REPORT / 2022

CURING CHRONIC COAL

The health benefits of a 2030 coal phase out in **Turkey**

EUROPE BEYOND COAL

HEAL HEALTH AND ENVIRONMENT ALLIANCE

CAN CLIMATE ACTION NETWORK Europe

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In November 2021, Turkey announced a 2053 net zero emissions target and became one of the last countries to ratify the Paris Agreement[1]. However, the country is not taking sufficient steps to phase out coal power generation, with serious implications for people's health, climate change, climate-related health problems and the costs of the health burden.

Studies show that from 1990-2020, Turkey's coal-fired electricity production increased by 459%, while the greenhouse gas emissions (GHGs) from the electricity sector increased by 323%[2]. The most recent commitments to reduce GHGs announced in November 2022 during COP27 don't include a coal phase out date. The year 2038 is set as the year when GHG emissions should peak; although analyses show that this would mean more than a 30% increase in current greenhouse gas emissions[3]. Moreover, there are still plans to open new areas to coal mining and increase domestic coal-based electricity generation, even though many new coal projects have been shelved.

Coal must be phased out in Turkey to protect people's health, the climate and the economy

There is no scientific doubt about the huge health burden created by coal power generation. In Turkey, burning coal for electricity leads to **5,000 premature deaths every year** due to air pollution[4]. Concerns about the health impacts of burning coal and other fossil fuels has been growing. In 2021, the World Health Organization (WHO) underlined the need to phase out polluting fossil fuels, given their high health impact. In 2022, more than 180 health organisations and WHO voiced their support for a fossil fuel non-proliferation treaty[5].

In addition, climate change, which is driven by burning coal, oil and gas, affects the social and environmental determinants of health – clean air, safe drinking water, sufficient food and secure shelter. Between 2030 and 2050, climate change is expected to cause approximately 250,000 additional deaths per year globally, from malnutrition, malaria, diarrhoea and heat stress[6].

The direct damage costs to health (i.e. excluding costs in health-determining sectors such as agriculture and water and sanitation), are estimated to be between **USD 2-4 billion/year** by 2030[6]. Areas with weak health infrastructure – mostly in developing countries – will be the least able to cope without assistance to prepare and respond.

THE HEALTH BENEFITS

of phasing out coal in Turkey by 2030

AVOIDED HEALTH IMPACTS FOR TURKEY

with a coal phase out by 2030, compared to
an end of operation in the 2050s

102,601
Premature deaths

30,975
Cases of preterm births

114,683
Hospital admissions

67,108
New cases of chronic bronchitis in adults

419,835
Cases of bronchitis in children

3,772,502
Days with asthma and bronchitis symptoms in asthmatic children

231,333,351
Sickness days

27,606,746
Lost working days

HEALTH ECONOMIC COST

Up to 194 billion EUR

CONTINUNING WITH TURKEY'S COAL POWER ADDICTION
until the 2050s (end of the plants' lifetime)

would lead to

compared to a 2030 coal phase out

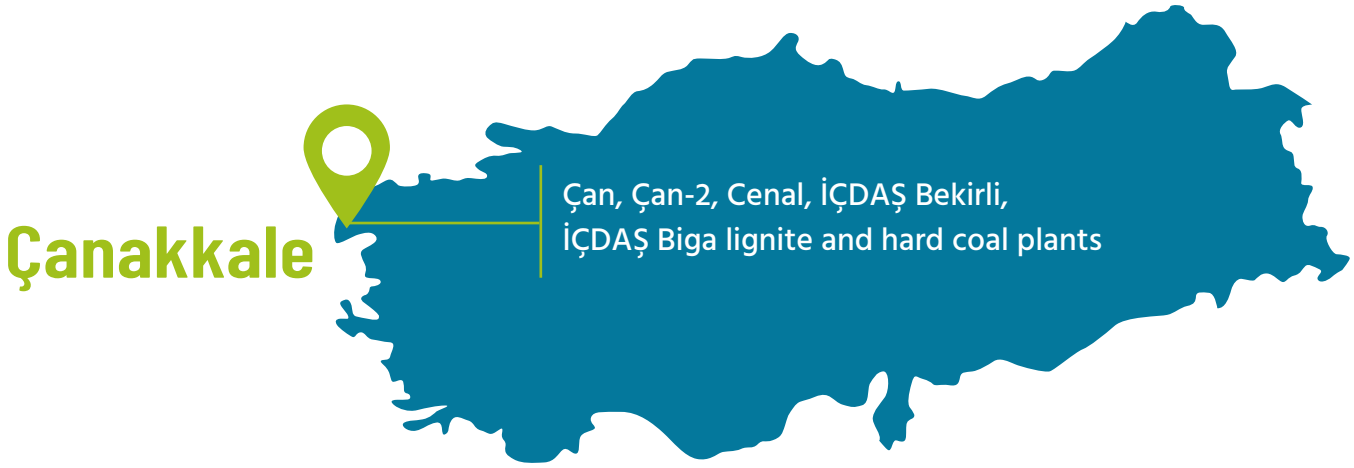
If Turkey phased out coal by 2030, an additional **102.601** premature deaths could be prevented. **This is almost 20 times more than deaths from traffic accidents in Turkey per year[7].**

Moreover, each year 436.000 people lose their lives due to communicable and non-communicable diseases, **160.000** due to circulatory system diseases and 80.000 due to tumors. This shows that the **(cumulative) preventable health burden** of burning coal is **more than annual deaths due to tumors in Turkey.**

