Towards An Integrated Green Transformation Strategy:

Report for Türkiye

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2013 *Millennium Goals Report* of the United Nations:

"*the present dominant model of development is facing simultaneous multiple crises such as depletion of natural resources and the market failures that have already marked the first decades of the current millennium*".

Accordingly, this model has been ineffective in enabling productive and decent employment and has exacerbated the phenomenon of climate change

UNCTAD's 2019 *Trade and Development Report* further notes that *current trends of resource extraction and consumption patterns are simply not sustainable*;

"*the global economy does not serve all people equally. Under the current configuration of policies, the rules, market dynamics and corporate power, economic gaps are likely to widen and environmental degradation will intensify*".

efforts against the looming climate crisis are cast within the shadowy realm of the *age of anxiety* where,

- the global economy is excessively financialized and fragile;
- global demand remains weak;
- investment is sluggish;
- and distribution of incomes and wealth is heavily concentrated.

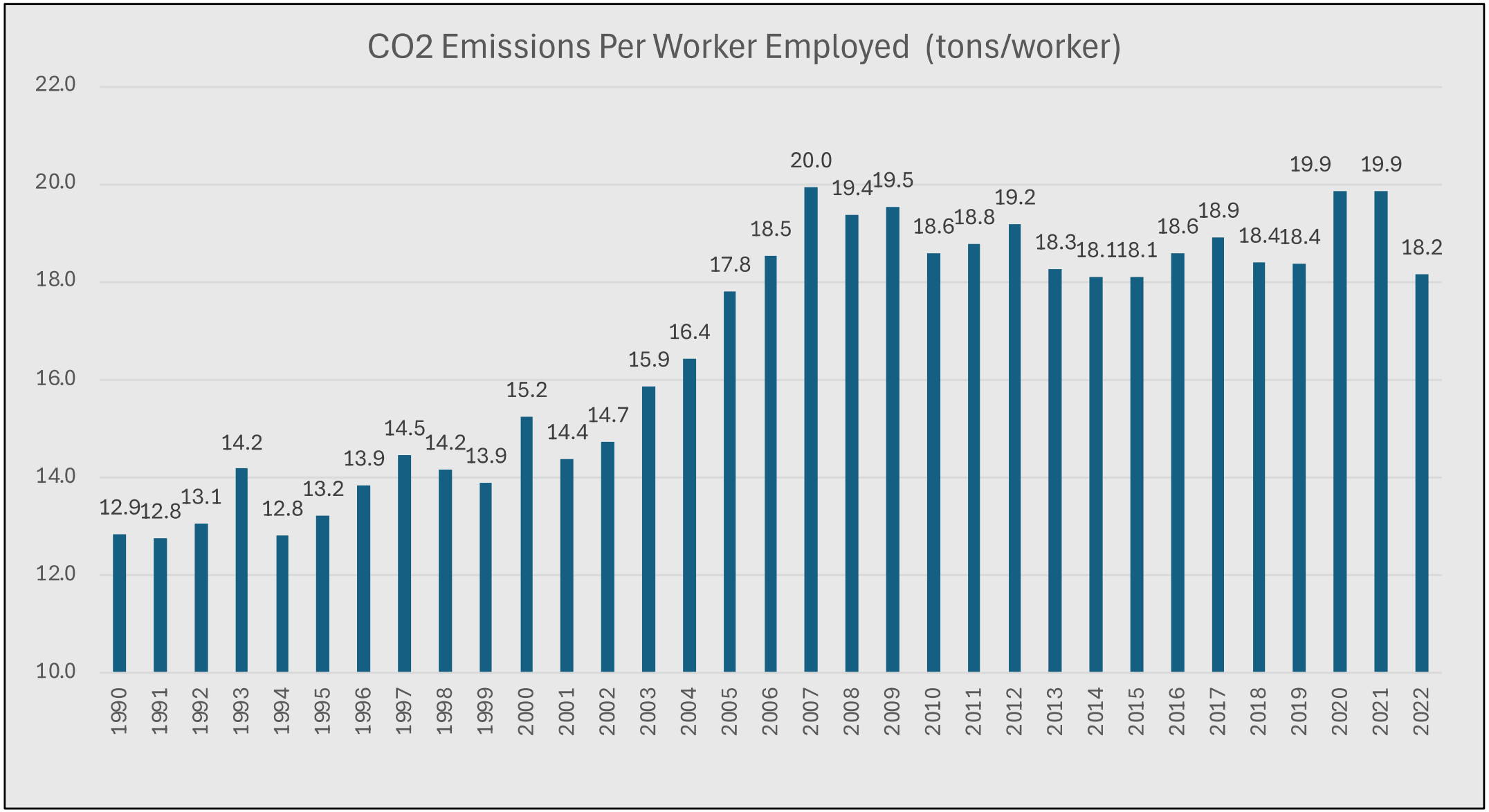
… the main purpose of this presentation is to investigate the key challenges and the underlying structural constraints Türkiye faces in its potential green transformation, and to discuss its viable policy proposals against this challenging background.

- one of the main criticisms of Türkiye's climate abatement pathway is that it does not acknowledge any decrease in absolute emissions. Instead, it is only focused on reducing greenhouse gaseous emissions relative to a hypothetical *business-as-usual* scenario,

- which is heavily criticized for its exaggerated and questionable assumptions.

- This indicates that Türkiye will likely deviate from the trajectory of other developing emerging market countries, as well as the world averages, in the coming decades.

- Yet, Türkiye has very strong potential in renewables-led power generation given her geographical opportunities and wide array of potential gains in technological efficiency in energy production.


