Challenges of Energy Sector in Türkiye with Respect to Climate Change Mitigation Targets and Sustainable Climate-Resilient Development

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Motivation

- Türkiye is an important OECD member developing country, whose dependence on fossil fuels in the energy sector is high and whose CO_2 *eq*. GHG emissions originating from the energy sector are still increasing rapidly, and moreover, a socioeconomic future based on fossil fuels is still supported.
- **In this context, the main purpose of the study is as follows**:

1) To introduce shortly the United Nations based intergovernmental negotiations – Global Climate Diplomacy;
2) To make a scientific technical evaluation of the national circumstances and greenhouse gases of Türkiye regarding enery and climate change;
3) To assess the validity of Türkiye's 2030 and 2053 climate change mitigation targets within the scope of the United Nations Framework Convention on Climate Change (UNFCCC) Paris Agreement; and
4) To evaluate possibilities of transition to green energy within the scope of a sustainable climate-resilient development, and the climate change resilience of the energy sector.

POLICIES TO SLOW DOWN THE GLOBAL WARMING

(United Nations Based Intergovernmental Negotiations – Climate Diplomacy)

(Türkeş, 2020, 2021, 2022, 2023)

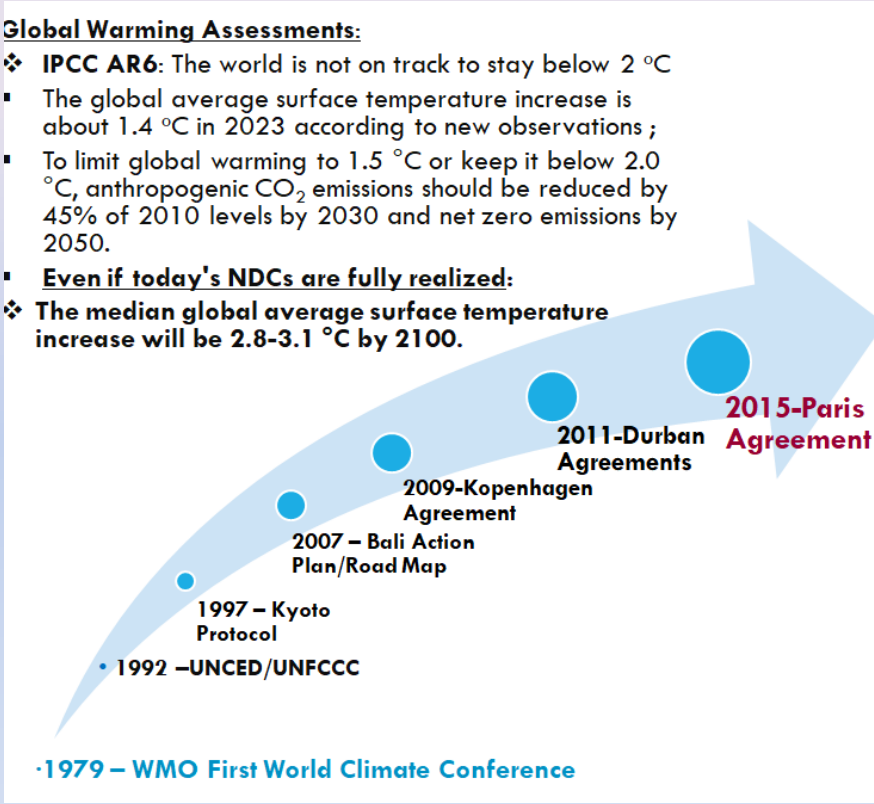
«**As the number of intergovernmental climate activities increases, the global warming trend becomes worse and more difficult to control**.»

Another words:

«There is a significant positive relationship between the number of climate change activities (e.g., works, process, studies, scientific papers, projects, reports, etc.) and intergovernmental treaties (e.g., convention, protocol, agreement, pact, etc.) and observed trends in global CO_2 concentration, CO_2 emission and global average surface temperature and record number of days above 1.5˚C, etc.»

Çizelge 1: 1979-2020 döneminde iklim değişikliği konulu uluslararası ve hükümetlerarası görüşmeler sürecinde gerçekleşen önemli dönüm noktaları ve gelişmeler (Türkeş 1995a, 1995b, 2001a, 2001b, 2006a, 2006b, 2008, 2009, 2010, 2012a, 2012b, 2017, 2021a ve 2021b; Türkeş ve Bilir 2013'e göre güncelleştirilerek yeniden düzenlendi).

Çalışma/Eylem/Etkinlik/Süreç	*Başlıca Konferans, Uzlaşma, Antlaşma ve Gelişmeler*
Bilimsel ve teknik değerlendirme ve bilgilenme çalışmaları	• WMO Dünya Birinci İklim Konferansı (1979) • Villach İklim Değişikliği Konferansları (1985 ve 1987, Villach) • Toronto Değişen Atmosfer Konferansı (1988, Toronto) • WMO/UNEP IPCC'nin kuruluşu (1988) • **IPCC 1. Değerlendirme Raporu (Aralık 1990, Cenevre)**
Yasal bir hükümetlerarası çerçeve iklim rejimi için hazırlık	• BM Küresel İklimin Korunması Kararı (Aralık 1988, New York) • Nordwijk Bakanlar Konferansı (Kasım 1989, Nordwijk) • WMO Dünya İkinci İklim Konferansı (Ekim-Kasım 1990, Cenevre) • **BM Hükümetlerarası İklim Değişikliği Görüşmeleri (1991-1992, çoğu Cenevre'de olmak üzere, dünyanın çeşitli kentlerinde)**
Yasal iklim rejimine temel oluşturacak bir çerçeve iklim anlaşmasına yönelik eylem stratejileri	• BM Çevre ve Kalkınma Konferansı (Haziran 1992, Rio de Janerio) • **BM İklim Değişikliği Çerçeve Sözleşmesi'nin kabulü (BMİDÇS, Haziran 1992, Rio de Janerio)** • **BMİDÇS'nin yürürlüğe girişi (Mart 1994, New York)** • BMİDÇS Berlin Buyruğu (Nisan 1995, Berlin)
Yasal yükümlülük hedefleri	• **BMİDÇS Kyoto Protokolü'nün kabulü (Aralık 1997, Kyoto)** • BMİDÇS Buenos Aires Eylem Planı (Kasım 1998, Buenos Aires)
Yasal yükümlülükleri yürütme etkinlikleri (Kyoto kuralları)	• **BMİDÇS Bonn Siyasi Uzlaşması (Temmuz 2001, Bonn)** • **BMİDÇS Marakeş Uzlaşmaları (Kasım 2001, Marakeş)** • BMİDÇS Montreal Konferansı Kararları (Kasım- Aralık 2005, Montreal)
Yasal sera gazı yükümlülüklerinin uygulanması	• **BMİDÇS Kyoto Protokolü'nün yürürlüğe girişi (Şubat 2005, New York)**
• Kyoto sonrası yasal iklim rejiminin oluşturulması, • sera gazı yükümlülüklerinin belirlenmesi ve • küresel ısınmayı 1.5 °C düzeyinde durdurmak	• BMİDÇS Bali Eylem Planı/Yol Haritası (Aralık 2007, Bali) • BMİDÇS Bangkok İklim Değişikliği Görüşmeleri (Mart-Nisan 2008, Bangkok) • **BMİDÇS Kopenhag Uzlaşması (Aralık 2009, Kopenhag)** • BMİDÇS Cancun Uzlaşmaları (Aralık 2010, Cancun) • **BMİDÇS Durban Uzlaşmaları (Aralık 2011, Durban)** • **BMİDÇS KP Doha Düzeltmeleri (Aralık 2012, Doha)** • BMİDÇS Varşova Düzenekleri (Kasım 2013, Varşova) • **BMİDÇS Paris Antlaşması'nın kabulü (Aralık 2015, Paris)** • **BMİDÇS Paris Antlaşması'nın yürürlüğe girişi** (4 Kasım 2016) • BMİDÇS Glasgow Antlaşması (13 Kasım 2021)

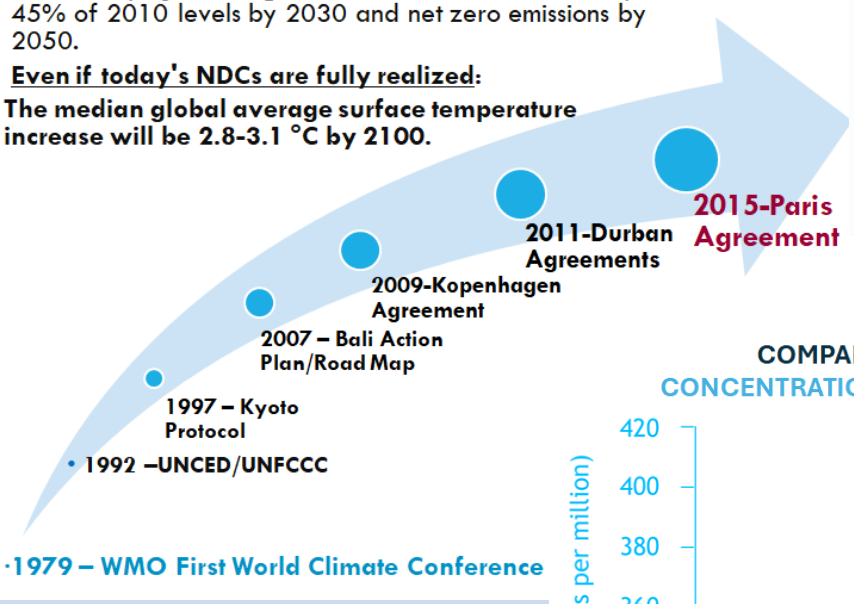


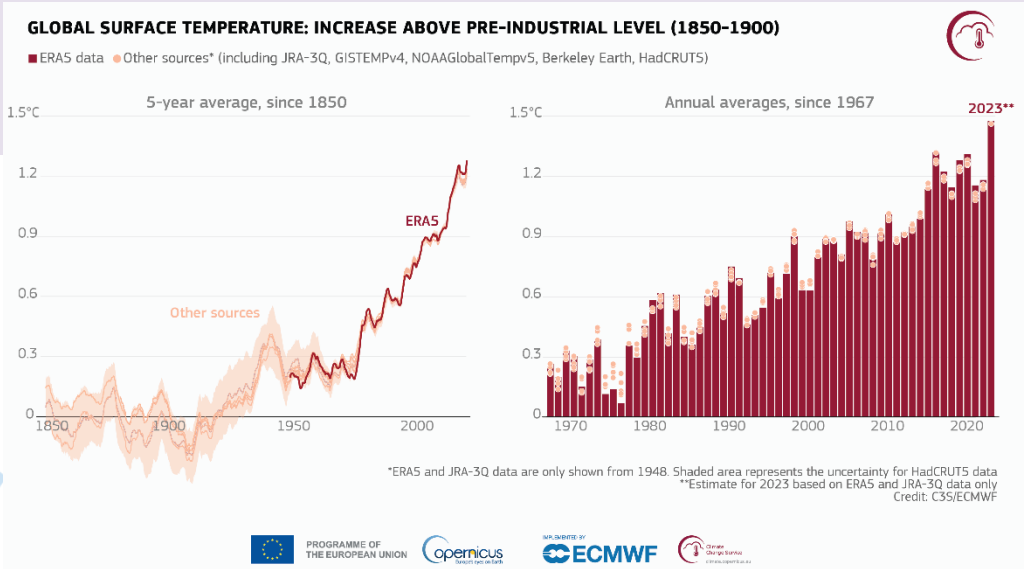
(Türkeş, 2020, 2021, 2022, 2023)

Global Warming Assessments:

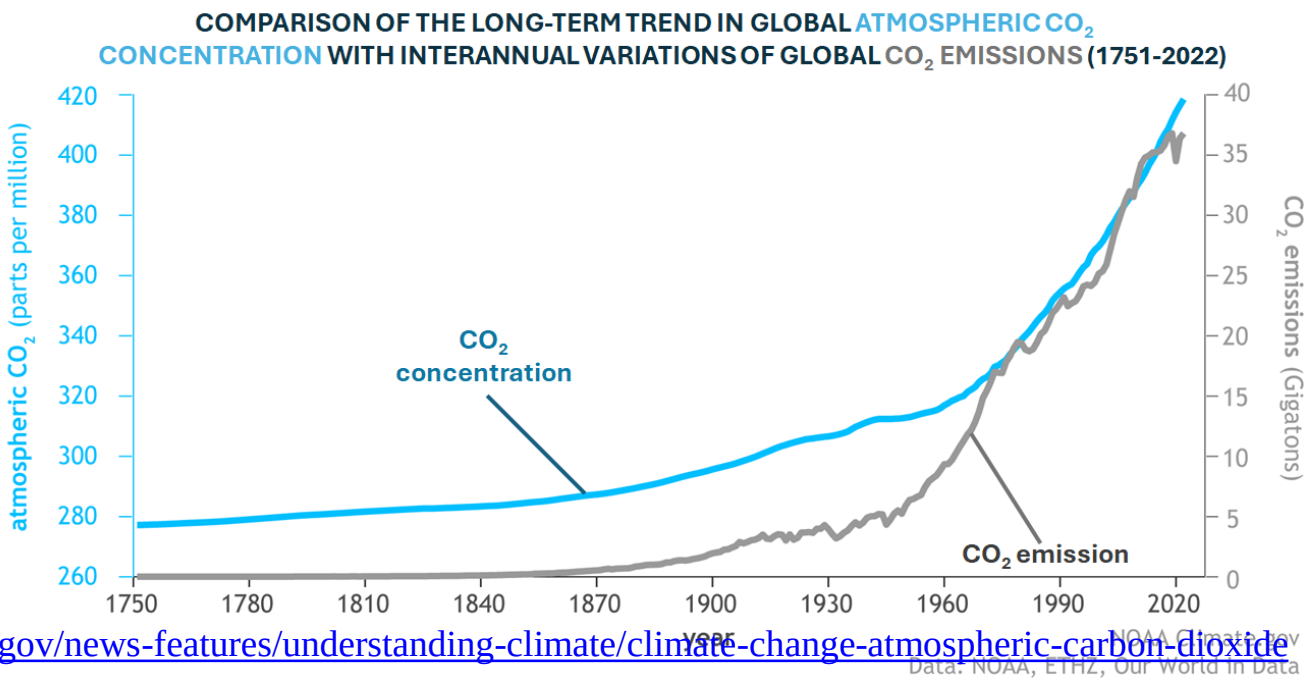
- **IPCC AR6**: The world is not on track to stay below 2 °C
- The global average surface temperature increase is about 1.4 °C in 2023 according to new observations ;
- To limit global warming to 1.5 °C or keep it below 2.0 °C, anthropogenic CO_2 emissions should be reduced by 45% of 2010 levels by 2030 and net zero emissions by 2050.
- **Even if today's NDCs are fully realized:**

The median global average surface temperature increase will be 2.8-3.1 °C by 2100.





https://climate.copernicus.eu/global-climate-highlights-2023



https://www.climate.gov/news-features/understanding-climate/climate-change-atmospheric-carbon-dioxide

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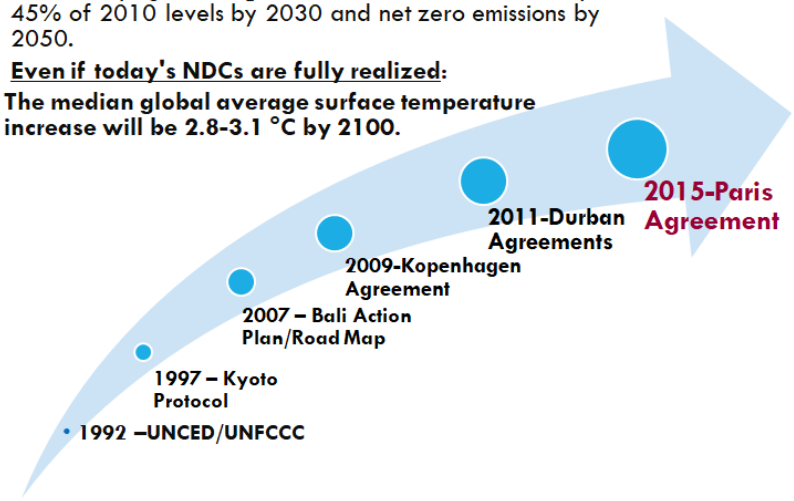
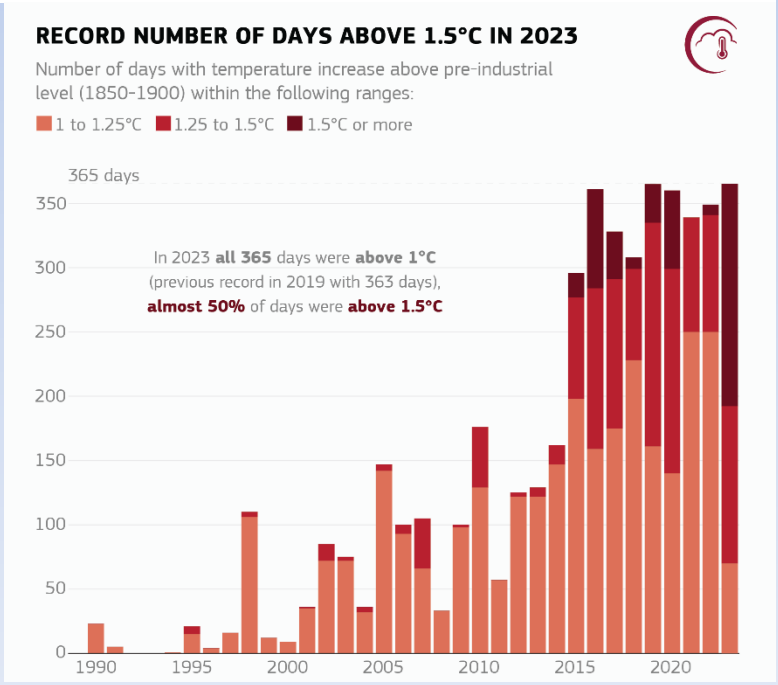


·1979 – WMO First World Climate Conference



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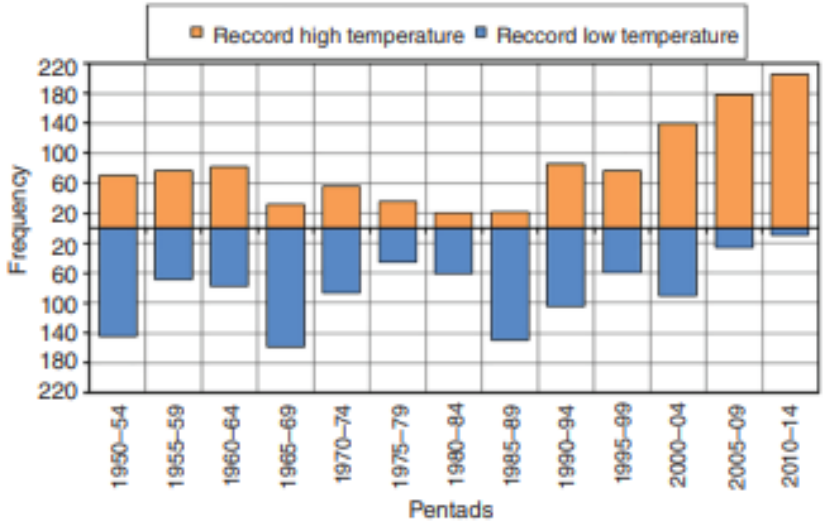
International Journal of Climatology | RMetS

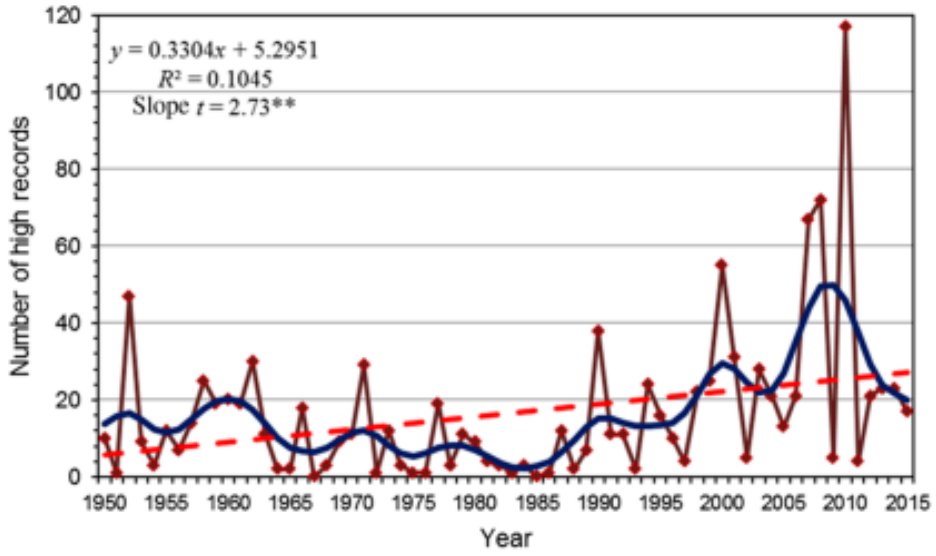
RESEARCH ARTICLE

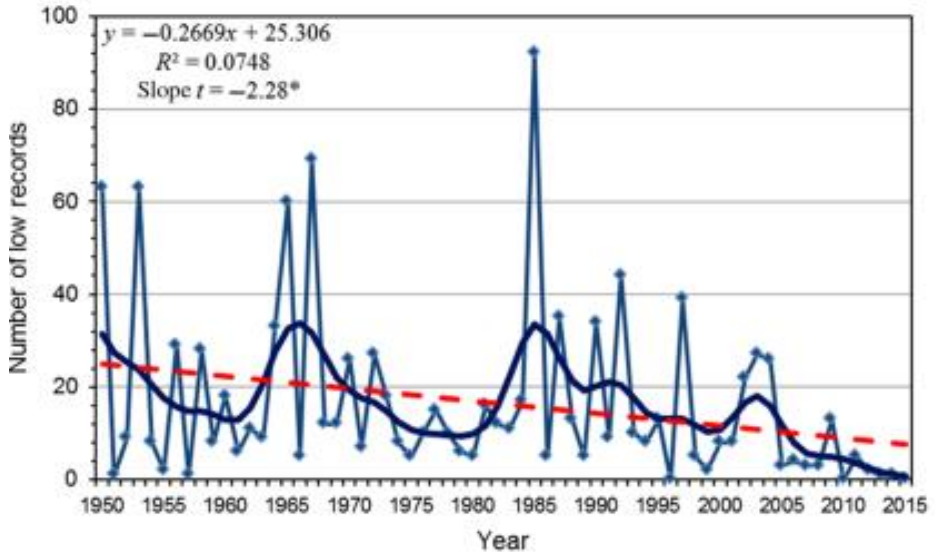
Variability and trends in record air temperature events of Turkey and their associations with atmospheric oscillations and anomalous circulation patterns

Murat Türkeş[1] | Ecmel Erlat[2]

Temporal variations of the annual numbers of the record Tmax and Tmin events by pentads







- Observed variations and linear trend (– –) in annual numbers of record Tmax (Tmin) observed at the 90 stations of Turkey during the period 1950–2015.
- The linear trend (slopes from linear regression) is statistically significant at the 0.01 level and the trend rate is 3.3 (–2.7) events per decade for record Tmax (Tmin).
- Year-to year variations in the series are smoothed by the nine-point Gaussian filter (—).

Theoretical and Applied Climatology (2021) 145:137–157
https://doi.org/10.1007/s00704-021-03620-1