Moreover, in 2020, Turkey's annual health spending was 15.5 billion EUR (250 billion TRY)[8]. **The health cost saved from a phase out by 2030 are equivalent to financing the health spending for 12.5 years.**

ZOOMING IN: HEALTH BENEFITS

for Çanakkale, İskenderun, Kütahya, Maraş, Muğla and Zonguldak cities of Turkey as coal hotspots

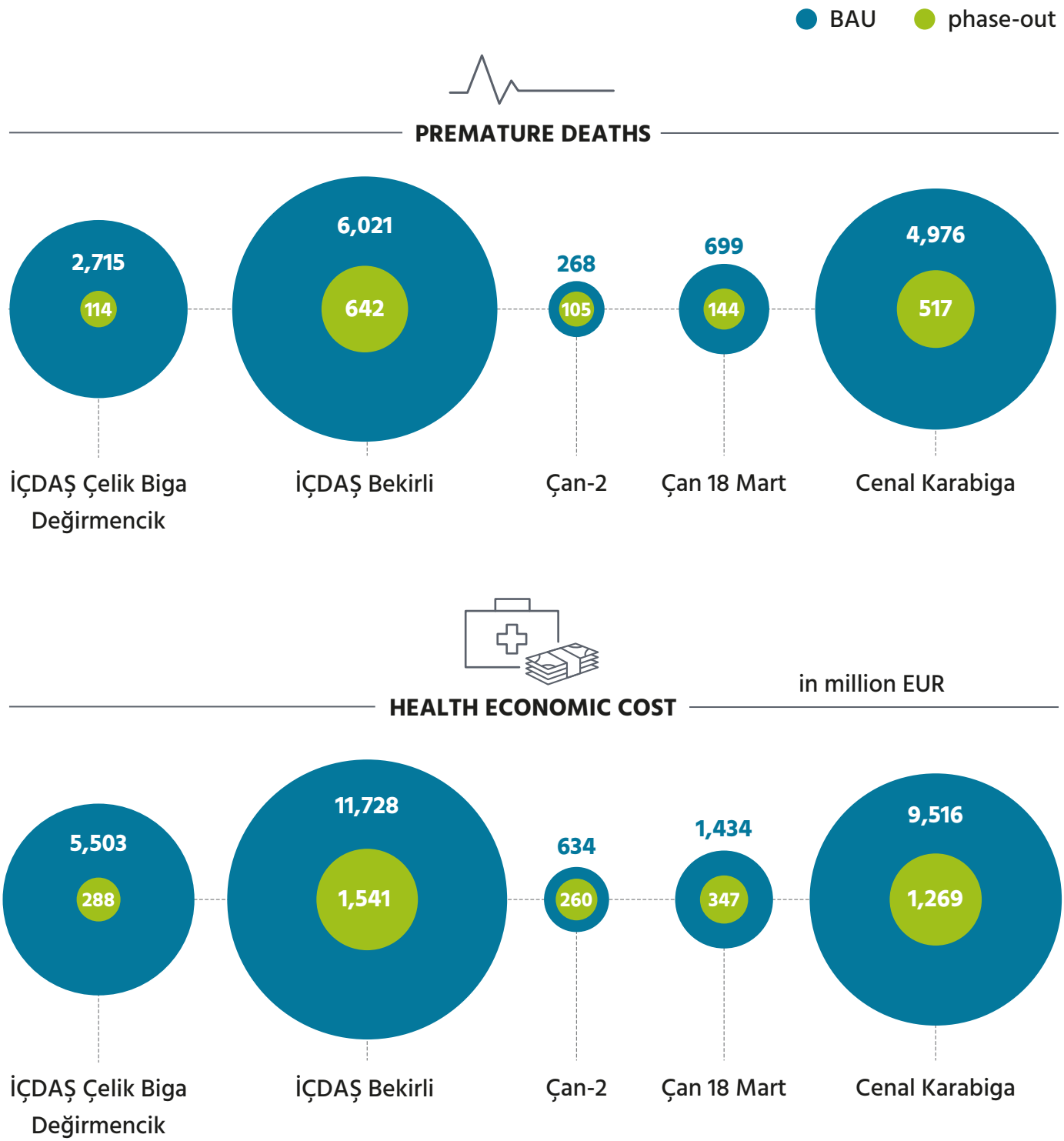


There are five operating coal power plants in Çanakkale that use lignite coal extracted in the region or imported hard coal[9].

- **Çan 18 Mart** has been in operation since 2005. It has a capacity of 320 MW and it burns domestic lignite coal. Its phase out date is recommended as 2029 under the phase out scenario, but it's production licence ends in 2052.
- **Çan-2** has been in operation since 2018. It has a capacity of 330 MW and it burns domestic lignite coal. Its phase out date is recommended as 2026, but its production licence ends in 2033.
- **Cenal** has been in operation since 2017. It has a capacity of 1,320 MW and it burns imported hard coal. Its phase out date is recommended as 2027, but it's production licence ends in 2062.
- **İÇDAŞ Bekirli** has been in operation since 2011 and 2015 (the first 600 MW went online in 2011, and the second in 2015). It has a capacity of 1,200 MW and it burns imported hard coal. Its phase out date is recommended as 2026, but its production licence ends in 2056.
- **İÇDAŞ Biga** (İÇDAŞ Değirmencik) has been in operation since 2005 and 2009 (the first 135 MW went online in 2005, and the remainder in 2009). It has a capacity of 405 MW and it burns imported hard coal. Its phase out date is recommended as 2023, but it's production licence ends in 2056.