CO2 Emissions Per Worker Employed (tons/worker)
22.0
20.0
18.0
16.0
14.0
12.0
10.0
12.9
12.8
13.1
14.2
12.8
13.2
13.9
14.5
14.2
13.9
15.2
14.4
14.7
15.9
16.4
17.8
18.5
20.0
19.4
19.5
18.6
18.8
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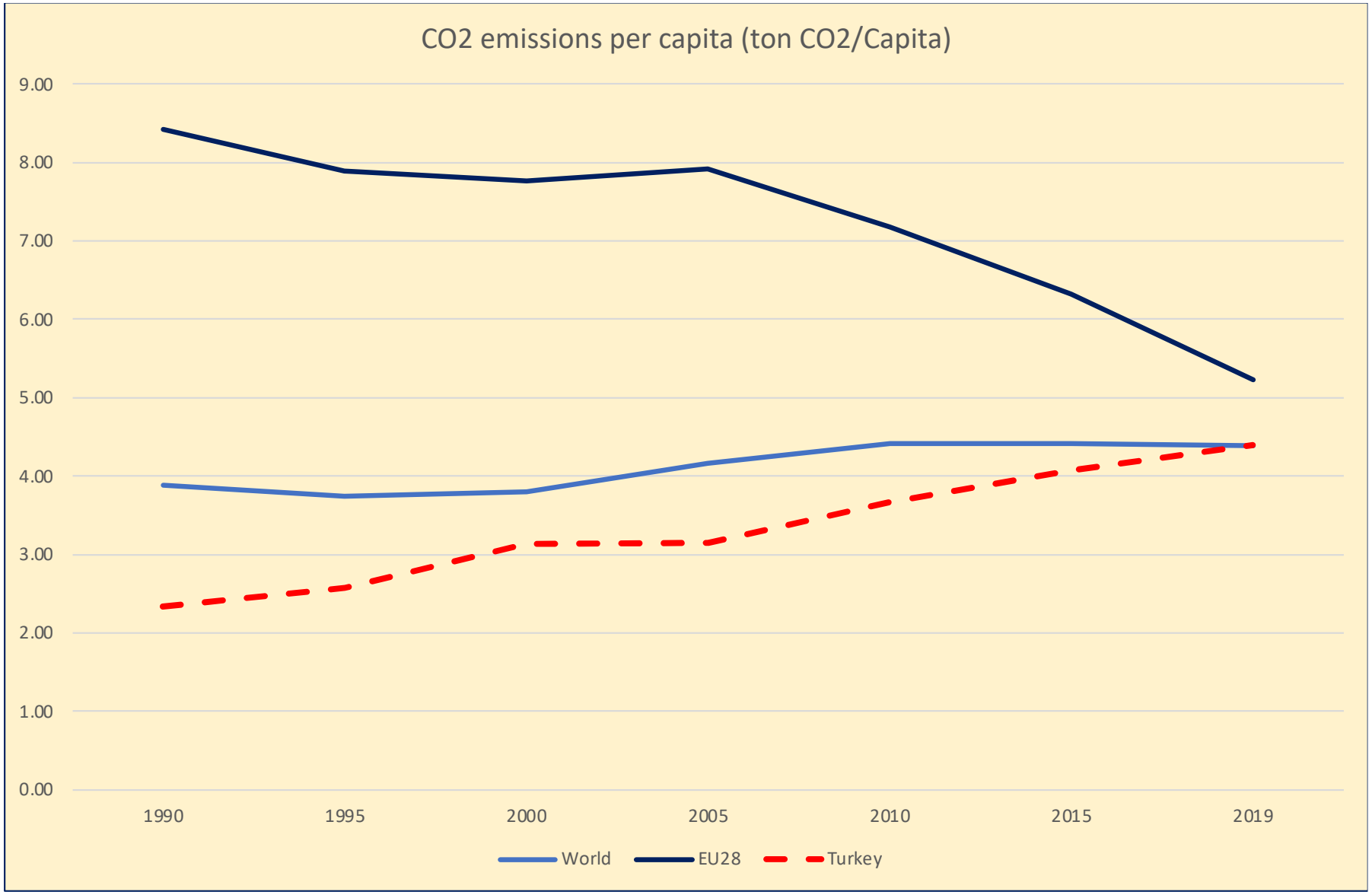
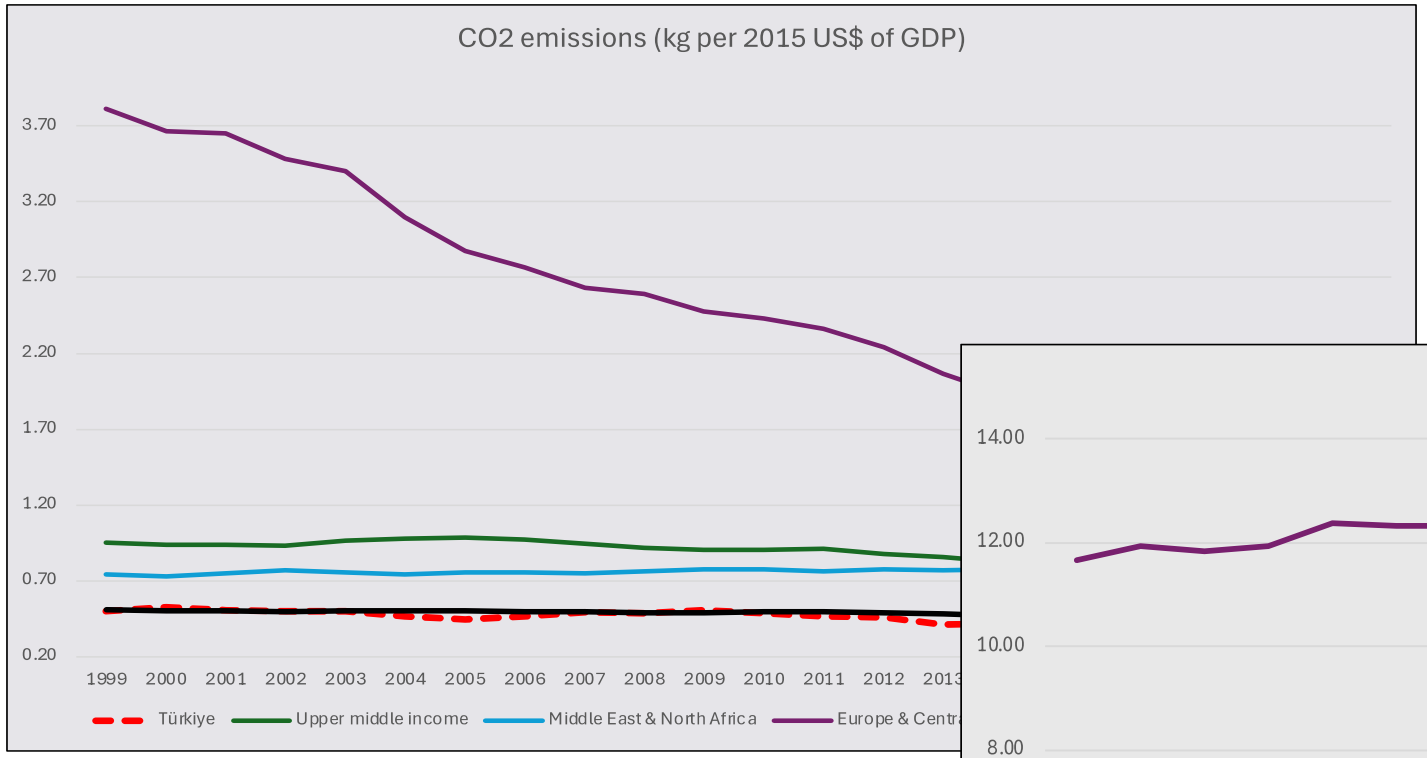
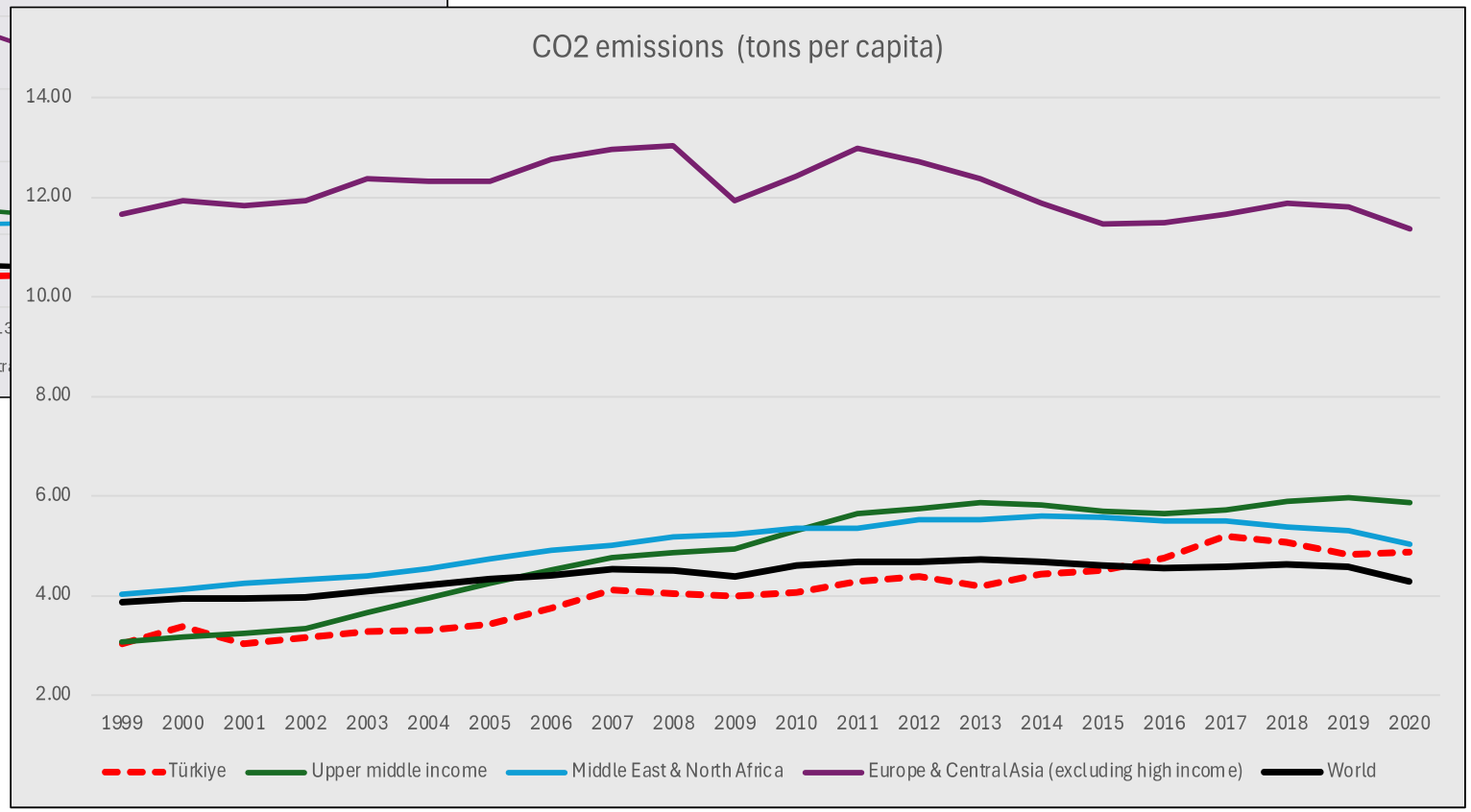
2022

