

# TOOLKIT

## Coal power generation and health in Iskenderun Bay, Turkey



# About us

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The Health and Environment Alliance (HEAL) is a leading European not-for-profit organisation addressing how the environment affects health in the European Union (EU). With the support of more than 70 member organisations, HEAL brings independent expertise and evidence from the health community to different decision-making processes. Our broad alliance represents health professionals, not-for-profit health insurers, doctors, nurses, cancer and asthma groups, citizens, women's groups, youth groups, environmental NGOs, scientists and public health research institutes. Members include international and Europe-wide organisations as well as national and local groups.

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Dear Reader,

Thank you for your interest in this health toolkit on how to prevent new coal-fired power plants in the Iskenderun Bay region, Turkey.

The Bay region is a beautiful and historical area and one of Turkey's agricultural hubs. However, the health of the six million people living there, and the health of people in Turkey, is threatened by plans to build about 16 new coal power plants in the region. The pollution from these plants would add to the existing burden of disease from heavy industrial activity and the from the four thermal power plants already operating in the Bay region.

In this toolkit, the Health and Environment Alliance (HEAL) has brought together evidence on how coal power generation harms health, and what the state of the environment and health is in the Iskenderun Bay region. HEAL also provides several suggestions on how to communicate on health threats and the evidence with different audiences, based on our tested and trialled communication at local, national and European level. Last but not least, examples of successful activities of health groups in Turkey and at international level are given, as well as quotes from leading health experts.

This toolkit aims to support you, the people from Turkey, from Adana, Yumurtalik, Erzin, Silifke or Iskenderun, in your communication, advocacy and legal efforts on new coal-fired power plants, particularly on increasing the health messaging and evidence, for a successful outcome.

The information collected in this toolkit has been developed with the feedback from leading health professionals in Turkey, including the provincial branches of the Turkish Medical Association in Adana, Hatay and Mersin, and environmental groups such as TEMA Foundation, Ecology Collective, Osmaniye Environmental Platform, İÇKD, MERÇED and CETKO.

We wish you success in all your activities to improve the health of the people in the Iskenderun Bay region and beyond, and look forward to continued fruitful collaboration..

Regards,



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*This toolkit also considers the Mersin province, even though geographically it is located outside the Iskenderun Bay region. However, strong demographic, social, economic and industrial links exist between Iskenderun Bay and Mersin, and the Mersin energy infrastructure is developed closely with that of Iskenderun Bay.*





## CASE STUDY

### The State of the Environment and People's Health in Iskenderun Bay

Iskenderun Bay in the south-east Mediterranean region of Turkey is a highly and intensely populated area with three metropolitan cities, Adana, Mersin and Hatay. The total population of the region with all four provinces (including Osmaniye) is almost six million (2014) and is expected to grow from migration from within Turkey and Syria. The region also hosts seasonal agricultural workers.

The region's major economic activity is agriculture given its optimum climate conditions, geographical features, soil fertility, and irrigation opportunities. 6.8 percent of Turkey's total added value of the agricultural sector comes from Adana and Mersin's agricultural production, and the Erzin district of Hatay is home to 20 percent of the citrus production of the entire country.

Iskenderun Bay has also been one of the major industrial regions of Turkey. Agricultural, logistics, textile and ready-made clothing, chemical materials and products, metal processing and metal products, machinery, mining, and food industries are leading sectors in the region.

The region hosts a considerable number of heavy (energy-intensive) industrial facilities. There are five cement factories, and 10 steel factories in Osmaniye and Iskenderun, making Iskenderun Bay the number one steel production region in Turkey with a total production of 15.8 mt in 2014 (one additional cement plant is under construction, which will be the largest in the Middle East).

The energy infrastructure in Iskenderun Bay region is well developed as a main input to all these industries. There are two coal-fired power plants (with a total installed capacity of 2410 MW), one natural gas fired plant (900 MW), one oil-fired thermal power plant (220 MW), and hydropower plants with a total installed capacity of 875 MW operating in the region. There are two important international oil pipelines (Baku-Tiflis-Ceyhan and Turkey-Iraq crude oil pipelines) reaching Mediterranean at Iskenderun Bay, and to domestic crude oil pipelines.

The government plans to further develop the region as an energy industry zone; promoting new coal power generation with about 16 new coal plants, and different

renewable energy resources; in addition, the first nuclear power plant of Turkey is planned in Mersin. The region is planned to host domestic and international investments in oil refineries, petrochemical and petroleum product industries, and liquefied natural gas export terminals.

The existing agricultural, industrial and energy activities, together with unplanned urbanisation and an increasing population, have already created a huge environmental pollution burden, mainly due to low standards and poor enforcement of pollution prevention and control measures.



### The Environmental Outlook

The Iskenderun Bay region is under environmental threat from excessive use of fertilisers and pesticides in agriculture; emissions to air and waste streams to water bodies and land from different industries such as cement, steel, chemicals, and textile; exploitation of underground and surface water resources; and threats to biodiversity as a result of these environmental stressors.

The next short summary mainly focuses on the environmental problems which are linked with coal-fired power generation to be able to set the background for a future cumulative impacts assessment for planned coal-power plants.

