. Beyond these, no other substantial benefits towards reducing environmental effects can be achieved. When devising our energy policies, it will be appropriate from the sustainable energy perspective to take into consideration the use

---

<sup>16</sup> Ministry of Environment and Urbanization, "Paris Agreement and Private Sector Workshop Final Report", 2017

of low-carbon fuels, such as LPG, and of electric cars.

In this framework, a preliminary study should be conducted, prior to the 11th Development Plan and with the participation of and contributions from the public and private sectors, in order to identify specific incentive tools to be designed for infrastructure, technology, and/or product investments targeting low-carbon development, and for energy efficiency in particular. Incorporating the results of this study into the upcoming Development Plan and putting them into practice will constitute a significant step towards the goal of promoting investments in this field.

**ARÇELİK**

**Reduction:** Arçelik Inc. reduces environmental effects of production through energy efficiency projects, achieving, at the same time, significant cuts on energy costs. In 2016, nearly 270 energy efficiency projects were carried out, which resulted in annual energy savings of 138,720 GJ and CO<sub>2</sub>e reductions of 12,257 tonnes. These savings equal the total annual power production levels of a 24 MW solar plant.

**Adaptation:** Since 2010, Arçelik Inc. voluntarily estimates production-driven greenhouse gas emissions in accordance with the ISO 14064-1 Standard, and

submits these estimates to independent institutions for certification.

In addition to production, Arçelik Inc. is the first and only Turkish firm in its sector that undertakes, since 2013, certification efforts towards logistics carbon management.

With its climate change management endeavours, Arçelik Inc. has achieved CDP Leadership for five consecutive years, qualifying for the CDP's Global A List in 2014 and 2016.

Arçelik Inc. fulfils its obligations under the Regulation on the Monitoring and Reporting of Greenhouse Gas Emissions, a process audited and verified by an authorized external audit firm.

With its two WEEE recycling facilities, Arçelik Inc. is the first and only production firm in Turkey to set up a WEEE recycling plant. Operations of these two plants provided savings that amounted to 108.3 GWh and CO<sub>2</sub>e reductions to 54,000 tonnes. The amount of savings equals the total annual energy production of seventeen wind turbines of 2.5 MW combined.

**R&D and Innovation:** R&D endeavours help reduce environmental effects of products. Arçelik Inc. allocated 45 million TL for R&D ventures on environment-friendly products within its operations in Turkey.

### 3. Managing the Carbon Economy

To design carbon pricing policies entails tackling incentive mechanisms to promote energy efficiency and low-carbon economy under a coherent policy package, and concurrently completing technical infrastructural requirements needed for implementation.

Offsetting the additional tax burden that will possibly arise from carbon pricing by reducing other taxes may be considered as an option. This practice, referred to as “neutral tax” in the economics literature, involves “offsetting” the energy tax by reducing existing taxes in other areas. This option helps achieve reductions in carbon emissions on the one hand, and minimizes production losses through neutralizing the tax burden on the other.<sup>17</sup>

Emissions Trading System (ETS) is regarded as an effective mechanism for reducing greenhouse gas emissions. Effective development of the ETS in Turkey can be achieved by ensuring that the following conditions are met:

- Deepening of national financial markets,
- Ensuring financial auditing mechanisms to reach institutional competence,
- Effective functioning of auditing and monitoring systems and

- Taking account of the inventory formed as a result of MRV activities.

Design parameters to be identified for the ETS should ensure a fair system that would not undermine the competitive power of sectors.

On the other hand, Turkey’s most significant drawback on the way to an ETS is the lack of sufficiently detailed data on sectoral carbon emissions. Enhancing the data inventory in this direction is a prerequisite for the implementation of this system. Therefore, the ETS should be put into practice in Turkey only after sufficient experience in MRV has been acquired.

When setting an upper limit for the ETS, a dynamic approach, instead of constant growth perspectives, should be adopted; moreover, sectoral growth estimates and sector-specific dynamics should be assessed in consultation with the business world<sup>18</sup>.

In the light of these considerations, it can be argued that implementing a new policy instrument, including neutral tax, for addressing climate change entails the designing of a comprehensive policy package that will not be confined to a single instrument and will take account of sectoral and global competitiveness as well as macroeconomic policies.