… as a result, Türkiye’s emissions per capita remains on an upward trend



In contrast, Türkiye's CO2 inventory compares favorably in most respects with economies in the region as well as its competitors at the global scale.

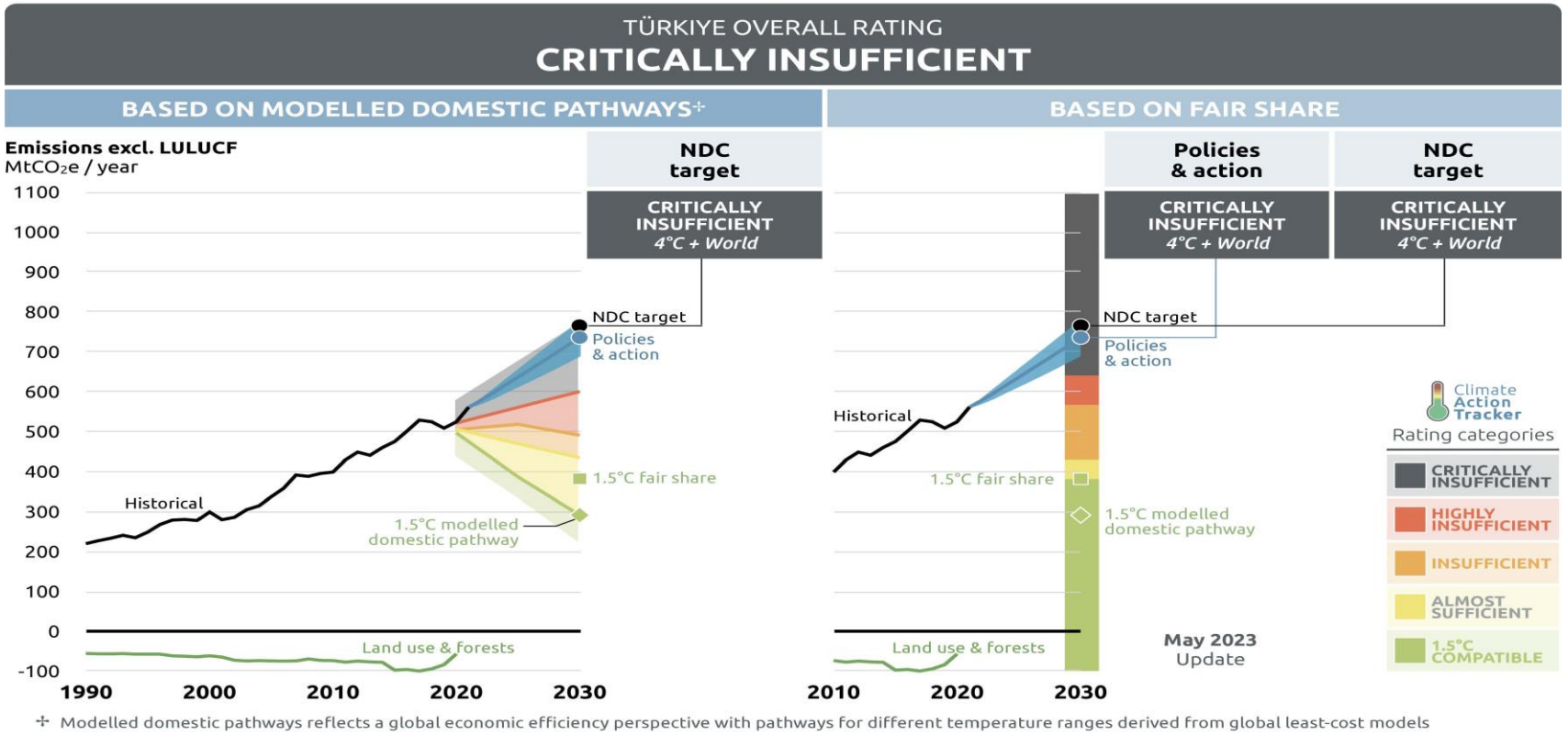




Along with her peers of the developing & emerging market economies, Türkiye clearly shares the main tacit dilemma of tradeoffs between maintaining *energy security versus exercising her right to development*.

Climate Action Network:

- Türkiye's NDC target reflects *minimal to no action* and is reported as *not at all consistent with limiting warming to 1.5°C;*
- *The NDC* does not provide transparent assumptions on carbon dioxide removals.
- "*Türkiye's target is not in line with any interpretation of a fair approach to meeting the 1.5°C temperature limit*"; and
- "*if all countries were to follow Türkiye's approach, warming would exceed 4°C*".



However, on a positive note

Türkiye has made significant progress towards its energy goals with the introduction of the *National Energy Plan for 2035*, and the *2053 Long Term Climate Strategy* document presented to the 29 COP meetings (UNFCC, 2024).

The *Climate Strategy* document aims to increase the country's solar power capacity from 6.7 GW in 2020 to 82 GW, while also quadrupling its total wind & solar power capacity to 120GW, by 2035.

specific targets

- by 2030, primary energy consumption will be reduced by 16%, preventing 100 million tons of CO2 Emissions. Nuclear energy installed capacity will be increased to 4.8 GW
- by 2035, Energy intensity will be reduced by 35%. Installed capacity of solar and wind energy will be increased fourfold and nuclear energy installed capacity will be increased to 7.2 GW; and
- by 2053, the share of renewable energy in primary energy will be increased from 17% to 50%.

- In the steel sector,

total emissions could be reduced by 20,6% by 2040 and by 99,7% by 2053
at an investment cost : $33.6 billion.

- For the cement sector,

emissions could be reduced by 29.8% by 2040 and by 92.8% by 2053
Total investment cost: $29.8 billion.

- In the aluminum sector,

emissions could be reduced by 53% by 2040 and by 75% by 2053
Total investment cost: $4.3 billion.

- For the fertilizer sector,

a complete reduction of emissions by 100% is targeted for 2053,
Total investment cost: $5.3 billion.