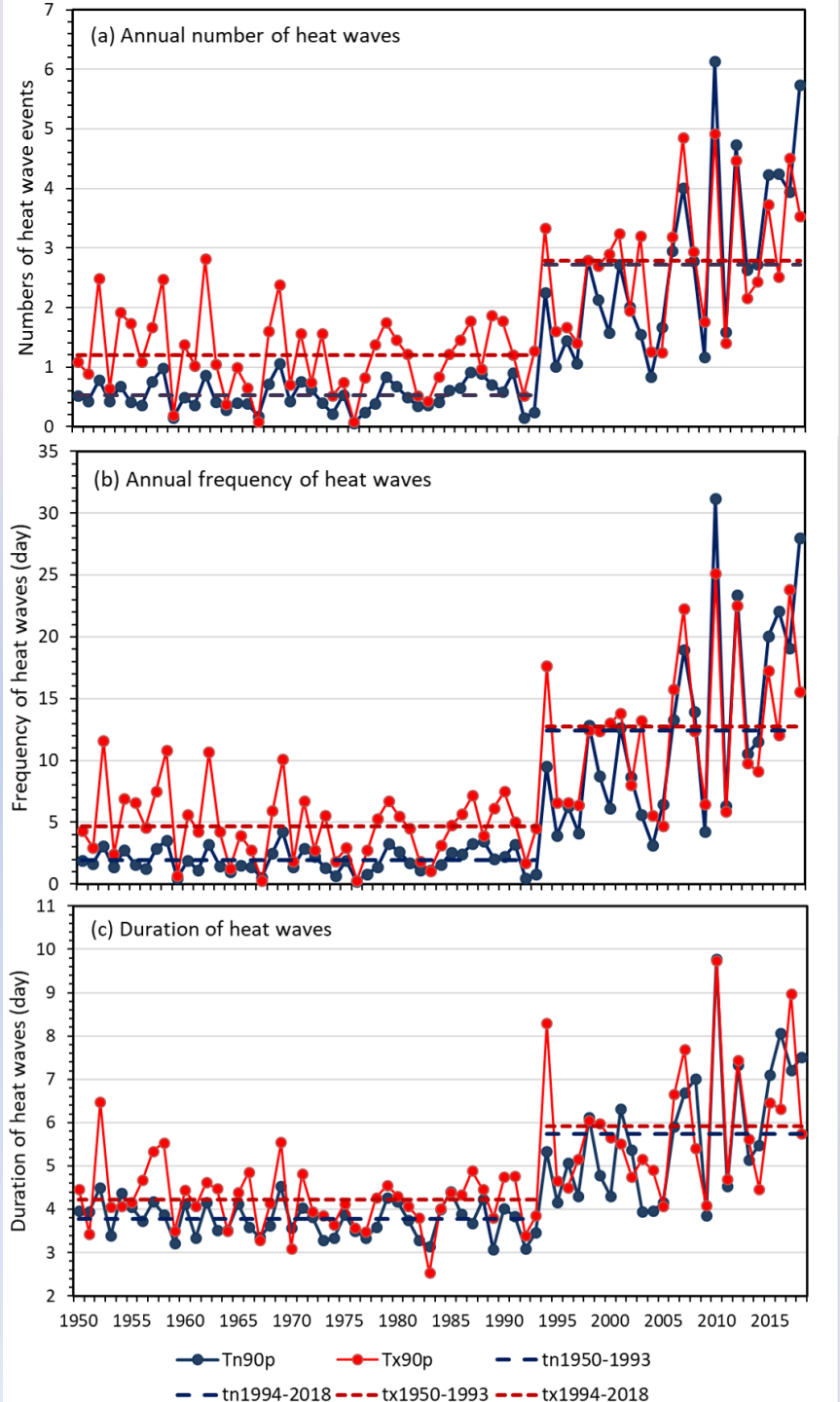
ORIGINAL PAPER

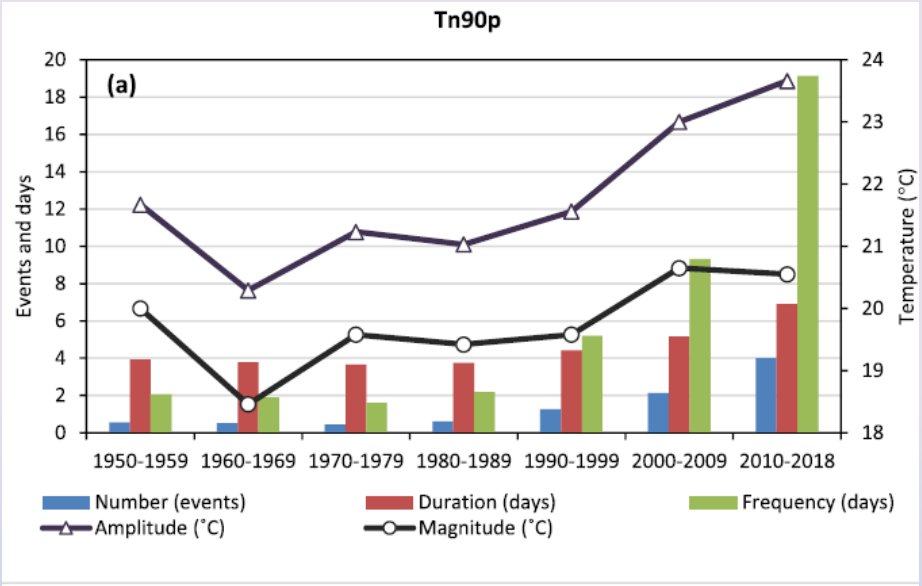
Observed changes and trends in heatwave characteristics in Turkey since 1950

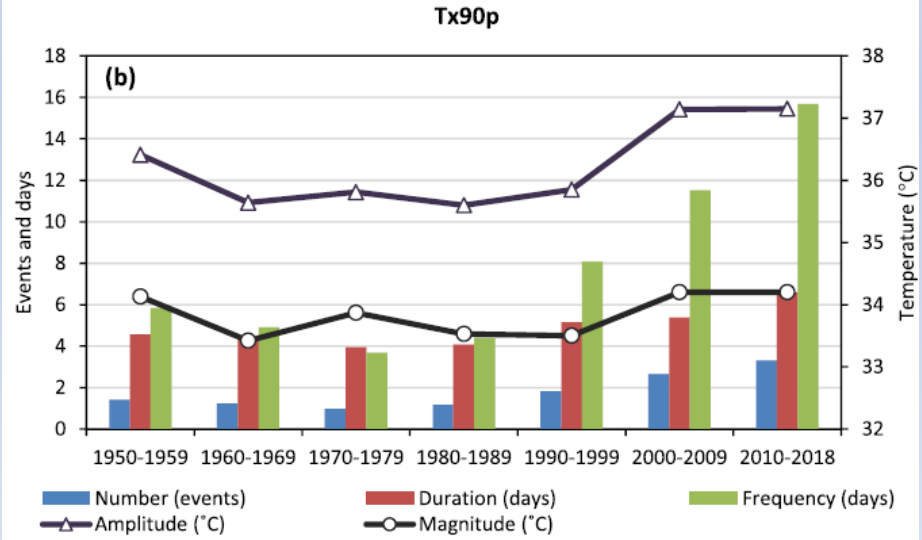
Ecmel Erlat[1] · Murat Türkeş[2] · Fulya Aydin-Kandemir[3]

Received: 1 September 2020 / Accepted: 12 April 2021 / Published online: 21 April 2021

Year-to-year variability in the country-based long-term Tn90p and Tx90p time series of Turkey, including a HWNs, b HWFs and HWDs along with the comparisons of the heatwave index values between the periods of 1950–1984 and 1985–2018.

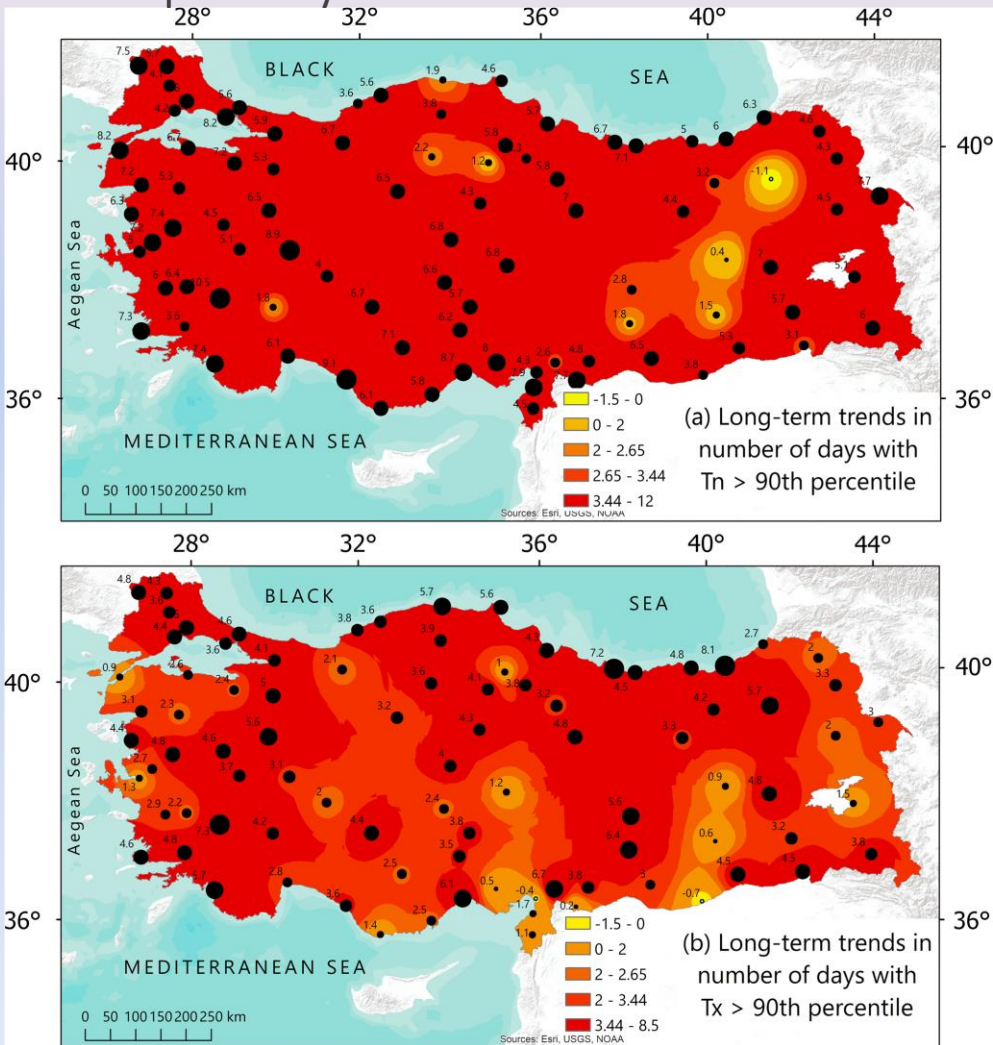






Temporal variations of the HWN, HWD, HWF, HWA, and HWM for a Tn90p and b Tx90p series by decadal sub-periods during the period of 1950–2018

- Long-term trends in (a) heatwave number (HWN) of Tn90p series and in (b) heatwave numbers (HWN) of Tx90p series for the period of 1950–2018.
- Downward triangles and plus/star represent negative and positive trends, respectively



Major United Nations Climate Change Agreements and the Climate Diplomacy

- United Nations Conference on Environment and Development (UNCED) (June 1992),
- United Nations Framework Convention on Climate Change (UNFCCC) (March 1994),
- The UNFCCC - The Kyoto Protocol (February 2005),
- The Doha Amendment to the Kyoto Protocol (December 2020),
- UNFCCC - The Paris Agreement (December 2015).

What is the United Nations Framework Convention on Climate Change (UNFCCC)? -1

- The **UNFCCC** entered into force on 21 March 1994. Today, it has near-universal membership. The 197 countries that have ratified the Convention are called Parties to the Convention**. Preventing "dangerous" human interference with the climate system** is the ultimate aim of the UNFCCC.
- **First steps to a safer future: the Convention Recognized that there was a problem.**

What is the United Nations Framework Convention on Climate Change (UNFCCC)? -2

- **Sets a lofty but specific goal.**
- **The ultimate objective of the Convention** is to stabilize greenhouse gas concentrations "**at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system**."
- **Puts the onus on developed countries to lead the way.**
- **Directs new funds to climate change activities in developing countries.**

What is the UNFCCC Kyoto Protocol?

- The **Kyoto Protocol** was adopted on 11 December 1997. Owing to a complex ratification process, it entered into force on 16 February 2005. Currently, there are 192 Parties to the Kyoto Protocol.
- In short, **the Kyoto Protocol implements the UNFCCC by committing industrialized countries and economies in transition to limit and reduce GHG emissions in accordance with agreed individual targets**.

The Kyoto Mechanisms

- The Protocol also offers **three market-based mechanisms**, which are the additional means to meet Parties targets by way of :

1. **International Emissions Trading**
2. **Clean Development Mechanism (CDM)**
3. **Joint implementation (JI)**

- **«It is the hot-air problem!»**

What is the Paris Agreement? -1

- The Paris Agreement is a legally binding international treaty on climate change. It was adopted by 196 Parties at COP 21 in Paris, on 12 December 2015 and entered into force on 4 November 2016.
- Its goal is to limit global warming to well below 2 degrees, preferably to 1.5 degrees Celsius, compared to pre-industrial levels.

How are countries supporting one another?

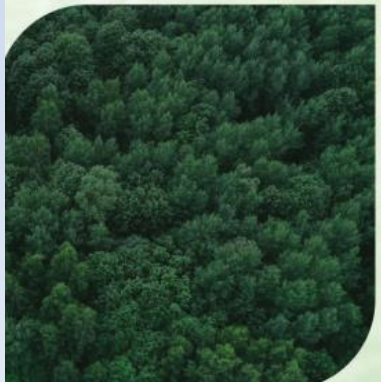
- The Paris Agreement provides a framework for **financial, technical and capacity building support** to those countries who need it.
- **Finance**: The Paris Agreement reaffirms that developed countries should take the lead in **providing financial assistance** to countries that are less endowed and more vulnerable, while for the first time also encouraging voluntary contributions by other Parties.
- Climate finance is needed **for mitigation**, because large-scale investments are required to significantly reduce emissions.
- Climate finance is equally important **for adaptation**, as significant financial resources are needed to adapt to the adverse effects and reduce the impacts of a changing climate.