---

<sup>17</sup> TÜSİAD, “Addressing Climate Change from an Economic Policy Perspective”, 2016

<sup>18</sup> TÜSİAD, “Addressing Climate Change from an Economic Policy Perspective”, 2016

Such a package will constitute an important step towards low-carbon development provided that it incorporates, as mentioned above, new measures and technologies for increasing energy efficiency (e.g., energy efficiency standards and external trade arrangements to promote these standards, energy performance certificates, etc.), and incentives and practices to enable the dissemination of renewable energy sources. These measures should simultaneously be put into practice alongside the ETS and/or neutral tax.

On the other hand, instituting an integrated and sustainable data transfer mechanism between institutions, authorised by various regulations to gather and process data that will serve as input for environmental policy-making, is a precondition for effective implementation.

#### **ÇİMSA**

**Reduction:** At the cement factory in Eskişehir, alternative fuels substitute for conventional ones, such as coal and petroleum coke, thus enabling emissions reduction. Alternative fuels coming from various industries are processed at the Refuse-Derived Fuels (RDF) preparation plant located at the factory site.

RDF production is carried out in accordance with ÇİMSA Waste Acceptance Criteria and with relevant regulations and

communiqués. The RDF produced are burned in a Hotdisc combustion device, a first in Turkey, and later in a rotary furnace together with other fuels.

By using RDF at the plant, waste management processes of other industries have been supported, and at the same time waste-induced environmental effects have been minimized. The RDF use has led to a total CO<sub>2</sub> emissions reduction of 42,700 tonnes over the years 2014-2016. Alternative fuel usage rate is intended to be increased from 33.3% in 2016 to over 40% by 2020.

At the Mersin facilities, projects on energy efficiency and on power generation from waste gas heat have been carried out. The project on power production from waste gas heat generated by rotary furnaces came into effect in 2012. Having an installed capacity of 9.8 MW, the plant meets about 20% of the factory's total annual power demand. The project allowed for a CO<sub>2</sub> emissions reduction of 24,502 tonnes by 2016.

#### **4. Low-Carbon Energy Supply Portfolio**

Besides greenhouse gas emissions reduction, transition to low-carbon development has other benefits to be taken into consideration. These include reducing import dependence in

energy, improving energy security, preventing air pollution and creating new employment opportunities.

As Turkey aims to meet at least two thirds of its electricity production by using domestic energy sources, it is essential to maximize the use of its extensively available renewable sources, including geothermal, solar and wind power, while subjecting the use of lignite coal, another domestic energy source, to all relevant environmental standards. It is also important for Turkey to communicate, in international platforms dealing with climate policies, its growth and energy projections involving the use of coal, as well as its technical justifications for these projections. It is believed that such arguments bear significance for enhancing Turkey's energy supply security and reducing its current deficit, and as such they should be substantiated by quantitative analyses based on Turkey's medium and long term base and peak load demand and commodity price projections. In addition to this, it is necessary to improve and diversify energy resource portfolio in such a way as to reinforce environmental and financial sustainability concurrently with supply security.

Taking measures for accelerating renewable energy investments will be a crucial step in this respect. Accordingly, it is required that technical, administrative and financial criteria for wind and solar energy tender applications be determined in such a way that only feasible projects can apply. Moreover, in order for a

predictable investment environment to develop, it is essential that the incentives system and other legislative arrangements be designed for the long haul. Wind and solar energy contests and Renewable Energy Resource Zone (YEKA) tenders should continue to be organized in a manner that would ensure continuity in capacity growth, and the potential available in these areas should swiftly be incorporated into the system, if we desire to meet our goals. Certain arrangements are required for increasing the capacities of wind power plants in operation, where vast increases can be realized in short periods of time. In addition, the potential available for expanding the use of solar power starting from households (e.g., solar roof systems) should be utilized.

As a consequence of increasing consumer awareness, there are an ever growing number of consumers who desire to use electricity generated from renewables, and thus support renewable energy investments. It is important to make the necessary arrangements for introducing green certificates for electricity generated at renewable energy plants, a practice stipulated also under the National Renewable Energy Action Plan, and for promoting green electricity supply.

To properly manage the transformation towards energy resource diversification, renewable energy ventures should be well integrated into the system. To this end, necessary adjustments to the electricity

transmission network should be made, and the transmission and distribution infrastructure should be expanded and strengthened so that it will be better equipped for its operations. Recent advancements in and the potential offered by electricity storage technologies should be closely monitored. To increase the R&D and innovation capacity in renewable energy technologies, it is important to promote R&D endeavours, particularly in the field of electricity storage technologies, and develop products and practices related to this field.