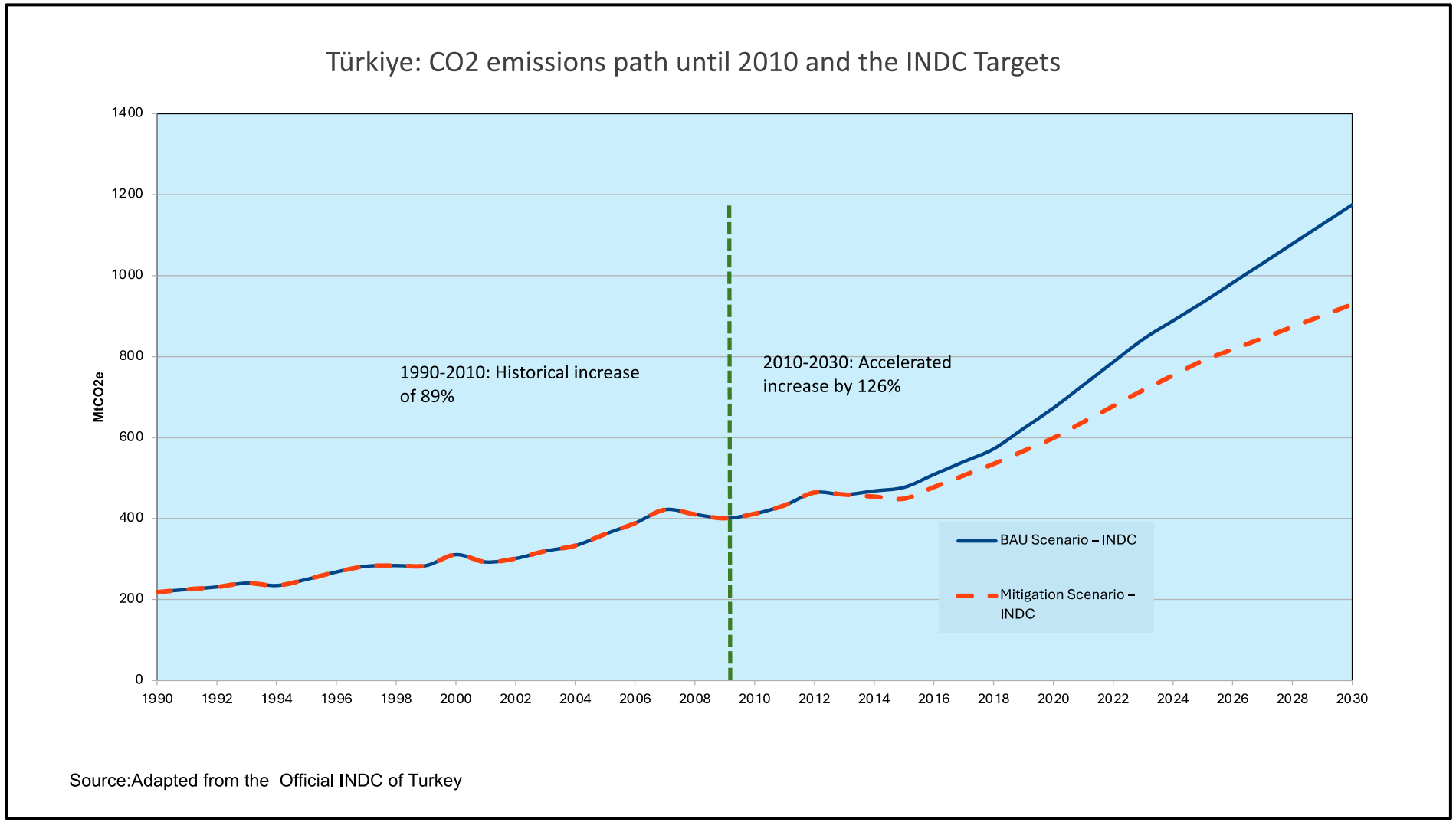
World Bank's 2022 CCDR report suggests that Türkiye's 2053 net-zero path would require an investment of $68 billion in 2022-2030, with expected benefits of $146 billion for 2022-2040

As a point of contrast, UNCTAD's call for The *New Collective Quantified Goal* towards Climate Finance suggests that developing countries require around $1.1 trillion for climate finance from 2025, rising to around $1.8 trillion by 2030.

Evaluating Türkiye's NDC Pathway and the Proposed Domestic Emissions Trading System (ETS)

The NDC abatement pathway has been criticized by many researchers and NGOs for its erroneous assumptions and rather poor analytical framework.

See, *e.g.*, Climate Action Network, Yeldan, 2023; Şahin *et. al.*, 2021; Şahin, 2016; Voyvoda and Yeldan, 2015.



Aşıcı (2023):

Turkish ETS has been announced to be initiated in 2025, where the scheme will replace the *Monitoring-Reporting-Verification* (MRV) system that had been enacted back in 2017.

In electricity, refinery, non-metallic minerals, basic metals, paper and chemicals, those enterprises emitting above a threshold level of GHGs (> 500 ktCO2e) will be covered under the ETS regulations.

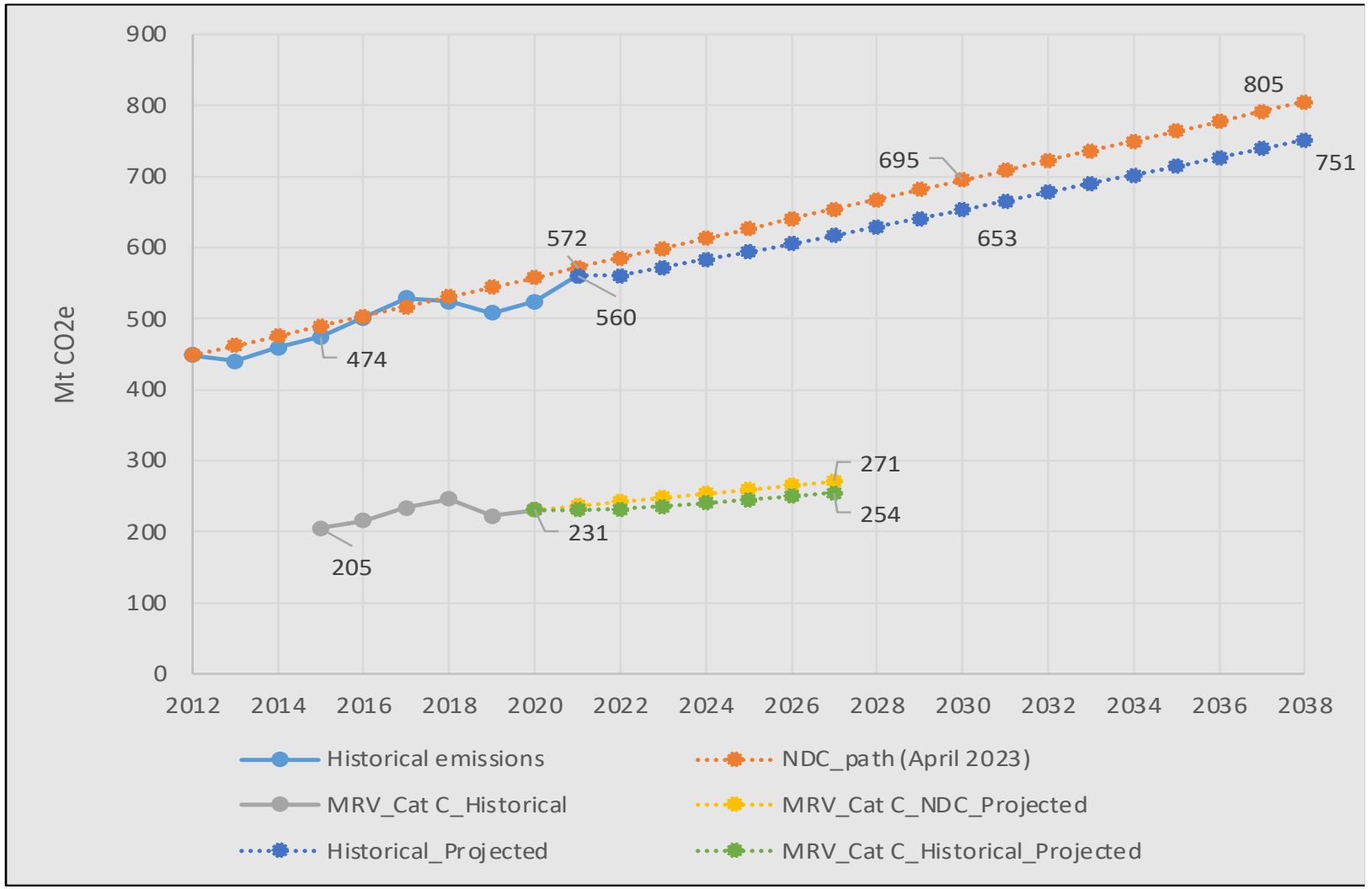
As of 2020, 476 installations that had been listed under the Turkish MRV system were responsible for a total of 251 million tons of CO2e (MtCO2e). This corresponds to 48.2% of the aggregate 520 MtCO2e total emissions in that year.