NATIONAL CIRCUMSTANCES OF TÜRKİYE WITH RESPECT TO CLIMATE CHANGE MITIGATION

(Mainly on Energy Sector and Greenhouse Gas Emissions)

1990 - 2021/2022

EIGHTH NATIONAL COMMUNICATION AND FIFTH BIENNIAL REPORT OF TÜRKİYE UNDER THE UNFCCC



ANKARA
2023

Population

The Results of Address Based Population Registration System, 2023

The population of Türkiye became 85 million 372 thousand 377 people

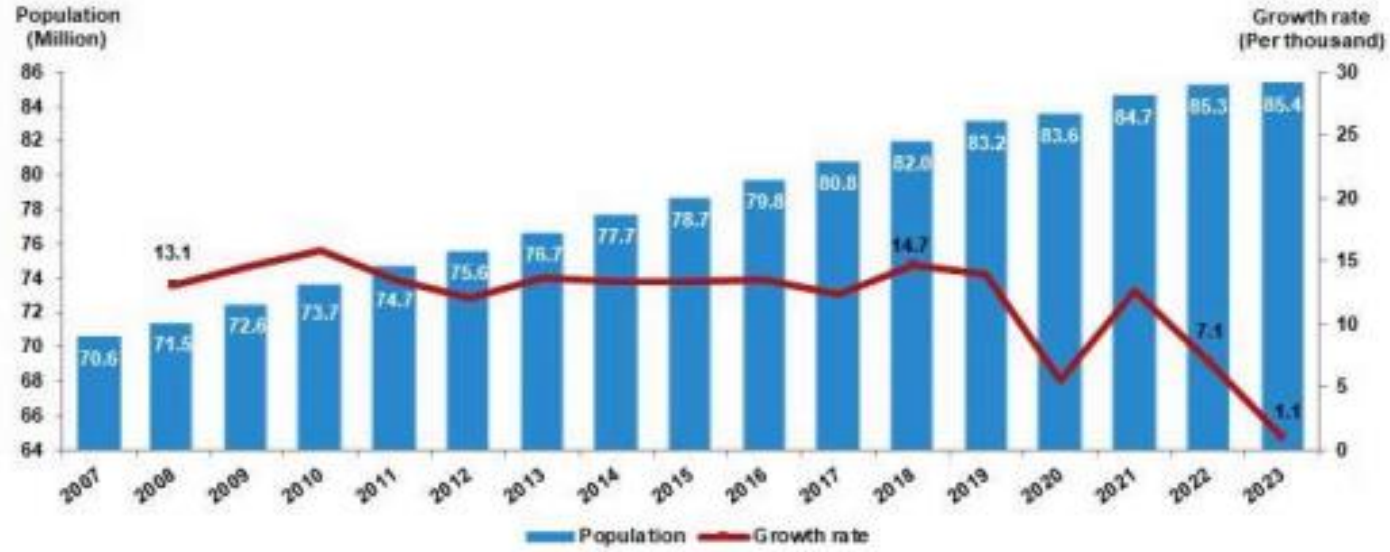
The population residing in Türkiye increased by 92 thousand 824 people compared to the previous year and reached to 85 million 372 thousand 377 people as of 31 December 2023. Male population was 42 million 734 thousand 71 people and female population was 42 million 638 thousand 306 people. While 50.1% of the tota population were males, 49.9% of the total population were females.

According to the results of Address Based Population Registration System (ABPRS), foreign population[1] residing in Türkiye decreased by 253 thousand 293 people and became 1 million 570 thousand 543 people. 48.6% of this population were males and 51.4% of this population were females.

Annual population growth rate of Türkiye was 1.1 in thousands

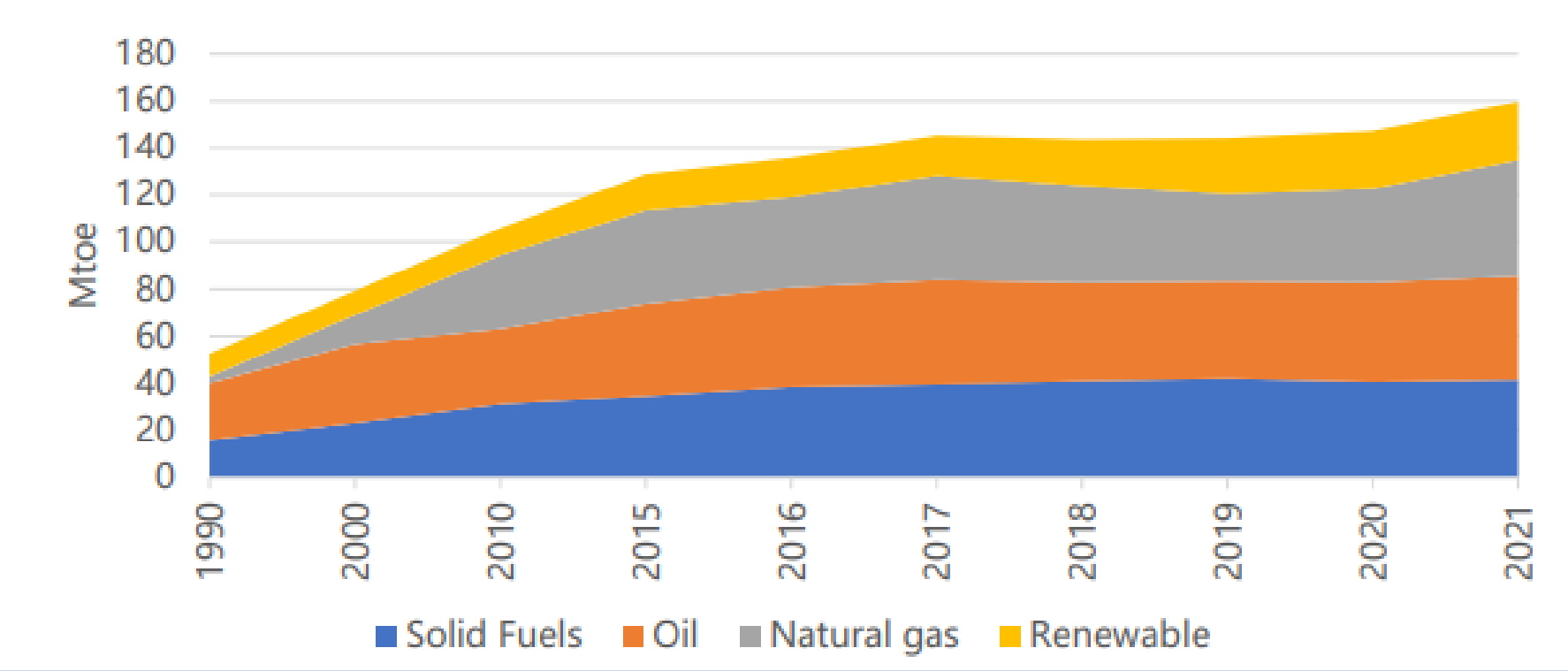
Annual population growth rate decreased to 1.1 per thousand in 2023 from 7.1 per thousand in 2022.

Population and annual population growth rate, 2007-2023



https://data.tuik.gov.tr/Bulten/Index?p=The-Results-of-Address-Based-Population-Registration-System-2023-49684&dil=2

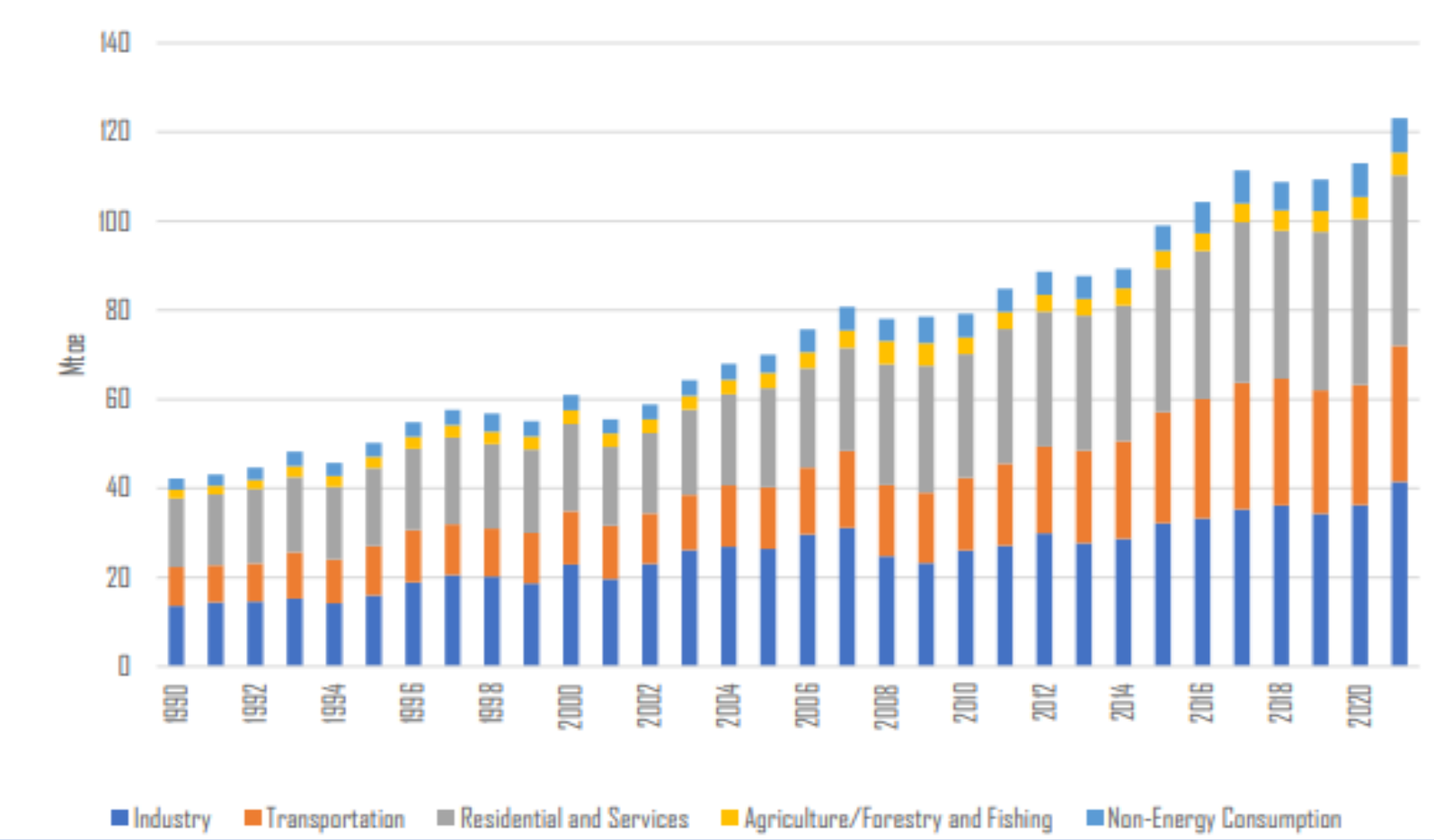
Energy Sector: Primary Energy Supply, 1990-2021



- Total primary energy supply was 52.5 Mtoe in 1990 and increased to 159.4 Mtoe in 2021 (with 203% increase). The share of fossil fuels in total primary energy supply was 82% in 1990, and 84.5% in 2021. The share of renewables, on the other hand, was 15.6% in 2021.
- Total installed power capacity of Türkiye increased sixfold since 1990 and reached to 99.82 GW in 2021 and it is expected to reach 189.7 GW by 2035. The share of domestic resources in total installed power capacity was 65.1% in 2021.

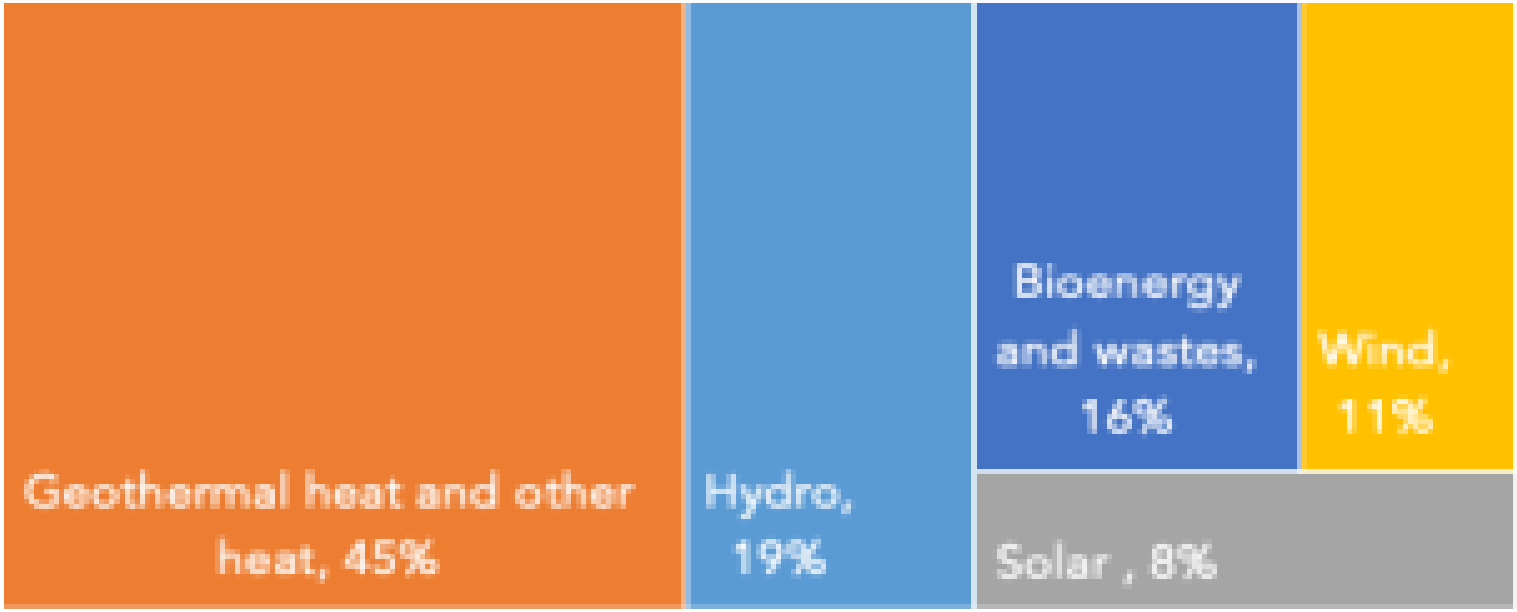
https://unfccc.int/sites/default/files/resource/8NC-5BR%20T%C3%BCrkiye.pdf