#### ENERJISA

**Reduction:** ENERJISA has a CO<sub>2</sub> reduction capacity of 2 million tonnes per year; thanks to its renewable energy (hydroelectricity, wind) operated power plants that are located in different parts of Turkey.

At the Bandırma I Natural Gas Plant, three improvement projects were specified and carried into practice with the purpose of increasing efficiency and reducing emissions. The efficiency of gas turbines and of combustion processes in the auxiliary boiler has been improved, and additional improvements have led to reductions in internal power consumption, and consequently in production losses. The

projects were designed as part of the production process and demonstrate continuity. With these projects, combustion-induced CO<sub>2</sub> emissions have seen an annual decrease of 5,600 tonnes as the natural gas consumption diminished.

## 5. Energy Efficiency

Energy efficiency is of particular significance from a climate change perspective. On the other hand, Turkey should particularly focus on energy efficiency when framing its climate change mitigation policies as this matter closely concerns Turkey's increasing energy demand, its energy imports driven current deficit and even its energy supply security. It is crucial, in this respect, that Turkey make the most of its energy efficiency potential.

According to the analyses conducted by the International Energy Agency, nearly half of the envisaged emissions reductions worldwide<sup>19</sup> will emanate from energy efficiency and renewable energy in the years to come. While Turkey's energy intensity is above the OECD average<sup>20</sup>, Turkey has a considerable energy efficiency potential in all energy-related areas ranging from energy production to consumption. According to yet another International Energy Agency report, entitled "*Energy Policies of IEA Countries - Turkey 2016*"

<sup>19</sup> International Energy Agency (IEA), "Energy Technology Perspectives", 2017

<sup>20</sup> TPES/GDP (calculated on the basis of data from the International Energy Agency (IEA) report entitled "Key World Energy Statistics".)

Review”<sup>21</sup>, Turkey is the only country among IEA members that did not see any decrease in its energy intensity between 2005 and 2015. Therefore, it is critical for Turkey to give due consideration to energy efficiency within the scope of its growth plans and emissions reduction strategies.

Turkey aims to reduce its energy intensity by at least 20%, compared to the 2011 level<sup>22</sup>, by 2023. Although it is a positive step, monitoring the progress towards this aim is needed.

Turkey will also benefit from raising energy efficiency awareness and installing proper incentive and deterrence mechanisms.

To improve energy efficiency, sector-specific road maps should be prepared in cooperation with the public and private sectors; the liberalization of the energy sector should be accelerated; and the more effective functioning of competitive energy markets should speedily be ensured.

Ensuring proper operation of free and competitive market structures in the electricity and natural gas sectors will contribute to the efforts to make more effective use of Turkey’s efficiency potential. Higher efficiencies achieved by private power plants in Turkey, compared to publicly run plants, and significant reductions in power

transmission losses owing to the privatization of electricity distribution can be cited as prominent examples in this respect.

Among other important steps to be taken are revising the Energy Efficiency Law and the relevant legislation in accordance with changing circumstances and needs, identifying and implementing the necessary arrangements, and installing control mechanisms.

In order to realize the energy efficiency transformation in a much more speedy and reliable manner, it will be beneficial to bring into force mandatory, rather than voluntary, improvements that are guided by legislation and are well-defined.

#### **KOÇ HOLDİNG**

**Reduction:** Projects oriented towards energy intensity and greenhouse gas emissions reduction constitute an important part, and a priority area, of the Koç Holding’s efforts towards devising environmental policies, and long-term environmental and climate change strategies. These projects have a positive impact both on environmental and climate performance, and on costs owing to the operational efficiency achieved.

---

<sup>21</sup> *Energy Policies of IEA Countries - Turkey 2016 Review*, <http://www.iea.org/publications/freepublications/publication/EnergyPoliciesofIEACountriesTurkey.pdf>

<sup>22</sup> *Ministry of Energy and Natural Resources, Energy Efficiency Strategy Paper (2012-2023)*

The energy efficiency projects conducted by the Koç Group companies between 2012 and 2016 (i.e. over the last five years) yielded energy savings of over 13.4 million GJ in total and prevented greenhouse gas emissions of over 940 thousand tonnes.

**Adaptation:** Water efficiency in production, wastewater recycling, and relieving pressure on resources by increasing resource reuse and diversification are among the priority areas within the scope of the Koç Holding's environmental strategy.