Closing down these five coal power plants in Çanakkale by 2030, instead of running the plants until their production licence ends, would prevent 90 of every 100 premature deaths. 1,524 premature deaths would occur with a phase out scenario compared to 14,678 premature deaths under business as usual. The cumulative health economic costs could be lowered by 87%, from 29 billion EUR (28,815 EUR) to 4 billion EUR (3,705 EUR). The reductions in health costs and burdens expected under the phase out scenario for İÇDAŞ Biga (Değirmencik) plant is higher than other plants as the recommended phase out date is 2023 and only two years of operation are included in the cumulative impacts[10].

PREMATURE DEATHS AND HEALTH COSTS OF THE PLANTS OPERATING IN ÇANAKKALE UNDER 2030 COAL PHASE OUT AND BUSINESS AS USUAL (BAU) SCENARIOS

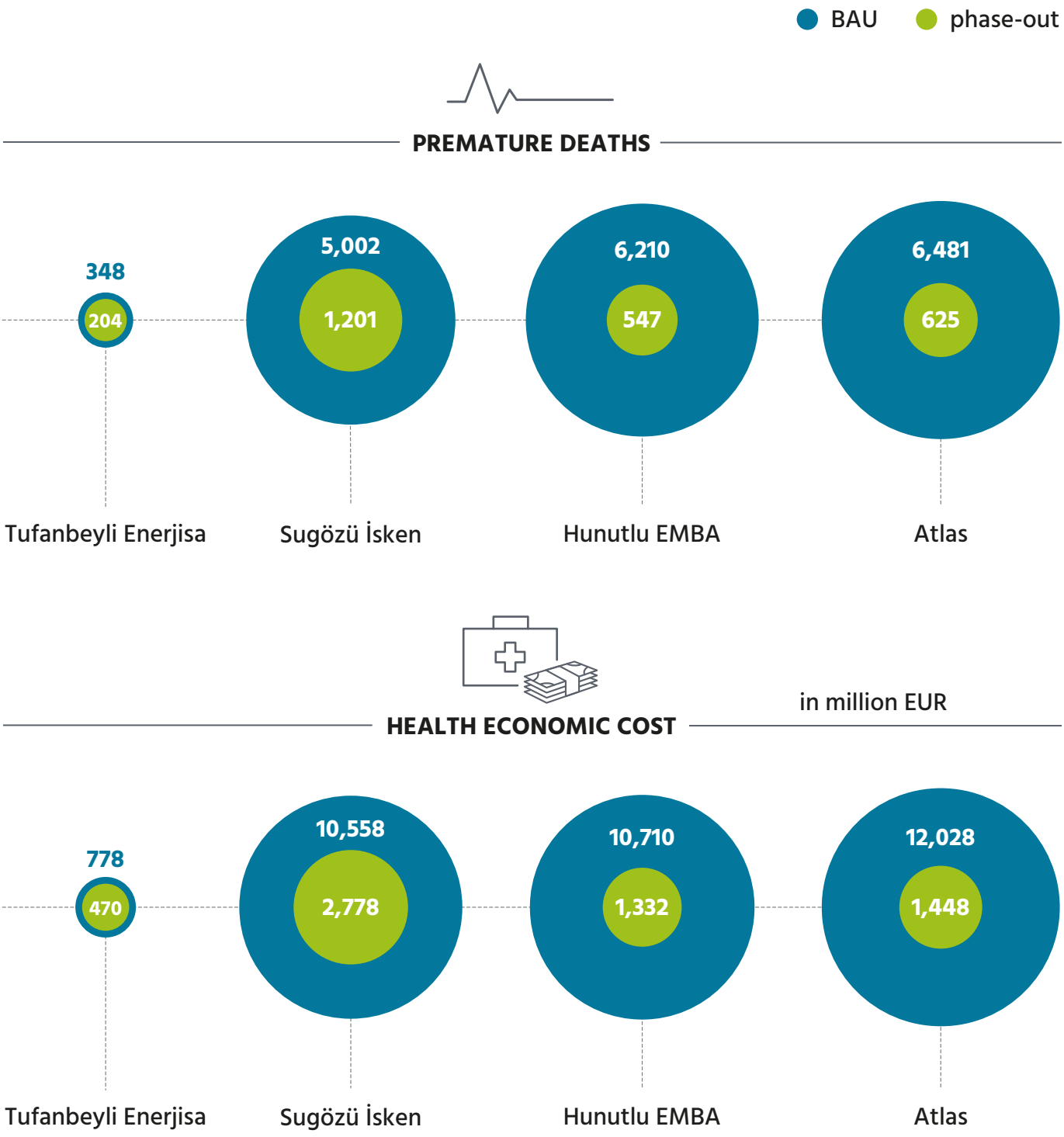


There are four operating coal power plants in Adana and Hatay that use lignite coal extracted in the region or imported hard coal.

- **Atlas** has been in operation since 2014 in Hatay. It has a capacity of 1,200 MW and it burns imported hard coal. Its phase out date is recommended as 2026, but it's production licence ends in 2057.
- **Hunutlu EMBA** has started operation in the second half of 2022 in Adana. It has a capacity of 1,320 MW, it burns imported hard coal. Its phase out date is recommended as 2028, but its production licence ends in 2064.
- **Sugözü İsken** has been in operation since 2003 in Adana. It has a capacity of 1,320 MW and it burns imported hard coal. Its phase out date is recommended as 2026, but its production licence ends in 2039.
- **Tufanbeyli** has been in operation since 2016 in Adana. It has a capacity of 450 MW and it burns domestic lignite coal. Its phase out date is recommended as 2029, but its production licence ends in 2034.