Türkiye's pledge is to limit emissions to 695 MtCO2e in 2030, which corresponds to a 41% decrease from BaU.

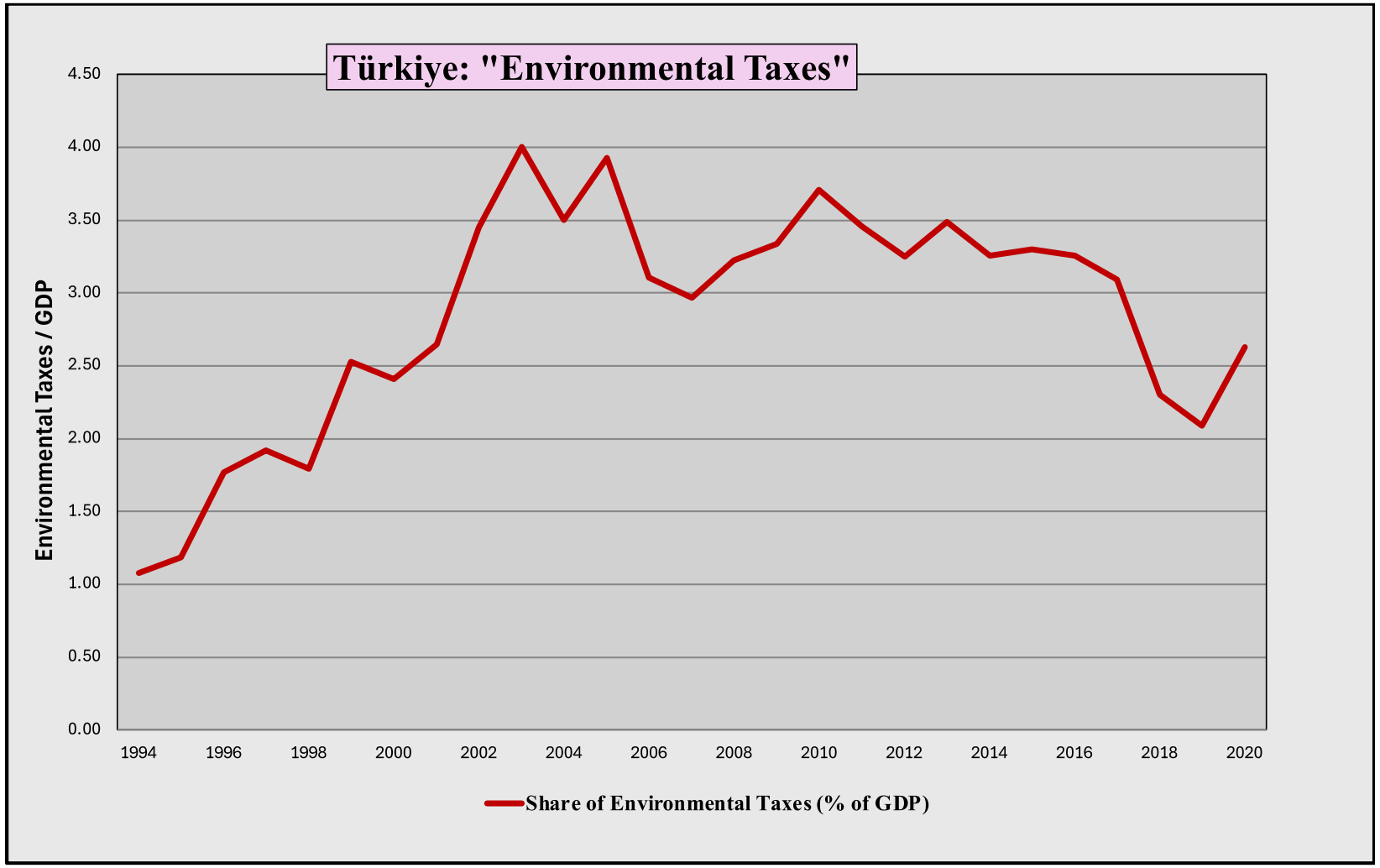
Historical emissions, however, reveal an entirely different path, under a more realistic analytical set of assumptions Turkish emissions are expected to reach to **653 MtCO2e in 2030**, and to **751 MtCO2e in 2038**.

Historical and Projected GHGs Emissions in Türkiye (MtCO2e)