When the total water use values over the last five years are assessed, it can be observed that the share of the use of surface and underground waters in the total water consumption fell from 91.1% to 59.2% by 2016. In 2016, over 106.34 million m<sup>3</sup> of water was recovered and used in production by way of recycling and reuse, thus making the share of recycled water use in production 72.3%.

**R&D:** The Koç Group companies manage their climate change mitigation and adaptation efforts, which include promotion of emissions reduction and of energy efficiency, wise use of water resources and waste management, on the basis of their long-term environmental strategies. The total value of environmental investments made by the Group companies

in the period between 2012 and 2016 amounted to more than one billion TL.

### 5.1. Energy Efficiency in Industry

It is of utmost importance that the efficiency potential in Turkey be determined for each sector within the framework of its National Energy Efficiency Action Plan, targets be differentiated on a sectoral basis and be implemented with due consideration to the views of sector representatives. The requirements for the ISO 50001 Certificate, which was made obligatory by the Power Generation Plants Acceptance Regulation, should be fulfilled in accordance with the procedures specified by the Regulation; efficiency activities should be systematically monitored and inspected.

Under the current system, voluntary agreements stipulate an average reduction of 10% in energy intensity over a three year period. Turkey has made significant gains in energy efficiency, thanks to the efficiency endeavours undertaken by industrial enterprises. To promote such gains in an integrated manner, it is believed that a system that allows for setting targets on company basis is called for. In this framework, we propose a gradual rewards system where gains are rewarded on a progressive basis (e.g.,

increasing rewards for every percentile increase in gains).<sup>23</sup>

We believe that the infrastructure for promoting energy efficiency projects should be reviewed; shortcomings and uncertainties should be remedied, and financially preferable subsidy models with easier application and qualification procedures should be put in place for industrial enterprises. Instead of minimum energy efficiency criteria, different subsidy categories should be defined on the basis of current/prospective efficiency levels.

For increasing energy efficiency in industry, large-scale tenders on energy efficiency transformation, similar to YEKA tenders, should be organized, and efficiency transformation should be accelerated in collaboration with the public and private sectors.

A similar practice to energy efficiency labels for buildings should be put into perspective for industrial plants, and alternative incentives should be granted to plants having high efficiency levels or upgrading their energy efficiency class.

The effectiveness of energy management departments particularly at the Organized Industrial Zones should be scrutinized. Accordingly, competencies and mandates of

these departments should be enhanced.

Other incentive mechanisms should be introduced to complement the grants provided for energy efficiency projects, the share of which is specified under the National Energy Efficiency Action Plan as 20% of project costs. In addition to “grants”, loans with grace periods, which would be made readily available for use, should be provided.

Targets towards increasing energy efficiency and reducing energy intensity in industry should be allowed to be set on company basis through voluntary agreements. Incentive mechanisms should be set up, independently of tax reductions in investment and operating costs, for companies that undertake industrial symbiosis research so that they can carry out their R&D activities and proceed to the field application of such research.

The state’s assuming of a certain share of the energy efficiency survey costs of those enterprises that have an energy consumption of over 1000 TEP and are having difficulties to bear the increasing costs resulting from mandatory surveys will provide considerable benefits. In case the projects included in the survey reports are realized, incentive mechanisms should be activated and the bureaucratic procedures for obtaining the financial supports provided by the Small and

---

<sup>23</sup> TÜSİAD Opinions on the 2<sup>nd</sup> Draft of National Energy Efficiency Action Plan [http://tusiad.org/tr/enerji-cq/item/9567-ulusal-](http://tusiad.org/tr/enerji-cq/item/9567-ulusal-enerji-verimliliqi-eylem-plani-2-taslaqi-tusiad-gorusleri)

[enerji-verimliliqi-eylem-plani-2-taslaqi-tusiad-gorusleri](http://tusiad.org/tr/enerji-cq/item/9567-ulusal-enerji-verimliliqi-eylem-plani-2-taslaqi-tusiad-gorusleri)

Medium Enterprises Development Organization (KOSGEB) for energy efficiency surveys in SMEs should be simplified.

In addition to improving efficiency in the energy sector and making use of the renewable energy potential, other steps should also be taken to fulfil Turkey's potential in such areas as smart grids, demand management, development of new technologies and electric cars. "Turkey's Road Map for Smart Grids", a project carried out by the Energy Market Regulatory Authority (EMRA) in collaboration with electricity distribution companies, is regarded as a positive development in this respect.