Closing down these four coal power plants in İskenderun Bay by 2030, instead of running the plants until their production licence ends, would prevent 86 out of every 100 premature deaths. 2,612 premature deaths would occur with a phase out scenario compared to 18,032 premature deaths under business as usual. The cumulative health economic costs could be lowered by 82%, from 34 billion EUR (34,074 EUR) to 6 billion EUR (6,028 EUR). The reductions expected from the Atlas and EMBA plants are significantly higher than the others, as their licence dates in the business as usual scenario end almost 30 years later than the other plants[10].

PREMATURE DEATHS AND HEALTH COSTS OF THE PLANTS OPERATING IN İSKENDERUN UNDER 2030 COAL PHASE OUT AND BUSINESS AS USUAL (BAU) SCENARIOS

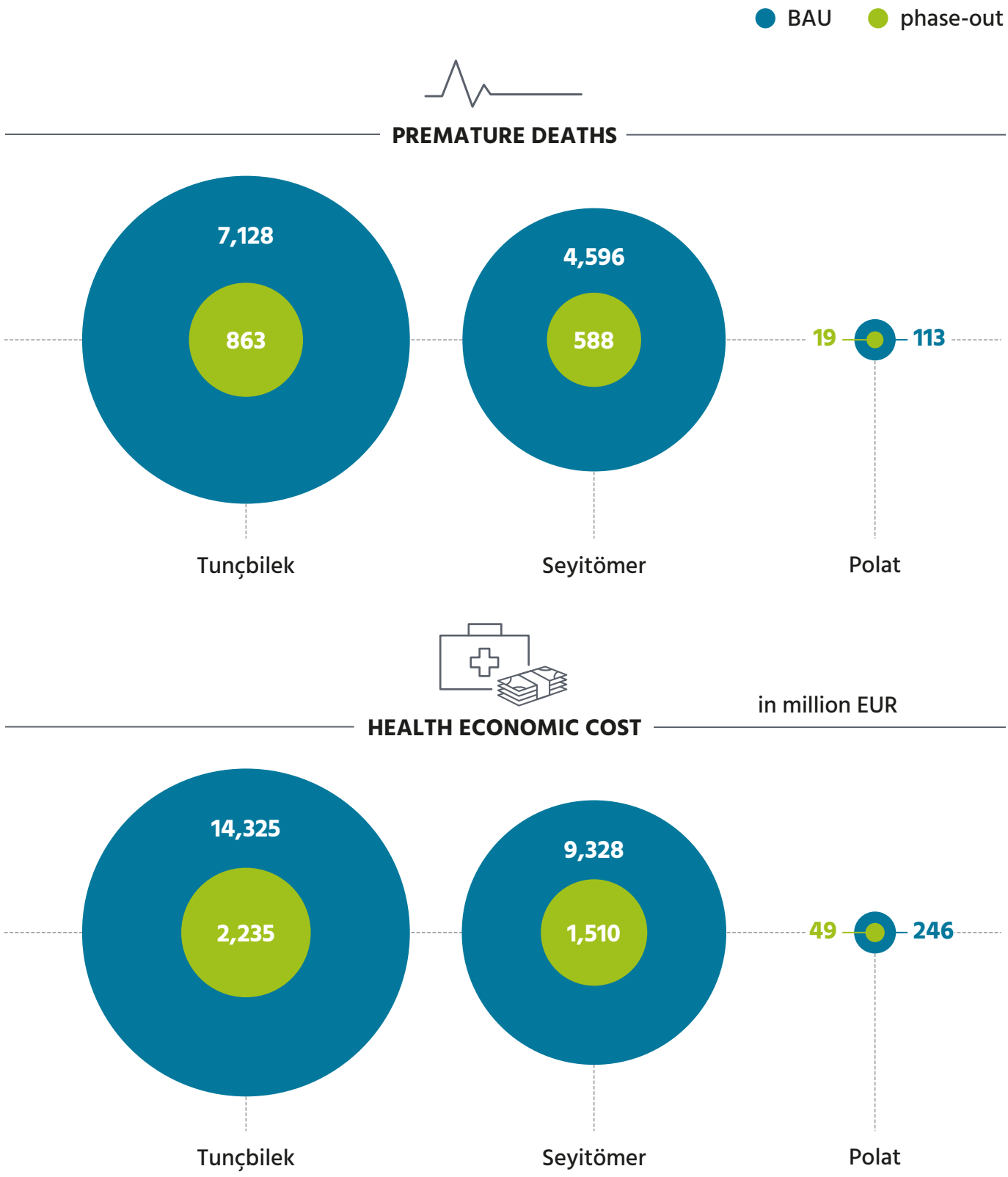


There are three operating coal power plants in Kütahya. They use lignite coal extracted from the nearby, domestic lignite mines.

- **Polat** has been in operation since 2013, with a capacity of 51 MW. Its phase out date is recommended as 2029, but it's production licence ends in 2057.
- **Seyitömer** has been in operation since 1973 (the first 150 MW went online in 1973, and the rest three units later) , with a total capacity of 600 MW. Its phase out date is recommended as 2028, but its production licence ends in 2062.
- **Tunçbilek** has been in operation since 1965 (still operating 65 MW unit went online in 1965 the rest in 1977 and 1978), with a capacity of 365 MW. Its phase out date is recommended as 2027 (for one unit) and 2028 (for the other two units), but its production licence ends in 2064.