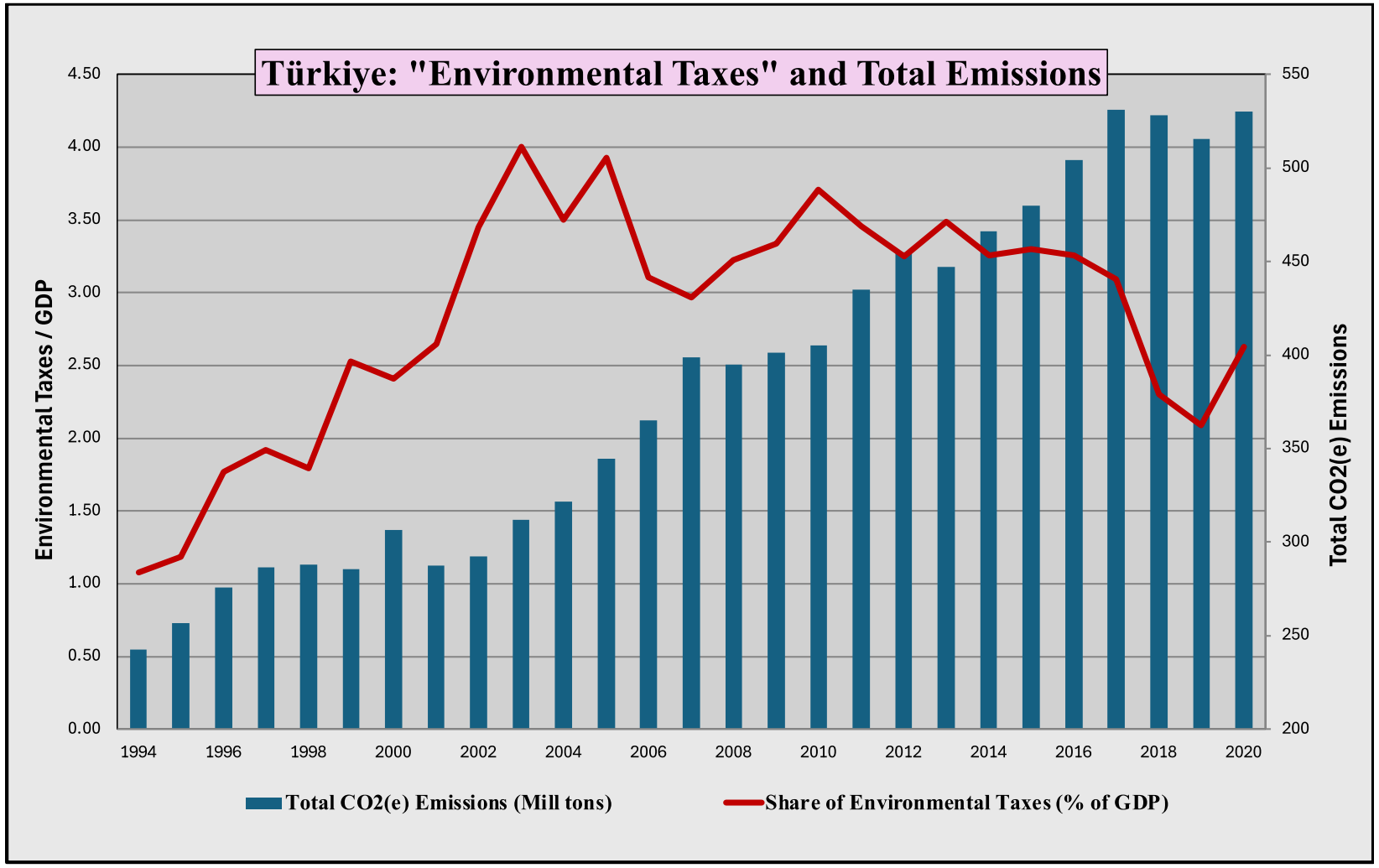
This calculation means that employing the official NDC projected emissions rather than emissions reflecting the historical trend would cause *a 17 million oversupply of allowances in 2027* (when the transition phase ends). Hence, there is a risk for the Turkish ETS to face extremely low carbon prices, if not zero prices.

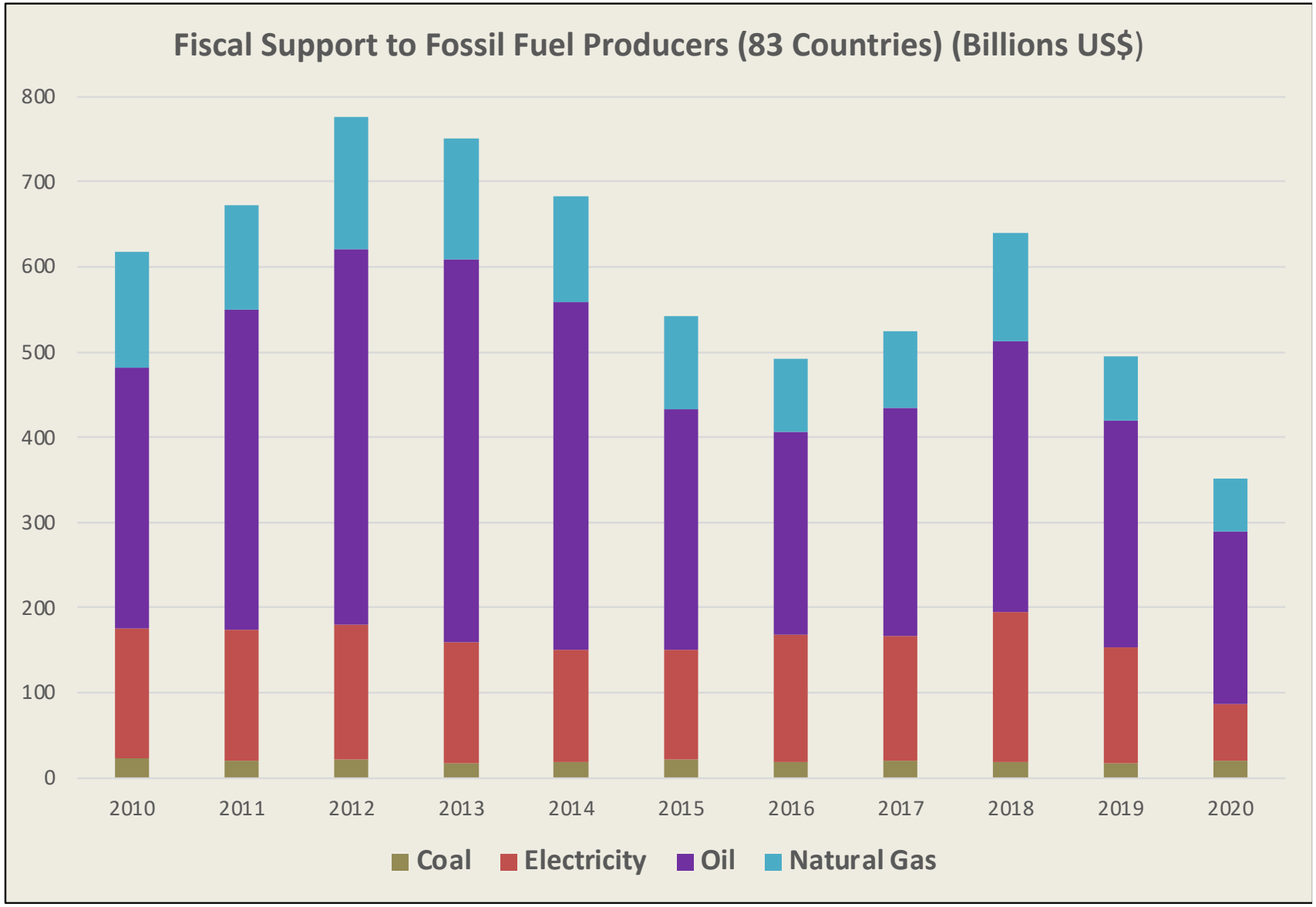


Türkiye has a sizable burden of “Environmental” taxes



Yet they have little impact, if any, on environmental abatement




Fiscal Support to Fossil Fuel Producers (83 Countries) (Billions US$)
800
700
600
500
400
300
200
100
0
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
Coal
Electricity
Oil
Natural Gas