Final Consumption of Primary Energy Sources



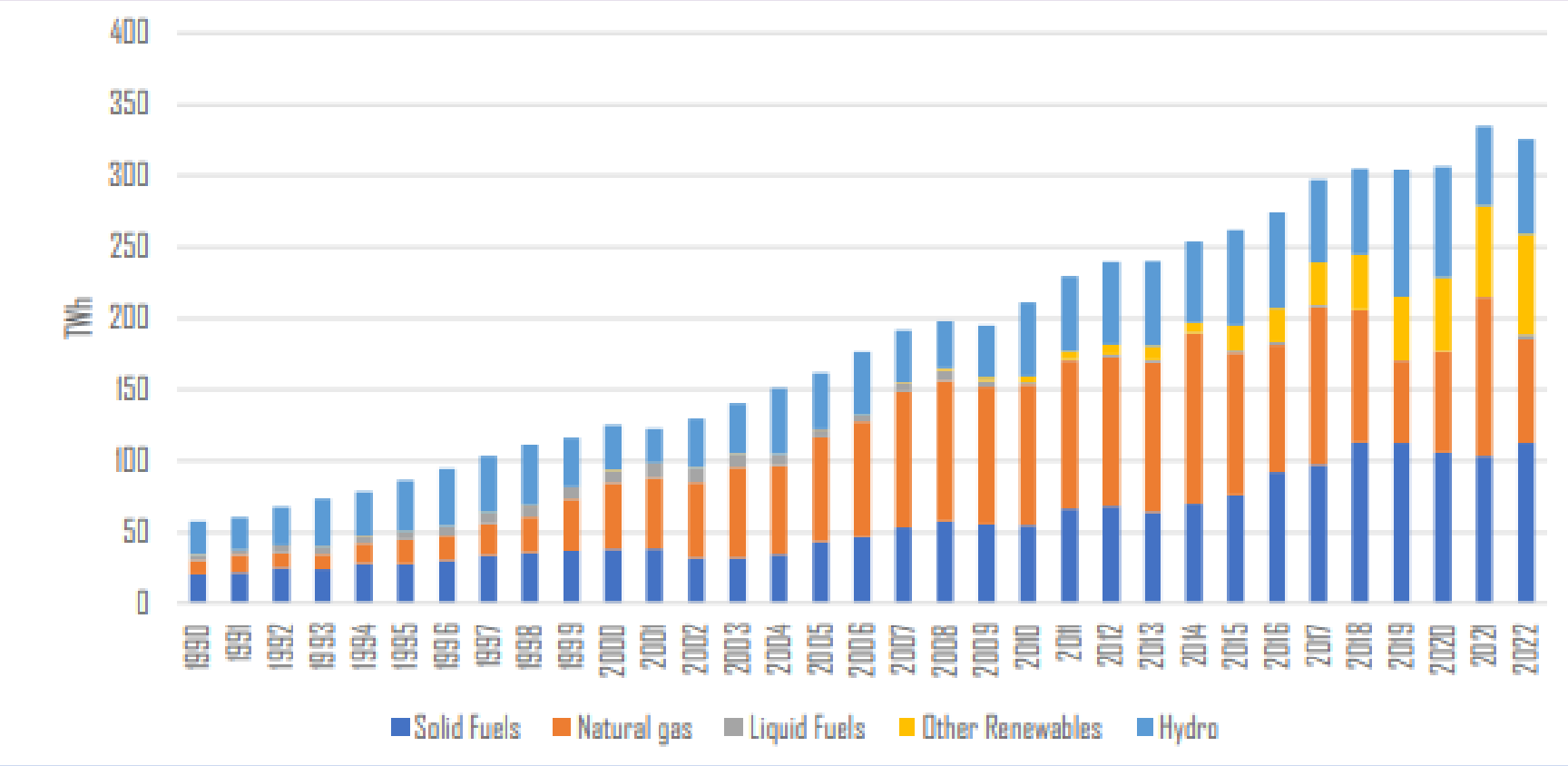
- Final energy consumption of Türkiye increased from 42.2 Mtoe in 1990 to 123.9 Mtoe in 2021. Although energy consumption has risen from 1990 to 2021, in periods of economic crisis (i.e. 2001 and 2008) clear decreases were observed especially for industrial sector.
- Industrial sector and construction sector are the highest energy consuming sectors and accounts for around 65% to 70% of final energy consumption.

Share of Renewable Energy by Energy Sources in 2021



- In 2021, 15.6% (24.9 Mtoe) of Türkiye's total primary energy supply was met by renewable energy sources.
- As of the end of 2021, 16% of the renewable energy supply in Türkiye was from biomass sources, 19% from hydraulic sources, 45% from geothermal sources, 11% from wind, and 8% from solar energy.

Electricity Generation by Primary Energy Resources



- Annual electricity production grew from 57.5 TWh to 326 TWh during the 1990-2022.
- Share of hydropower was 20.5%, other renewables were 21.2%, natural gas was 21.9%, liquid fuels were 1.1%, and the percentage of solid fuels was 35.0% in electricity production in 2022.

Republic of Türkiye Major Energy Policies and Measures: «**11th Development Plan** (2019-2023)»

- **11th Development Plan** defines Türkiye's main energy objective as "*to ensure uninterrupted, high-quality, sustainable, reliable and affordable energy supply*", and it focuses on facilitating competitiveness and efficiency increase in all fields. Policies and measures to reduce carbon emissions in energy sector are as follows:
- **Nuclear Power Plants (NPPs)** will be included in the electricity generation portfolio, efforts will be continued to increase the share of nuclear energy in electricity generation and institutional capacity will be strengthened.
- Construction of the first unit of **Akkuyu NPP** will be completed and electricity production will be started in 2023.

Republic of Türkiye Major Energy Policies and Measures: «**11th Development Plan** (2019-2023)» -2

- **Energy efficiency in existing buildings** will be promoted through support systems.
- **Energy Efficiency in Public Buildings Project** will be implemented.
- **National Green Building Certificate System** will be established.
- **Buildings that are more efficient and produce their own energy** will be expanded.
- … **renewable resources** will be used more intensively in the generation of electrical energy.
- … etc…

Republic of Türkiye Major Energy Policies and Measures: «**Strategic Plan of the MENR** (2019-2023)»

- Strategic Plan of the **Ministry of Energy and Natural Resources** (MENR) targets "*providing the highest contribution to national welfare by utilizing energy and natural resources in the most efficient and environmentally-conscious manner*". Some targets in the document are listed as follows:
- **Ratio of installed electrical power based on renewable energy resources** to the total installed power will be increased,
- **Energy efficiency measures with rehabilitation of the state-owned power plants**, using more efficient street lightings (LED), and expanding regional heating systems,
- **Nuclear energy** will be included and increasing its share in energy supply will continue.

Republic of Türkiye Major Energy Policies and Measures: «**EESP**(2019-2023)»

- The **Energy Efficiency Strategy Paper** (EESP), which sets a long-term target of 20% reduction in energy intensity by 2023 compared to 2011 figures, was approved by Türkiye's High Planning Council on February 27, 2012.

➢ The **EESP describes seven strategic purposes and corresponding strategic targets** with the focus on the industry, the electricity system, private/public buildings, electrical products, and transport, as follows.

1. **Decreasing energy demand and carbon emissions of the buildings,**
2. **Decreasing energy losses in industry and services sector**,

Republic of Türkiye Major Energy Policies and Measures: «**EESP**(2019-2023)» - 2

3. **Providing exchange of energy-efficient products** in market,

4. **Increasing efficiency in electricity production, transfer and distribution,**

5. **Decreasing unit fossil fuel consumption** of motor vehicles; **increasing the share of railways and urban mass transportation** in load and passenger transportation,

6. **Efficient and effective use of energy** in public establishment,

7. **Enhancement of corporate structures**, capacities and collaborations, …

INVENTORY OF GREENHOUSE GAS EMISSIONS AND SINKS

GREENHOUSE GAS EMISSION TRENDS IN TÜRKİYE

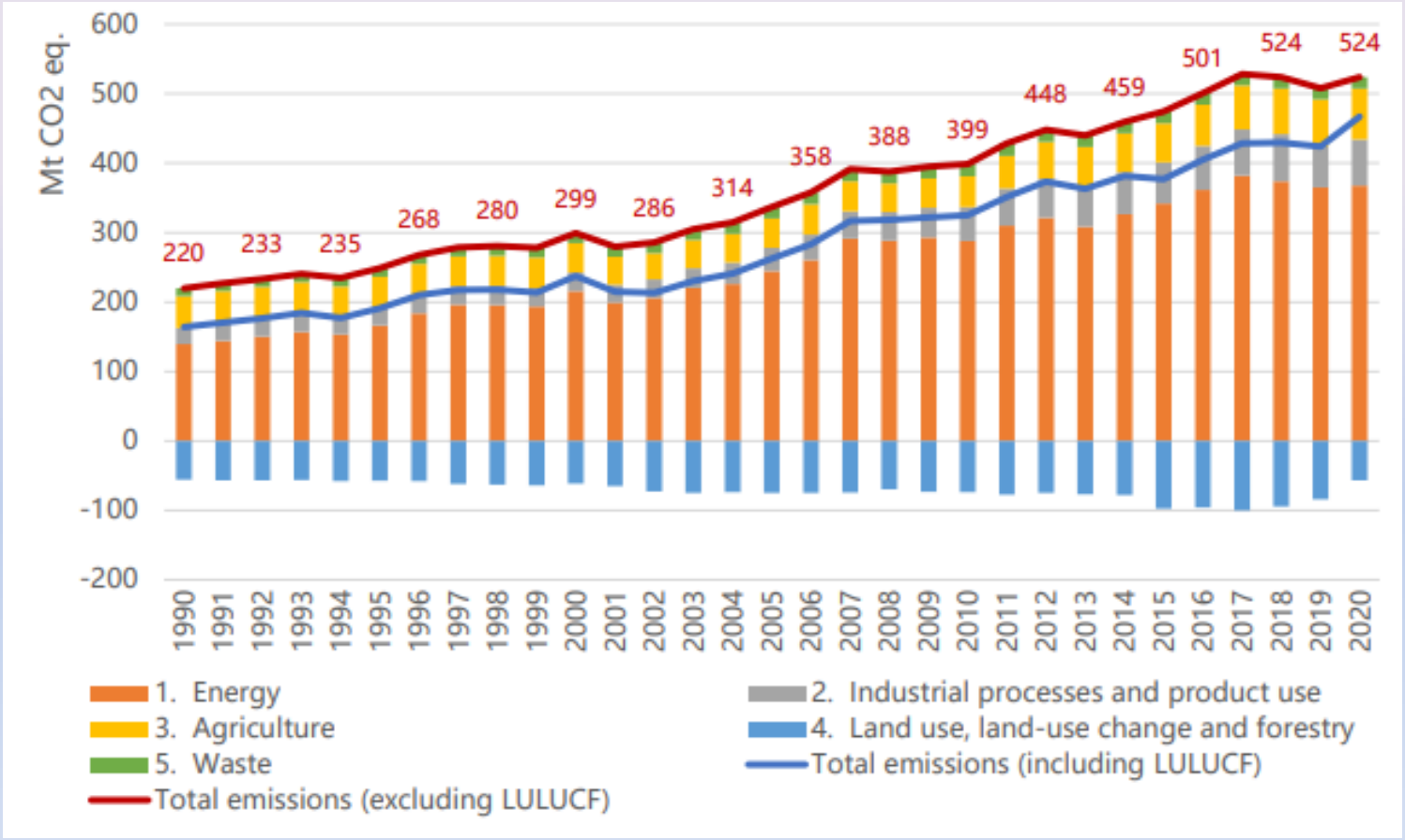
TURKISH GREENHOUSE GAS INVENTORY 1990 - 2020

National Inventory Report for submission under the United Nations Framework Convention on Climate Change