Closing down these three coal power plants in Kütahya by 2030, instead of running the plants until their production licences end, would prevent 88 out of every 100 premature deaths. 1,470 premature deaths would occur with aphase out scenario, compared to 11,837 premature deaths under business as usual. The cumulative health economic costs could be lowered by 84%, from 24 billion EUR (23,899 EUR) to 4 billion EUR (3,794 billion EUR)[10].

PREMATURE DEATHS AND HEALTH COSTS OF THE PLANTS OPERATING IN KÜTAHYA UNDER 2030 COAL PHASE OUT AND BUSINESS AS USUAL (BAU) SCENARIOS

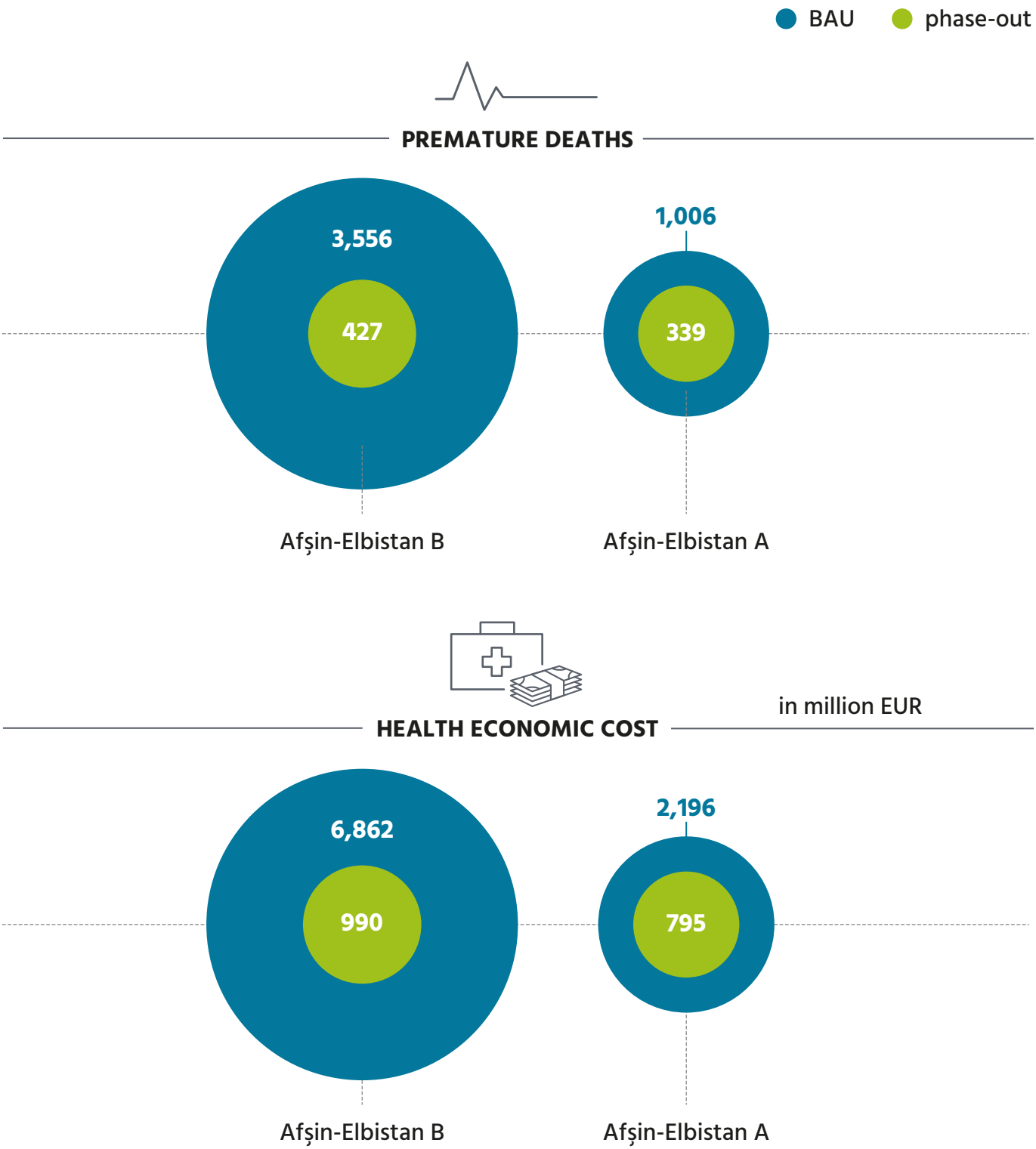


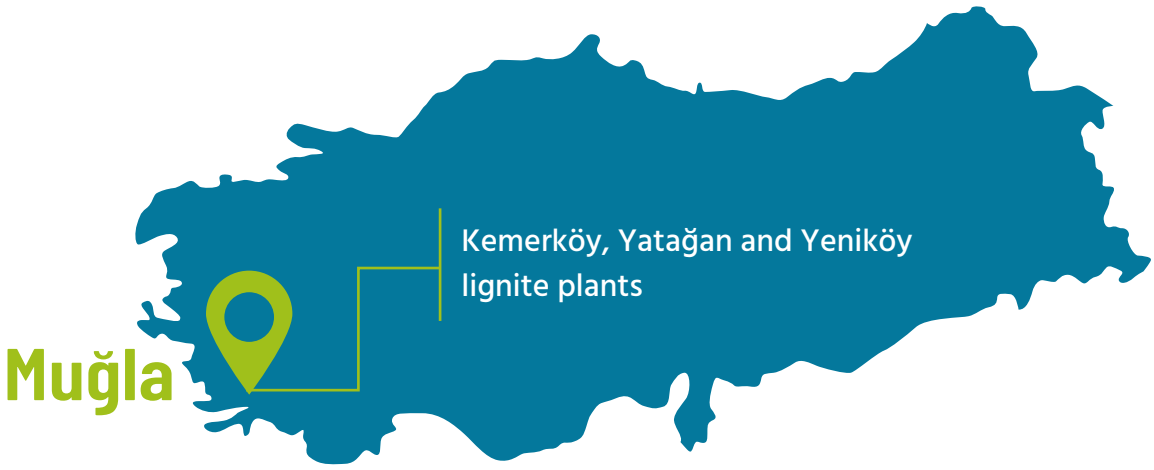
There are two operating coal power plant complexes in Maraş (Kahramanmaraş) that use lignite coal extracted from the nearby, domestic lignite mines.