Higher efficiencies of private power generation plants, compared to publicly run plants, and considerable reductions in transmission losses achieved as a result of the privatization of electricity distribution are seen as prominent examples in this context.

#### **OYAK**

**Reduction:** The Oyak Group successfully implements circular economy practices and low-carbon solutions embracing the principle "more value with fewer resources". The energy efficiency projects, conducted in the last two years by the Oyak Group's mining, metallurgy, cement and concrete companies, have yielded energy savings of over 1.77 billion kwh, and have facilitated, since 2013, renewable energy

production of 1.5 million kwh. Since 2013, an annual reduction of 200,000 tonnes of CO<sub>2</sub> equivalents has been achieved through eight C-certified projects alone.

**Adaptation:** With its efforts towards the use of alternative raw materials/fuels and the minimization of natural resource use, the Oyak Group has conserved 12.2 million m<sup>3</sup> of soil over the years 2015-2016. In 2016, the Oyak Group issued its Biodiversity Policy that rests on the Group's multi-sectoral structure and its sensitivities regarding biodiversity and rehabilitation. With the purpose of creating a guiding document for the sectoral and general use, a Biodiversity Handbook was prepared for the first time in the private sector, and was submitted, in 2015, to the 12<sup>th</sup> Conference of the Parties of the United Nations Convention to Combat Desertification.

**R&D and Innovation:** The Oyak Group encourages R&D and innovation efforts of all its companies in order to increase its competitiveness on the global and national scale and respond to the needs and expectations of its shareholders. An amount of 63.3 million TL was invested in R&D between 2015 and 2016. Moreover, the Oyak Group spent 246.7 million TL on environmental investments in the period between 2014 and 2016.

## 5.2. Energy Efficiency in Buildings

It is seen that a considerable part of the emissions reduction target set forth in the Intended Nationally Determined Contribution Document, which was submitted to the UNFCCC Secretariat, is envisaged to be met by measures towards energy efficiency in buildings and by urban renewal efforts. The plans and policies towards this target should include urban renewal goals and projections as well. It is of primary importance to devise a feasible and realistic road map to guide this transformation.

It will also be beneficial to plan efforts towards promoting products with high energy efficiency with a view to increasing energy savings in homes<sup>24</sup>.

The urban renewal process should be used as an opportunity to put into practice, during the designing and construction phases of the new building stock, measures towards efficient use of energy, waste prevention and expansion of renewable energy use.

Energy efficiency criteria for public procurements should be reviewed and implementation of the identified measures should be made obligatory.

---

<sup>24</sup>TÜSİAD Opinion on the Intended Nationally Determined Contribution Document regarding Turkey's post-2020 climate change mitigation efforts <http://tusiad.org/tr/cevre-iklim-degisikligi->

## POLAT ENERJİ

**Reduction:** Operating in the field of electricity generation from renewable energy sources, Polat Energy averages an annual emissions reduction of 1.2 million tonnes of CO<sub>2</sub> equivalents, thanks to the eight wind power plants with a total installed capacity of 660 MW owned by its subsidiaries.

Being Turkey's largest operational wind power plant with an installed capacity of 240.1 MW, Soma WPP represented our country in the "Turkey" episode of the "[24 Hours of Reality](#)" broadcast, which was part of the "Climate Reality Project" initiated by the former Vice President of the US, Al Gore, to address climate change and the energy problem.

Organized to give support to the Paris Agreement, the "24 Hours of Reality" project included 24 countries with the highest levels of carbon emissions and introduced a project selected from each country for addressing climate change. The 16<sup>th</sup> episode of the project was dedicated to Turkey and presented Al Gore's commentary on the effects of climate change in Turkey as well as a documentary

[cg/item/8973-turkiyenin-2020-yili-sonrasina-yonelik-iklim-degisikligiyle-mucadeleye-iliskin-ulusal-katki-niyet-belgesi](http://tusiad.org/tr/cevre-iklim-degisikligi-cg/item/8973-turkiyenin-2020-yili-sonrasina-yonelik-iklim-degisikligiyle-mucadeleye-iliskin-ulusal-katki-niyet-belgesi)

film about Soma WPP, which had been shot in Manisa-Soma.