TURKISH STATISTICAL INSTITUTE

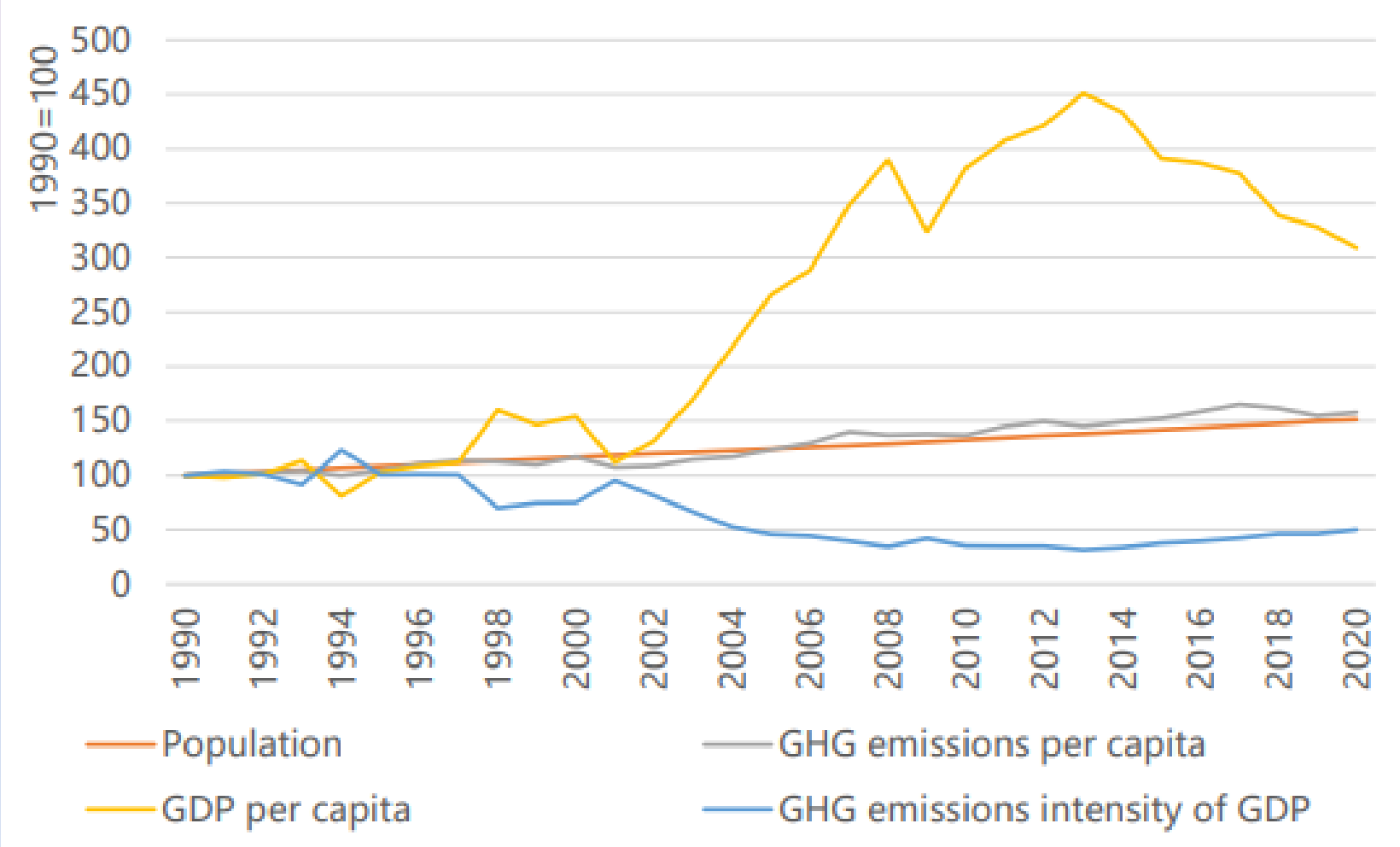
April 2022

Greenhouse gas emissions and removals, Mt CO_2 *eq*. (1990-2020)



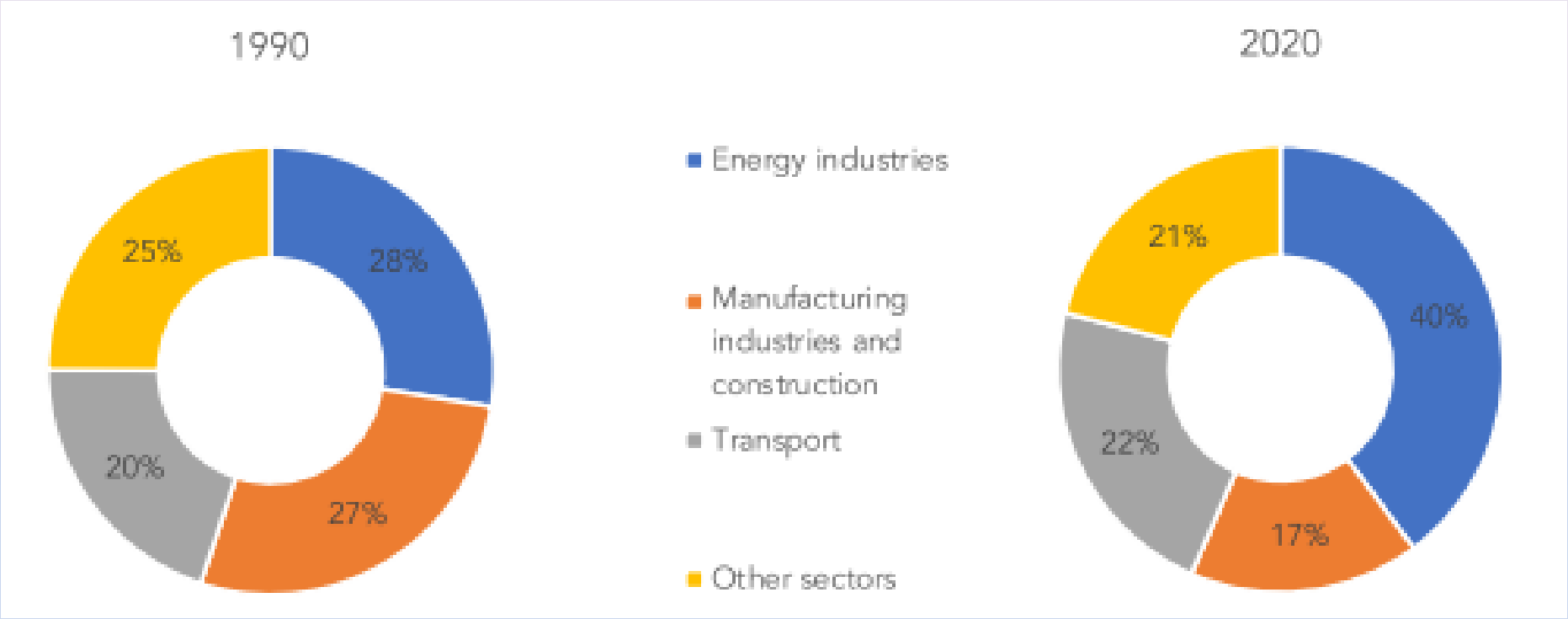
- Türkiye's total GHG emissions were 523.9 Mt CO2 eq. excluding the LULUCF, and 466.9 Mt CO2 eq., including the LULUCF in 2020. The energy sector was the highest contributor with 367.6 Mt CO2 eq. followed by agriculture with 73.2 Mt CO_2 eq., industrial processes and other product use (IPPU) with 66.8 Mt CO2 eq., and waste with 16.4 Mt CO2 eq.
- Energy sector has the highest percentage with 70.2%, agriculture has 14.0%, IPPU has 12.7%, and waste has 3.1%.

Trends in emissions per capita and dollar of GDP relative to 1990



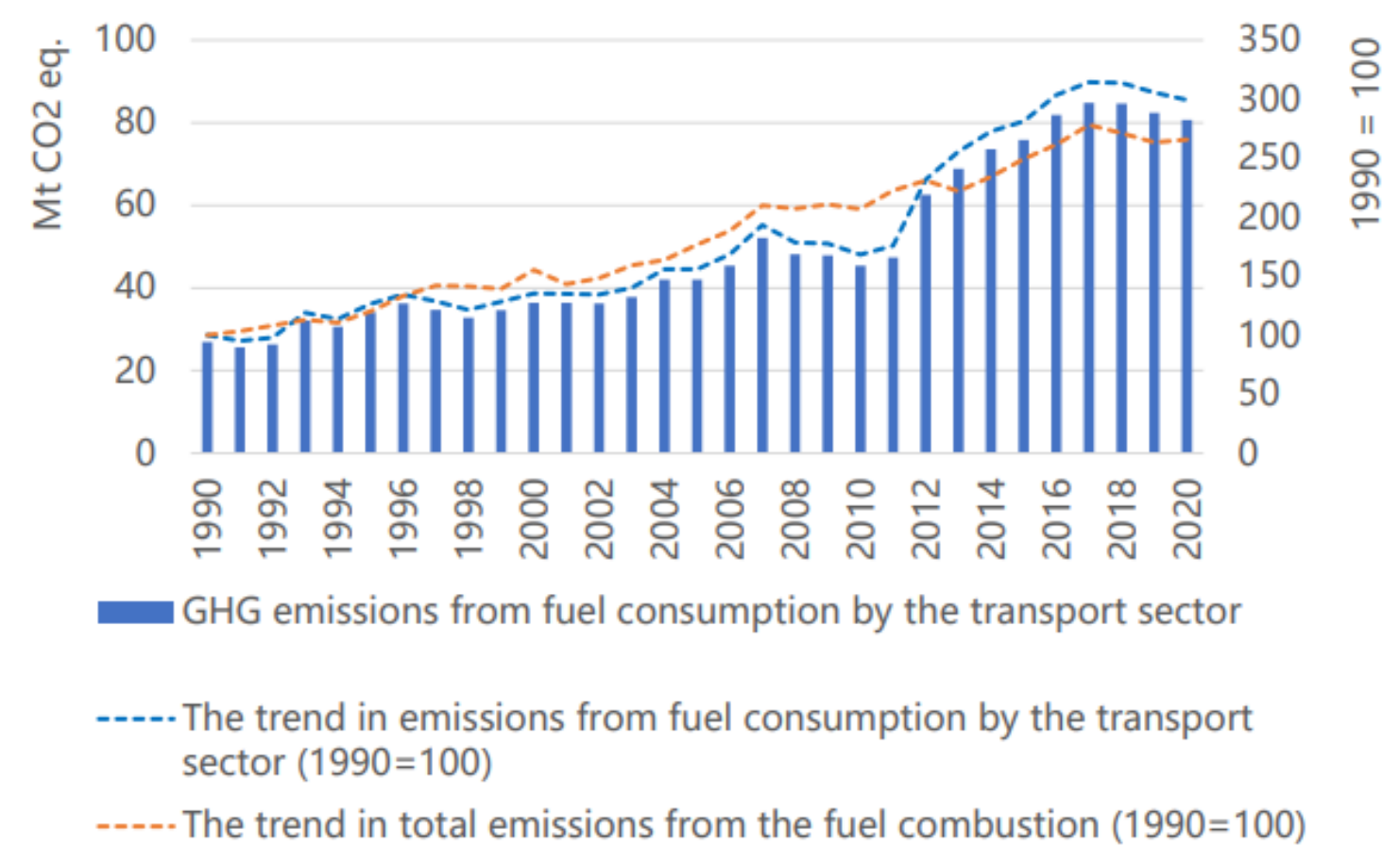
The direction of the emission intensity trend started to change after 2002. GDP (in current price) peak in 2013 and began to decline while population and emissions per capita continued to increase slightly.

Fuel combustion CO_2 *eq*. emissions by sectors, 1990 and 2020



- Energy sector GHG emissions increased by 163.3% between 1990 and 2020. Energy sector GHG emissions mainly were coming from stationary combustion.
- Total emissions from stationary combustion were 278 Mt CO_2 *eq*. in 2020, equal to 53% of total national GHG emissions (excluding LULUCF).

Trend in the Emissions from Fuel Consumption by the Transport Sector (1990-2020)



- In 2020, transport sector contributed to 80.7 Mt CO2 eq. emissions. Increase trend in emissions from fuel consumption by the transport sector was higher than the increase trend of emissions from fuel consumption by all sectors.
- GHG emissions (in CO2 eq.) from transport sector as a share of total emissions from fuel combustion increased from 20% in 1990 to 22.5% in 2020

Republic of Türkiye
Updated First Nationally Determined Contribution

Republic of Türkiye Updated First Nationally Determined Contribution

Türkiye's Special Circumstances under the UNFCCC

- United Nations Convention on Climate Change (UNFCCC) established a system of Annexes that divided countries into Annex I and II countries and Non-Annex countries.
- The Annex I countries included the industrialized countries that were members of the OECD and the former countries of the USSR and the socialist Central Europe countries "Economies in Transition".
- Annex II included the developed and industrialized countries. Türkiye, albeit being a developing country, was included in both Annexes I and II because of its OECD membership.

Türkiye's Special Circumstances under the UNFCCC

- Türkiye did not sign the UNFCCC when adopted in 1992 and in 1997 initiated the process to be deleted from Annexes I and II.
- In 2001, at the Seventh Conference of the Parties held in Marrakesh, Decision 26/CP.7 was adopted, and Türkiye was removed from the list in Annex II.
- Parties were also invited to recognize the "special circumstances of Türkiye, which placed Türkiye after becoming a Party, in a situation different from that of other Parties included in Annex I to the Convention."

Türkiye and UNFCCC

- Türkiye became a party to the UNFCCC on 24 May 2004,

✓ ratified the Kyoto Protocol on 26 August 2009,

✓ and ratified the Paris Agreement on 7 October 2021.