- **Afşin-Elbistan A** has been in operation since 1984 (the first 335 MW went online in 1984 and the rest three units one year apart), with a total capacity of 1,345 MW. Its phase out date is recommended as 2027, but it's production licence ends in 2038.
- **Afşin-Elbistan B** has been in operation since 2005, with a capacity of 1,440 MW. Its phase out date is recommended as 2026, but it's production licence ends in 2052[11].

Closing down these two coal power complexes in Maraş by 2030, instead of running the plants until their production licence ends, would prevent 83 out of every 100 premature deaths. 765 premature deaths would occur with a phase out scenario compared to 4,562 premature deaths under business as usual. The cumulative health economic costs could be lowered by 80%, from 9 billion EUR (9,058 EUR) to 2 billion EUR (1,785 billion EUR). The reduction expected from Afşin Elbistan-B is higher than Afşin Elbistan-A as its operation licence ends 14 years later under the business as usual scenario[10].

PREMATURE DEATHS AND HEALTH COSTS OF THE PLANTS OPERATING IN MARAŞ UNDER 2030 COAL PHASE OUT AND BUSINESS AS USUAL (BAU) SCENARIOS



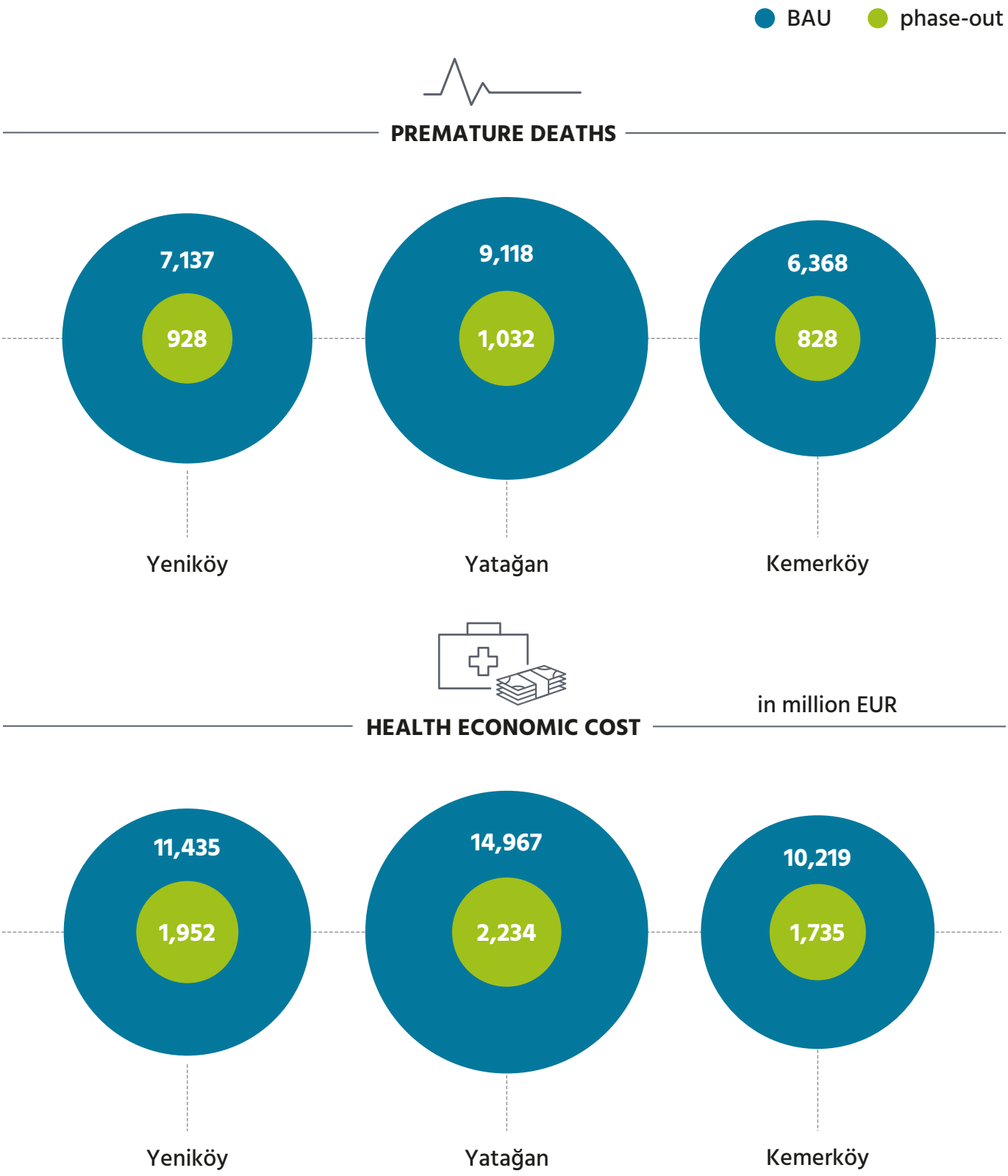


There are three operating coal power plants in Muğla that use lignite coal extracted from the nearby, domestic lignite mines.