The documentary film included interviews conducted with the plant personnel at their homes and on the job, given that the personnel are selected specifically from the local community. By this way, the issue of climate change and the fight against it are presented from the eyes of the personnel who live in the region.

### 5.3. Energy Efficiency in Transport

The INDC does not include a timetable for the transport sector targets. Scheduling a timetable for this issue area will help build predictability that is much needed in the planning of private sector investments.

“Combined transportation”, a model also emphasized in the Energy Efficiency Strategy Paper, is an exceptionally rational mode of transport chain in which different modes of transport are used where they are the most efficient in technical and economic terms. This model helps reduce per-unit fossil fuel consumption by motor vehicles, prevent fuel waste in urban transport and decrease environmentally hazardous emissions<sup>25</sup>. In this context, a “Combined Transportation Strategy” should be framed, in the first place,

<sup>25</sup> Republic of Turkey Ministry of Energy and Natural Resources, “Energy Efficiency Strategy Paper (2012-2023)”, 2012

<sup>26</sup> TÜSİAD Opinion on the Intended Nationally Determined Contribution Document regarding

with the aim of “developing combined transportation”, and relevant legislation should be completed and put into effect to ensure effective implementation<sup>26</sup>.

In addition to these, the use of smart transportation systems that utilize information and communication technologies should be expanded in order to improve energy and transportation efficiency.

### TÜPRAŞ

**Reduction:** Energy efficiency projects are among the measures adopted in combating climate change as these projects contribute to greenhouse gas emissions reduction. With the implementation of such energy efficiency projects as energy recovery from waste heat, modernization of furnaces and boilers, modernization of processing units, and thermal integration, a reduction of about 1.15 million tonnes of greenhouse gas emissions as well as energy savings of 3.6 million Gcal were achieved in the period between 2011 and 2016. These projects won SENVER, SEVAP and ICCI awards.

### R&D and Innovation:

**Energy Recycling with Membrane Deaerator Cold Boiler Feed Water;** This innovative method is used for recycling wastewater, which in turn reduces energy

Turkey's post-2020 climate change mitigation efforts <http://tusiad.org/tr/cevre-iklim-degisikligi-cq/item/8973-turkiyenin-2020-yili-sonrasina-yonelik-iklim-degisikligiyle-mucadeleye-iliskin-ulusal-katki-niyet-belgesi>

consumption and emissions. This technology is unprecedented in the world in terms of the process it involves. The project is patented and was awarded the first prize in the "Process Category" of the national leg of the 2013-2014 European Business Awards for the Environment. In addition, energy processes are effectively monitored by the help of the **"TUPRAS Energy Network Monitoring and Optimization"** and the **"Heat Exchanger Pollution Monitoring"** models.

**Municipal Urban Wastewater Recycling for Reuse as Process Water in Industry;**

The water required for the refinery's

production operation is provided from the ISU's (Izmit Water and Sewage Administration) Bay Wastewater Treatment Facility by using innovative treatment technologies. This project allows for a considerable amount of annual water savings that nearly equals the water demand of a city with a population of 130,000. The project entitled "Using Municipal Waste Water as Process Water for Recovery" qualified as one of the finalists in the "Process Category" of the national leg of the 2015-2016 European Business Awards for the Environment. <https://www.tupras.com.tr/ks-raporlari>

## Task Force Members

Anıl Bayülker - Yaşar Holding

Ayça Aksoy - Koç Holding

Ayşe Özge Kepenek - OYAK

Bora Şekip Güray - Sabancı Holding

Cansu Üttü – TÜSİAD

Ceren Bayören - OYAK

Ceren Solak Yılmaz - Garanti Bankası

Çağla Eker Altınkulp – TSKB

Derya Özet Yalgı – Garanti Bankası

Eyüp Taşboğaz - OMV

Fatih Özkadı – Arçelik

Gülcan Uysalol - Akçansa

Hayal Sönmezler - Turcas Petrol

İhsan Erbil Bayçöl - Enerjisa

İlksen Önbilgin – TÜPRAŞ

İrem Çeri - Enerjisa

İsmail Boz - Çimsa

Kiraz Öcal – Zorlu Enerji

Nergiz Akpınar - Polat Enerji

Nurşen Numanoğlu – TÜSİAD

Öykü Şenlen – TÜSİAD

Özgür Öztürk – Akçansa

Salih Tural - Enerjisa

Tamer Soylu - Zorlu Enerji

Volkan Orhan Tekin - TÜPRAŞ