- The Country's first NDC pledges to a 21% GHG emissions reduction compared to the business-as-usual level by 2030.
- Türkiye revised and increased its reduction target to 41% with its updated first NDC. Moreover, Türkiye aims for net-zero emissions by 2053, and the updated NDC aims for peak emissions by 2038.

Declaration by Türkiye for being a Party of Paris Agreement under the UNFCCC

DECLARATION

The Republic of Turkey, on the basis of "equity, common but differentiated responsibilities and respective capabilities" as clearly and accurately recognized under the United Nations Framework Convention on Climate Change of 9 May 1992 and the Paris Agreement, and by recalling decisions 26/CP.7, 1/CP.16, 2/CP.17, 1/CP.18 and 21/CP.20 adopted by the Conference of the Parties to the Convention, declares that she will implement the Paris Agreement as a developing country and in the scope of her nationally determined contribution statements, provided that the Agreement and its mechanisms do not prejudice her right to economic and social development.

Republic of Türkiye
Updated First Nationally Determined Contribution

- After being a Part to the UNFCCC Paris Agreement, Türkiye communicated the First Nationally Determined Contribution (NDC) at the 27th Conference of the Parties (COP27, November-December 2022 in Şarm El Şeyh).
- Through this communication, Türkiye confirms to reduce its GHG emissions by 41% through 2030 (**695 Mt CO_2 *eq* in year 2030**) compared to the Business as Usual (BAU) scenario given in Türkiye's previous 'first' NDC considering 2012 as the reference year.

Evaluation of Türkiye's Climate (Mitigation) Action and Updated First NDC -1

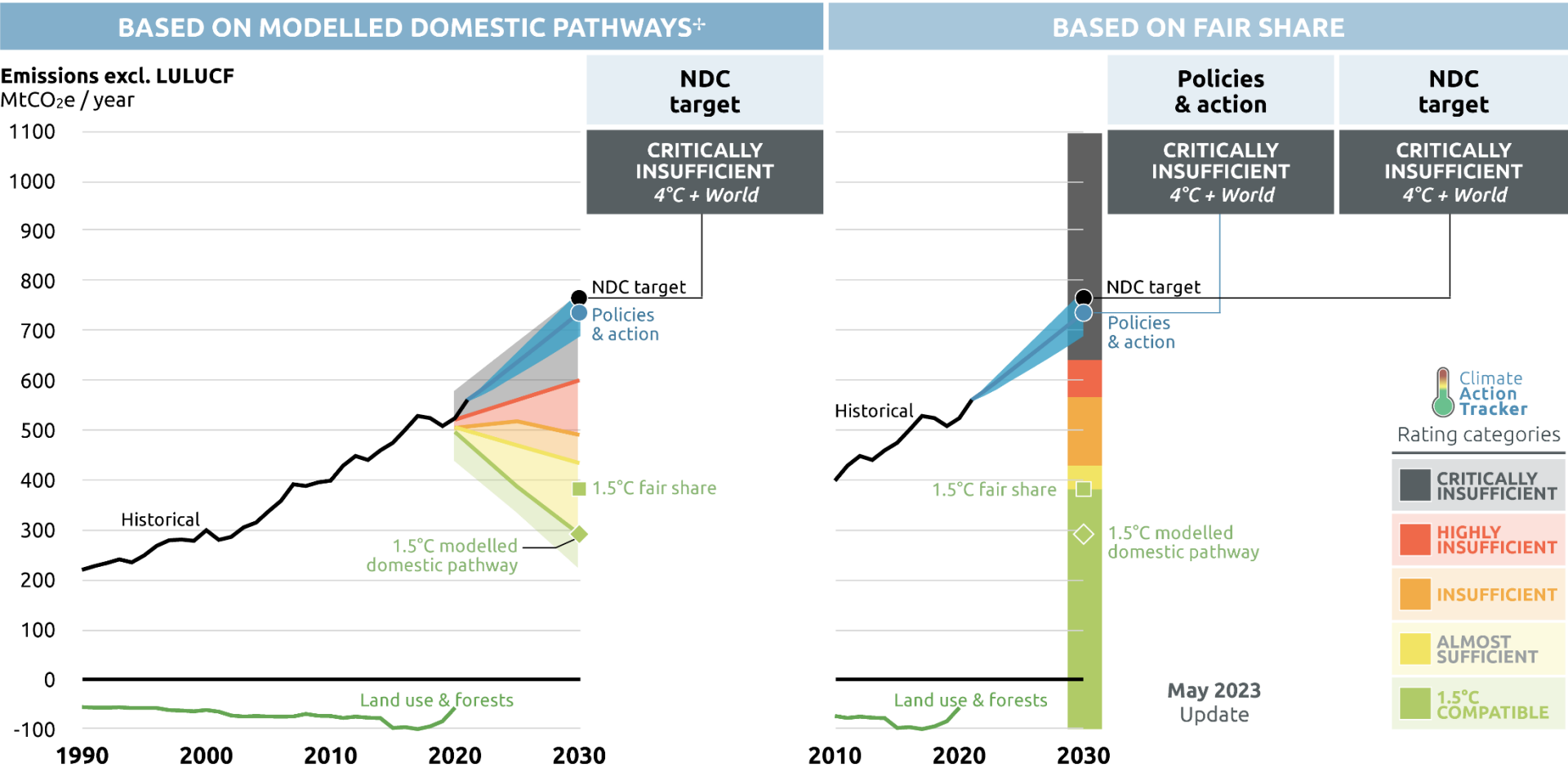
- Türkiye's submitted an updated NDC in April 2023 which, though stronger on paper, will still lead to increased emissions and is not compatible with the Paris Agreement's 1.5°C temperature goal. Türkiye's NDC update can already be achieved with its current policies which lead to a significant emissions increase.
- However, this updated NDC would see GHG emissions increasing by 36% compared to current levels excluding LULUCF.

Evaluation of Türkiye's Climate (Mitigation) Action and Updated First NDC -2

- The Turkish government will need to develop a coal phase-out plan for the power sector, which studies have shown is feasible by 2030, if it's serious about its commitment to reach net zero carbon emissions by 2053.
- Otherwise, for instance, Türkiye's Climate Action Tracker (CAT) rating remains unchanged as '**Critically insufficient**' on all fronts, which indicates Türkiye's climate policies and commitments are not at all consistent with the **Paris Agreement's 1.5 and 2.0 °C temperature goal.**
- **If all countries were to follow Türkiye's approach, warming would exceed 4°C.**

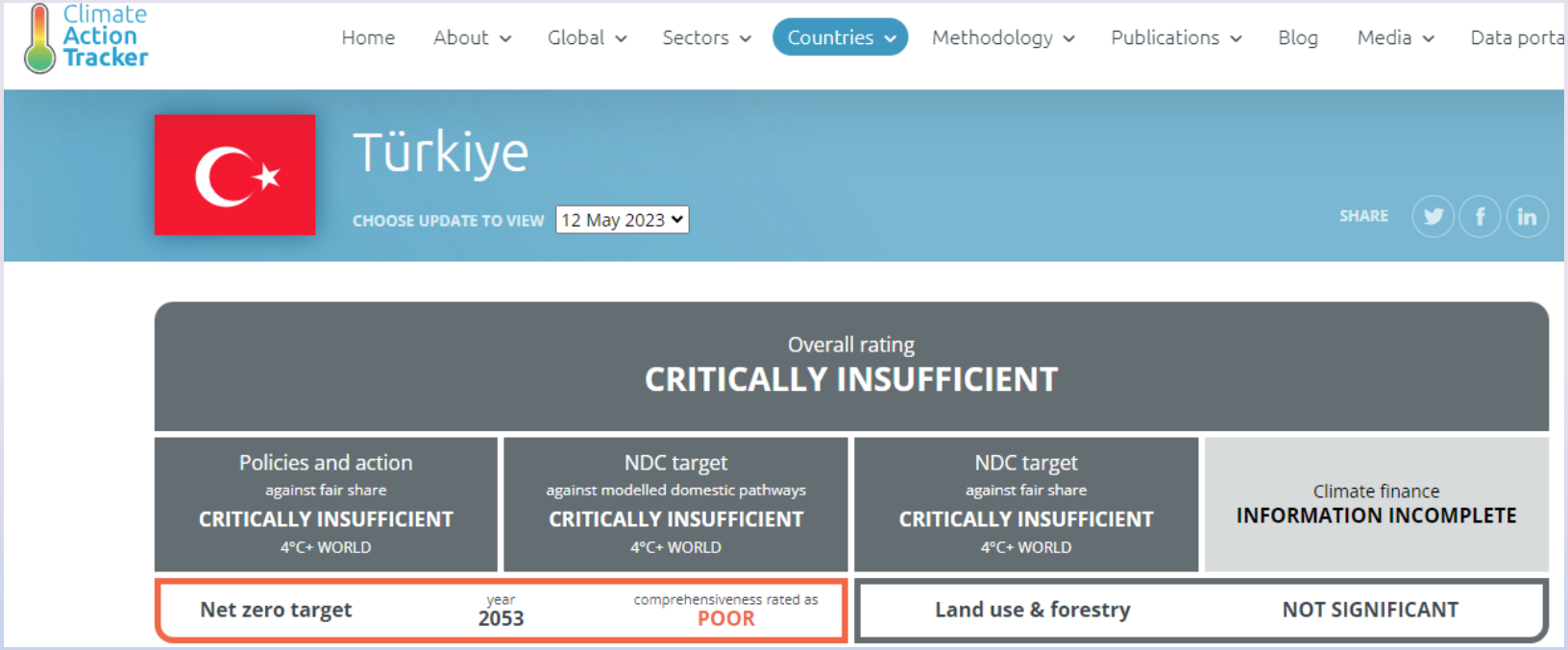
TÜRKIYE OVERALL RATING

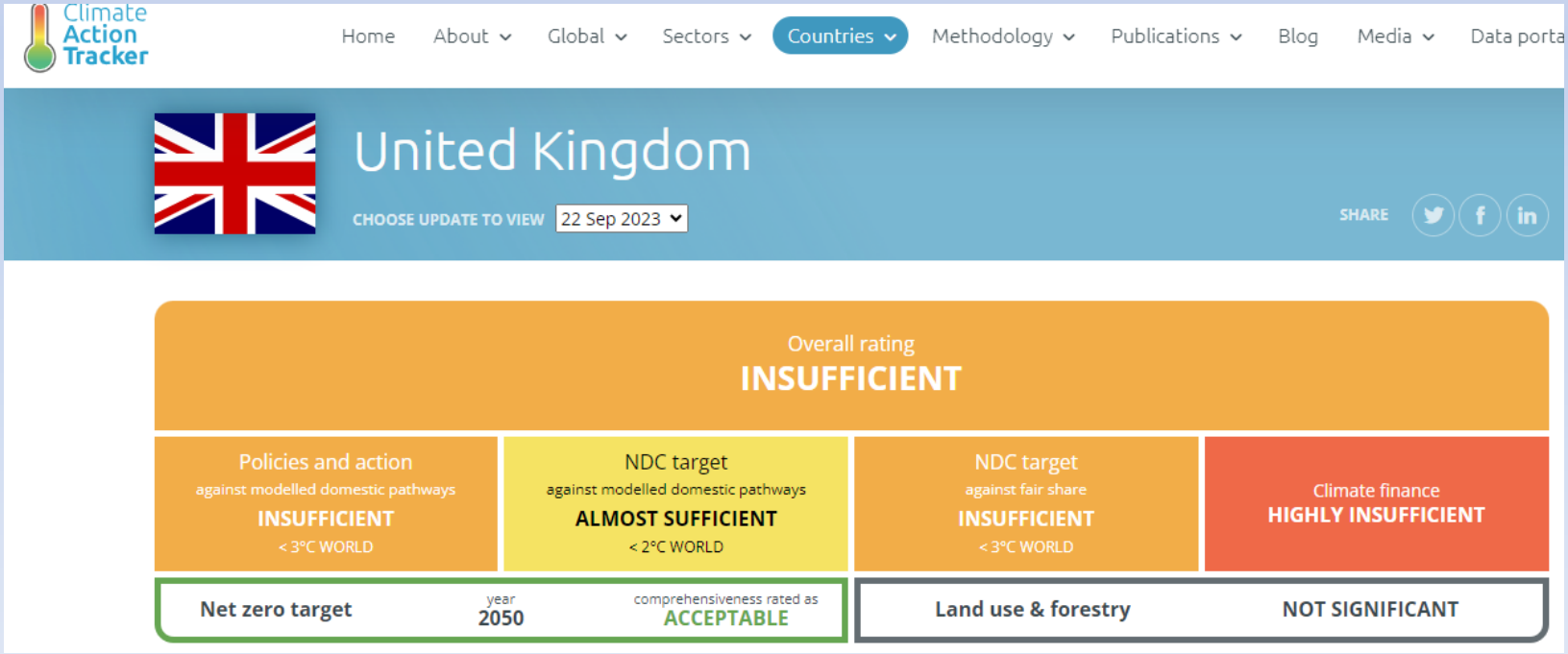
CRITICALLY INSUFFICIENT



✢ Modelled domestic pathways reflects a global economic efficiency perspective with pathways for different temperature ranges derived from global least-cost models

https://climateactiontracker.org/climate-target-update-tracker-2022/





https://climateactiontracker.org/countries/turkey/ https://climateactiontracker.org/countries/uk/