- **Kemerköy** has been in operation since 1993 (the first 210 MW went online in 1993, and the rest two units one year apart), with a total capacity of 630 MW. Its phase out date is recommended as 2029, but its production licence ends in 2063.
- **Yatağan** has been in operation since 1982 (the first 210 MW went online in 1982, and the rest two units one year apart), with a total capacity of 630 MW. Its phase out date is recommended as 2028, but its production licence ends in 2063.
- **Yeniköy** has been in operation since 1986 (the first 210 MW went online in 1986, and the other in 1987), with a capacity of 420 MW. Its phase out date is recommended as 2029, but its production licence ends in 2063.

Closing downthese three coal power plants in Muğla by 2030, instead of running the plants until their production licence ends, would prevent 88 out of every 100 premature deaths. 2,788 premature deaths would occur under phase out scenario compared to 22,623 premature deaths under business as usual. The cumulative health economic costs could be lowered by 84%, from 37 billion EUR (36,620 billion EUR) to 6 billion EUR (5,931 billion EUR)[10].

PREMATURE DEATHS AND HEALTH COSTS OF THE PLANTS OPERATING IN MUĞLA UNDER 2030 COAL PHASE OUT AND BUSINESS AS USUAL (BAU) SCENARIOS

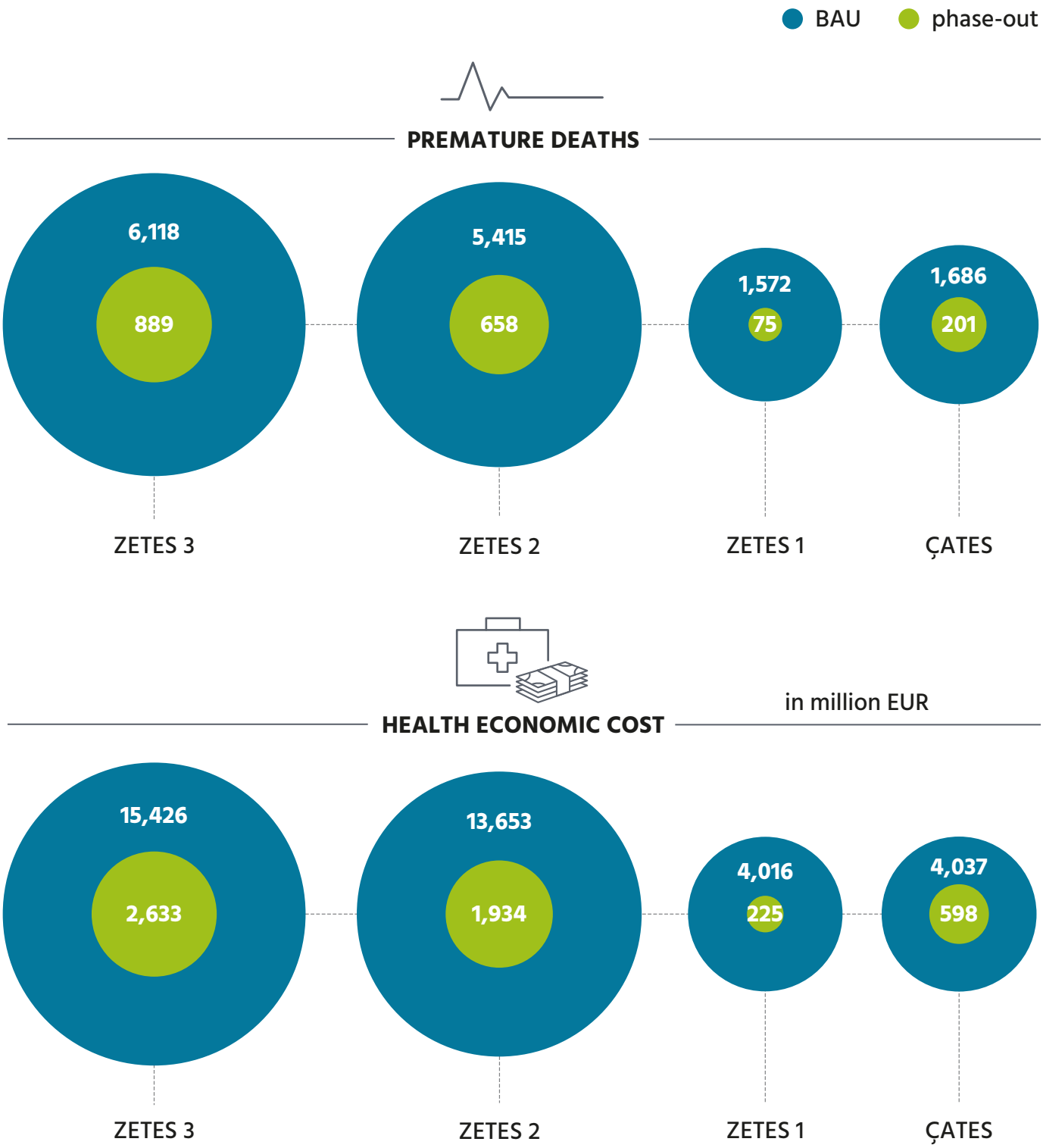


There are four operating coal power plants in Zonguldak that use hard coal extracted in the region or imported[12].