- *Acar & Yeldan 2016, JUST DO IT*:

- Türkiye can reduce its total CO2 emissions by 5% by eliminating its subsidies to the coal industry at a miniscule cost to its GDP

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Opinion paper

Environmental impacts of coal subsidies in Turkey: A general equilibrium analysis

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HIGHLIGHTS

- Turkey supports the coal sector providing both production and investment subsidies.
- Eliminating production subsidies leads to a 2.5% decline in total CO2(eq) by 2030.
- Additionally, removal of regional investment subsidies reduces CO2(eq) by 5.4%.
- The macro-effects of both scenarios are found to be quite small.
- Coal subsidies could be transferred to the financing of green policy alternatives.

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ABSTRACT

In this study we aim at providing an analytical framework for Turkey to study the macroeconomics and environmental impacts of the existing coal subsidization scheme. To this end we develop a regionally differentiated applied general equilibrium model spanning over 2015–2030. Our analytical apparatus focuses exclusively on the fiscal implications as well as the environmental repercussions of the removal of the subsidies on greenhouse gas emissions. With the aid of a set of alternative policy scenarios against a "business as usual" path, we study the regional and sectorial performances of growth, employment, investment and capital accumulation, consumption/welfare and trade balance. Our results indicate that by simple elimination of the coal subsidization scheme, Turkey can reduce its aggregate gaseous emis-

Türkiye, General Energy Balances: 2002-2022

	'000 Toe			Share in Total (%)			Avg Annual Rate of Change (%)	
	2002	2010	2022	2002	2010	2022	2002-2010	2010-2022
Domestic Production	24,430	31,558	50,830	31.70	29.80	32.22	3.20	3.97
of which Coal	11,538	16,214	18,967	14.97	15.31	12.02	4.25	1.31
of which Renewables[1]	322	683	5,326	0.42	0.64	3.38	9.39	17.12
Imports	57,156	84,606	125,129	74.16	79.90	79.31	4.90	3.26
of which Coal	8,342	14,423	23,651	10.82	13.62	14.99	6.84	4.12
Exports (-)	3,162	7,991	10,893	4.10	7.55	6.90	11.59	2.58
Total Primary Energy Supply	77,075	105,888	157,770	100.00	100.00	100.00	3.97	3.32
Total Energy Consumption	59,486	79,840	120,438				3.68	3.43
Consumption of Industry	23,022	26,077	37,753	100.00	100.00	100.00	1.56	3.08
of which Coal	8,693	8,641	9,447	37.76	33.14	25.02	-0.07	0.74
of which Renewables[1]	119	130	85	0.52	0.50	0.22	1.11	-3.57
1. wind and solar								

International Energy Agency (IEA) in its *2021 Energy Report* states that, even though "…*Türkiye has experienced impressive growth in renewables in the past decade* (notably solar, wind and geothermal), *still, fossil fuels continue to drive Türkiye's economy, with a heavy dependency on imports, especially oil and gas".*

Advances in renewables had been a conscious result of supportive government policies, while being "… *driven by a favorable resource endowment and strong energy demand growth*"

Summarizing,

Türkiye offers very strong potential in renewables-led power generation given its geographical opportunities and wide array of potential gains from decarbonization of its industrial production.

In contrast to all of this, however, Türkiye's macroeconomic outlook exhibits the characteristics of a typical late-industrializer, developing market economy trapped within the constraints of its growing population and speculation-driven patterns of growth.

The country's overall ambitious targets on green industrialization are marred by short-termism and rentier characteristics of its investment patterns, with a heavy reliance on (imported) fossil-fuel based production and consumption patterns which, in turn, have limited domestic substitution possibilities.

It is our contention that the main premise of viable *green industrialization strategy* should include:

- transition from fossil fuel-based production to sustainable and renewable forms of energy, industry and agricultural activities;
- addressing informalization and fragmentation of labor markets and installation of decent job programs;
- addressing wide imbalances of incomes and opportunities across not only wage labor and capital or the regional sphere, but also over gender, ethnicity and all forms of social exclusion;
- granting a realistic role to the states in resource mobilization and resource allocation within principles of social evaluation, rather than myopic expectations of the oligopolistic markets.

we propose the following policy actions for Türkiye towards attaining decarbonization in the medium to longer runs:

- Carbon must be realistically priced so as to reflect its true social costs. Offsets and various other international mechanisms that lead to exceptions should be kept at a minimum and must be dissolved within a pre-announced time frame.

- Transitioning away from coal ought to be regarded as an indispensable component of the overall policy package to attain the *Net Zero Emissions pathway*. Any energy and power sector that continues to rely on coal and fossil fuels will result in an astronomical price tag for CO2 and will prove the NZE pathway unrealistic.

- It is pertinent that certain *strategic* sectors, such as iron & steel, cement, transportation will need to be supported via exceptional treatments through tax breaks, compensations, free allowances, etc. Yet this must be announced under a *transitory* period and must be phased out in a transparent manner.

- It should be recognized that all along a decarbonization pathway based on pricing and restricting carbon emissions, there will be unavoidable costs in the short- to medium run. It must be understood that gains stand to be realized over a longer run and will not materialize immediately in miraculous fashion.

- Throughout this process, states will need to intervene simultaneously as an *administrator of social policy*, as a *regulator*, and as an *investor*.

- The fight against climate change should be prevented from being turned into an arena for financial speculation and rent-seeking.