Climate Action Tracker

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28.4% GLOBAL EMISSIONS COVERED BY NEW NDC SUBMISSIONS

40.5% GLOBAL POPULATION COVERED BY NEW NDC SUBMISSIONS

COUNTRIES WE ANALYSE

1.5C COMPATIBLE TARGET	SUBMITTED A STRONGER NDC TARGET	PROPOSED A STRONGER NDC TARGET	DID NOT INCREASE AMBITION*	WILL NOT PROPOSE A MORE AMBITIOUS TARGET
2022/2023 UPDATES				
-	AUSTRALIA NORWAY SINGAPORE UAE THAILAND	-	BRAZIL EU INDIA INDONESIA KAZAKHSTAN MEXICO TÜRKIYE UNITED KINGDOM VIET NAM EGYPT	-
2020/2021 UPDATES (BEFORE COP26 GLASGOW)				
-	ARGENTINA BHUTAN CANADA CHILE CHINA NIGERIA NORWAY PERU SAUDI ARABIA	INDIA	AUSTRALIA BRAZIL ETHIOPIA INDONESIA MEXICO RUSSIAN FEDERATION SINGAPORE SWITZERLAND THAILAND	-

https://climateactiontracker.org/climate-target-update-tracker-2022/

Evaluation of Türkiye's Climate (Mitigation) Action and Updated First NDC -3

- In the last two decades, Türkiye has experienced a large increase in energy demand which has resulted in Türkiye becoming heavily dependent on fossil fuels (oil, coal, natural gas) imports.
- Türkiye's continued reliance on fossil fuel imports is not only a burden on the economy, but also leaves the country vulnerable to volatile commodity markets, exacerbated by the Russian - Ukraine war and the depreciation of the Turkish Lira.
- **Despite the global climate change and climate crisis and the need for the world to get off fossil fuels, Türkiye plans to become a fossil gas hub.**

Recommendations on Türkiye's Climate Action for Energy Sector -1

- Some key recommendations for reversing the increasing trend of Türkiye's emissions and achieving the climate friendly sustainable energy not only for climate change mitigation but also sustainable climate-resilient development are:

- Focus on **maximising its huge renewable energy potential** rather than investing further in domestic lignite coal and natural gas production to **reduce its dependency on imported fossil fuels, avoiding fossil lock-in and improving energy security**.
- Develop **a coal phase-out plan** for the power sector and corresponding policies for implementation.
- Set **a stronger 2030 NDC target** that goes beyond current policies and drive emissions reductions. Ideally, this would be in the form of an emissions limit or reduction from a historical base year.

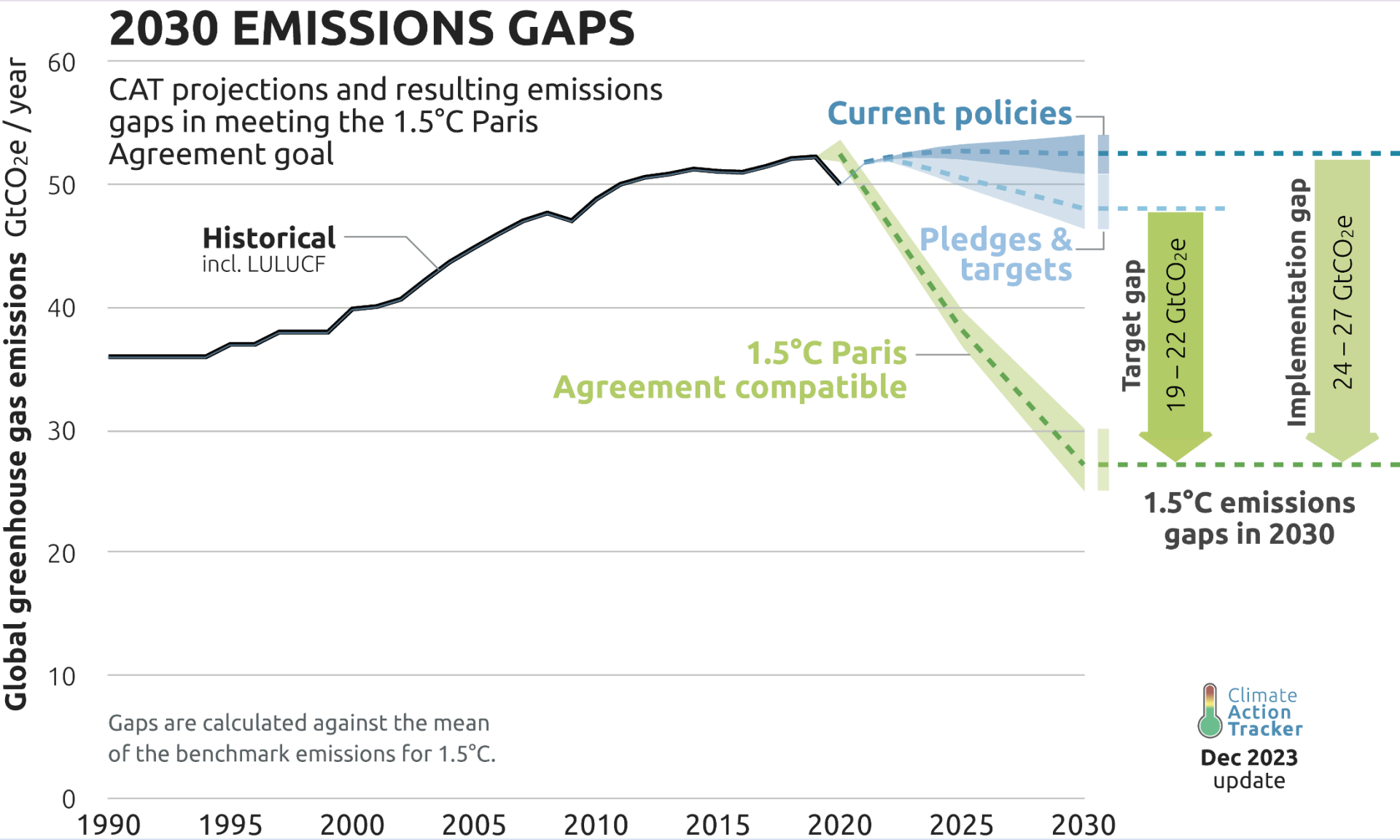
Recommendations on Türkiye's Climate Action for Energy Sector -2

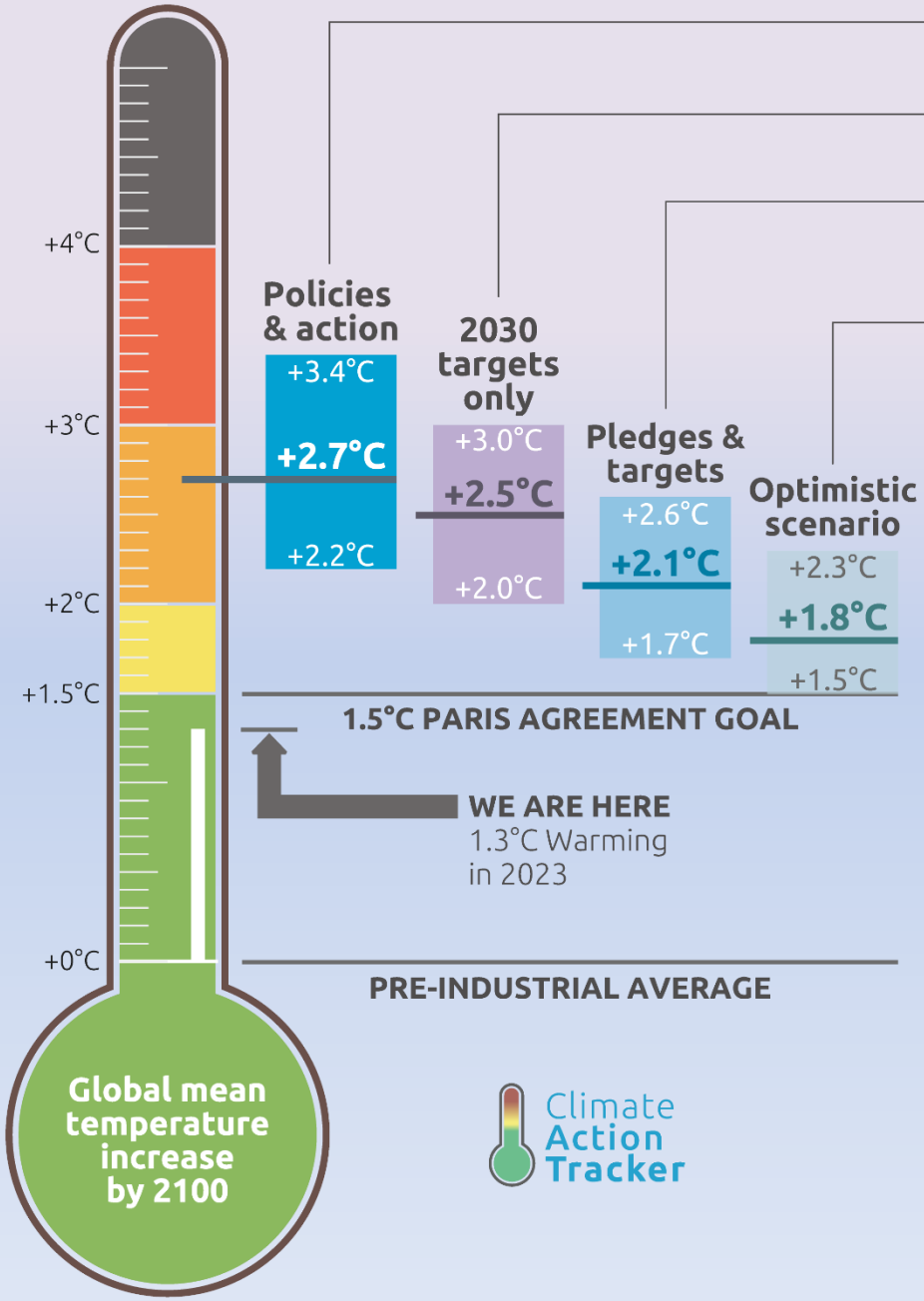
- Execute the **National Energy Plan for 2035** fully and without any delay, in which Türkiye has taken an important step in this direction by setting the target **of increasing installed solar power capacity from 6.7 GW in 2020 to 52.9 GW by 2035 and tripling its installed wind power capacity.**
- **Increase the number of policies to reduce transport emissions**.
- **On a positive note,** Türkiye has planned to manufacture its own electric vehicles (EVs), with sales of the first model set to begin towards the end of 2023. Türkiye's EV market share was less than 1% in 2020.

What have we achieved so far?

- Although climate change action needs to be massively increased to achieve the goals of the **Paris Agreement**, the years since its entry into force have already sparked **low-carbon solutions and new markets**.
- More and more countries, regions, cities and companies are establishing **carbon neutrality targets. Zero-carbon solutions** are becoming competitive across economic sectors representing 25% of emissions.
- This trend is most noticeable in the **power and transport sectors** and has created many new business opportunities for early movers.
- **By 2030, zero-carbon solutions** could be competitive in sectors representing over **70% of global emissions**.

➢ **All are not enough for climate change mitigation and the Paris Agreement global warming targets!**


2030 EMISSIONS GAPS
CAT projections and resulting emissions gaps in meeting the 1.5°C Paris Agreement goal
Global greenhouse gas emissions GtCO2e / year
60
50
40
30
20
10
0
1990
1995
2000
2005
2010
2015
2020
2025
2030
Historical
incl. LULUCF
Current policies
Pledges & targets
1.5°C Paris Agreement compatible
Target gap
19 – 22 GtCO2e
Implementation gap
24 – 27 GtCO2e
1.5°C emissions gaps in 2030
Gaps are calculated against the mean of the benchmark emissions for 1.5°C.
Climate Action Tracker
Dec 2023 update



Policies & action
Real world action based on current policies †

2030 targets only
Based on 2030 NDC targets* †

Pledges & targets
Based on 2030 NDC targets* and submitted and binding long-term targets

Optimistic scenario
Best case scenario and assumes full implementation of all **announced** targets including net zero targets, LTSs and NDCs*

† Temperatures continue to rise after 2100

* If 2030 NDC targets are weaker than projected emissions levels under policies & action, we use levels from policy & action

Climate Action Tracker

CAT warming projections
Global temperature increase by 2100

December 2023 Update

Conclusions

Climate Change Mitigation and Adaptation:

For preventing or halting the climate change by reducing the GHGs,

We need stronger global commitments…

With the use of less energy and natural resources and more and essential scientific and technical information, etc.,

We reach more succesfull adaptation…

With more balanced 'Climate System' and less climate change,

We face less exposure from, and lower vulnerability level to, the climate change and variability…

thank you

Arbutus andrachne

Arbutus unedo

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