- **ÇATES** has been in operation since 1989 (the first 157 MW went online in 1989, the second in 1991), with a capacity of 314 MW it burns domestic hard coal. Its phase out date is recommended as 2028, but its production licence ends in 2063.
- **The ZETES complex** has been in operation since 2010. With a capacity of 2,790 MW, it burns imported hard coal. It's phase out date is recommended to be between 2023-2027 (ZETES-1 in 2023, ZETES-2 in 2026 and ZETES-3 in 2027) but its production licence ends in 2053.

Closing down these four coal power plants in Zonguldak by 2030, instead of running the plants until their production licence ends, would prevent 88 out of every 100 premature deaths. 1,834 premature deaths would be occur under a phase out scenario compared to 14,792 premature deaths under business as usual. The cumulative health economic costs could be lowered by 85%, from 37 billion EUR (37,132 EUR) to 5 billion EUR (5,389 EUR). The reduction expected from ZETES-1 is higher than the others, as the recommended phase out date is 2023, so only two years of operation are included in the cumulative impacts for the phase out scenario[10].

PREMATURE DEATHS AND HEALTH COSTS OF THE PLANTS OPERATING IN ZONGULDAK UNDER 2030 COAL PHASE OUT AND BUSINESS AS USUAL (BAU) SCENARIOS



IS A 2030 COAL PHASE OUT POSSIBLE?

A new study conducted by several non-governmental organisations (NGOs) and research institutes was published in November 20212. **It revealed that, to achieve the country's 2053 net zero carbon target, 2030 is the most cost feasible year for Turkey's coal phase out,** once policy tools such as carbon pricing and elimination of coal subsidies are implemented. Moreover, the study finds that a 2030 coal phase out in **Turkey would reduce the country's carbon emissions from the electricity sector by 82.8% in 2035 compared to 2021.** On the other hand, according to the study, delaying the coal phase out to 2035 would make it difficult to reach the 2053 carbon neutral target.

Another study, published by the World Bank in 2022, also found that new coal power plants are neither needed nor the least-cost option to meet the growing electricity demand. This study suggested lowering the share of coal from 32% in 2020 to 9% in 2030, rather than reducing it to 0%. However, the suggestion was based on assumptions, such as negative emissions from forests, to achieve the 2053 net zero target. Turkey's forest carbon storage is vulnerable to economic and climatic factors, such as the forest fires Turkey experienced in 2021 and 2022, when more than 210 thousand hectares of forest were lost[13].

2030 is therefore the recommended coal phase out date as it has proven to be economically feasible in the context of achieving the official 2053 target.

RECOMMENDATIONS

for decision makers

1. Set a phase out date for existing coal by 2030 at the latest, and do not build any new coal power plants.
2. Make informed energy choices based on health and environment impact assessments, and economic cost and benefits analyses, that include short and long term, local and transboundary impacts.
3. Improve transparency and allow for scientific assessments by reporting emissions from the electricity sector in a transparent manner. This includes making data on emissions from large combustion plants, including coal power plants, publicly available and reporting data to European Pollutant Release and Transfer Register (E-PRTR), a database with public access), to allow independent research and assessments.
4. Make statistics on the health status of the population, and cases of disease at local level, publicly available.
5. Make energy sector planning more streamlined by connecting strategies and legislation from economic, energy and environmental sectors and increase transparency by allowing experts and the general public to participate.
6. Opt for sustainable forms of renewable energy and energy savings.

for the health community

1. Increase health and medical organisational and individual capacity to engage in debates on the health impacts and costs of coal and energy production, through communication and by providing evidence, e.g. in public consultations.
2. Highlight the evidence and materials produced by the World Health Organization (WHO), including the WHO manifesto for a healthy recovery from COVID-19[14], the WHO strategy and roadmap on health, environment and climate change[15], the WHO resolution on addressing the health impact of air pollution[16], as well as the WHO Ostrava Ministerial Declaration on environment and health[17], to enable better air quality and climate action for greater public health gains and a quicker energy transition.
3. Share the Lancet Countdown's publications, which highlights that every country, whether rich or poor, is already affected by climate change.
4. Highlight the true costs of coal power generation in economic and public health deliberations and decisions, and work towards increasing public understanding of how public health will benefit from reducing coal's unpaid health bill.
5. As health ministries, participate and provide input to the development and implementation of clean air activities and plans, as well as energy and climate policies, supporting measures to reduce coal pollution and ambitious phase out plans and mitigation measures.

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[9] Karaburun and Kirazlıdere plants, in Çanakkale, have not been considered under either of the scenarios as the licences have been given but construction has not started yet.

[10] The additional health burden from mining activities has not been added to the current estimations.

[11] Afşin-Elbistan C plant, which had been a topic in the past, has not been considered under either of the scenarios as it does not have an operating licence.

[12] An additional 660 MW unit at the ÇATES plant has not been considered under either of the scenarios as the licence has been given but the construction has not started yet.

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The Health and Environment Alliance (HEAL) is the leading not-for-profit organisation addressing how the environment affects human health in the European Union (EU) and beyond. HEAL works to shape laws and policies that promote planetary and human health and protect those most affected by pollution, and raise awareness on the benefits of environmental action for health.

HEAL's over 90 member organisations include international, European, national and local groups of health professionals, not-for-profit health insurers, patients, citizens, women, youth, and environmental experts representing over 200 million people across the 53 countries of the WHO European Region.

As an alliance, HEAL brings independent and expert evidence from the health community to EU and global decision-making processes to inspire disease prevention and to promote a toxic-free, low-carbon, fair and healthy future.

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