## Air Quality

Air pollution comes from a variety of sources, including transport, residential heating or natural sources such as forest fires. In addition, the air emissions from power plants and other industrial sources are a major contributor to poor air quality. Pollutants in the air which are of concern for health include particulate matter (PM), ozone (O<sub>3</sub>), nitrogen oxides (NO<sub>x</sub>), and sulphur dioxide (SO<sub>2</sub>)<sup>1</sup>.

According to the Ministry of Environment in Turkey, air pollution is the number one environmental problem in both Mersin and Hatay.<sup>2</sup> A review of 2014 air quality monitoring data shows that all cities in the region have annual mean concentrations of particulate matter (PM<sub>10</sub>) higher than what the World Health Organization (WHO) recommends to protect health.

AIR QUALITY STANDARD	PM10 ANNUAL MEAN (µg/m <sup>3</sup> )	PM10 24-HOUR MEAN (µg/m <sup>3</sup> )
National Standard (for 2015)	56	90 not to be exceeded more than 35 times a year
WHO Guideline	20	50
Name of the Station	PM10 annual mean (µg/m <sup>3</sup> )	Number of days 24-hour mean PM10 concentration exceeds national standard
Adana-Çatalan	30	2
Adana-Doğankent	19	0
Adana-Meteoroloji	65	23
Adana-Valilik	65	29
Hatay-1	82	84
Hatay-2 (Iskenderun)	41	4
İçel (Mersin)	52	11
Osmaniye	68	65

■ Above national standard    ■ Above WHO guideline

It is important to note that particulate matter PM<sub>2.5</sub>, the pollutant which is of biggest concern to health, is not measured in any of the air quality monitoring stations in the region. It is not possible to retrieve verified data on nitrogen oxide (NO<sub>x</sub>) emissions either in monthly and annual reports of the Ministry. Sulphur dioxide (SO<sub>2</sub>) is not properly monitored in the region.

Two provinces in the region - Adana and Mersin - took part in an international urban air quality project, where city based detailed reports on air pollution and its resources were produced in 2013. According to the Adana report<sup>3</sup>, the NO<sub>x</sub> emissions are caused by industrial facilities, whereas SO<sub>2</sub> and PM<sub>10</sub> are mainly resulting from residential heating. Although the assessment does not identify any risks of excessive SO<sub>2</sub> levels in the city in the four year-projection, **PM10 levels are expected to exceed national standards in two to four years in all four zones of the city of Adana even without any new coal power plant.**

According to the Mersin report of the same project<sup>4</sup>, the one monitoring station in the city only measures PM<sub>10</sub> and SO<sub>2</sub>. The NO<sub>x</sub> emissions were calculated based on

the submissions of industrial facilities for environmental permitting processes. The study finds that, in 2011, the main source of NO<sub>x</sub> in the city was industry with 78 percent; of which 50 percent comes from cement factories and almost 20 percent comes from energy facilities. Industrial emissions count for 66 percent of the total SO<sub>2</sub> emissions in the city, which is followed by residential heating with 33 percent. PM<sub>10</sub>'s main resource is also industrial operations (86 percent). Traffic is the second emission source for both PM<sub>10</sub> and NO<sub>x</sub>. **The study foresees that PM10 concentrations will exceed national annual standards by 2016, if no measures are taken.** This means that the background ambient air pollution is already quite high and has a trend to increase further without any new coal power plants built as planned.

The Mersin report concludes with a highlight on inefficiency of one monitoring station for an entire industrialised metropolitan city; which is unable to represent all emission sources due to its location. Similar criticisms exist for the stations in Hatay and Adana provinces. Challenges in gathering emission data from industries is another finding of the report.


## CASE STUDY

The air quality in Hatay province has been monitored by the Ministry of Environment in two locations: in Antakya since 2008, and in Iskenderun since 2011. A recent review study<sup>5</sup> on the data from Antakya station shows that PM<sub>10</sub> and SO<sub>2</sub> levels increased in the period of 2013-2014, mainly due to the increased population. The 2014 annual mean value of PM<sub>10</sub> concentration was 82 µg/m<sup>3</sup>, which is 37 percent higher than the national standard of 60 µg/m<sup>3</sup>, and which is four times higher than the WHO recommendation of 20 µg/m<sup>3</sup>. The increase in PM<sub>10</sub> concentrations in winter season especially during evening hours is linked with the coal combustion for residential heating.

The same study shows that the PM<sub>10</sub> levels in Iskenderun varies between 40-70 µg/m<sup>3</sup>. The SO<sub>2</sub> levels, although under the national standards as defined in air quality regulation, are higher than the concentrations in Antakya. This is interpreted by scientists that the iron-

steel factory in Iskenderun is a major contributing source to the SO<sub>2</sub> levels in the region. Emission measurements in the framework of another research exposed the same factory, the second largest integrated iron and steel plant of Turkey, exposed as the largest source of PM emissions with 19000 ton/yr. Contribution of industrial sources to the annual PM emissions was found to be 96 percent while domestic heating was responsible for 3.5 percent only.<sup>6</sup>

Reviewing both Ministry of Environment reports and independent scientific research in the region, we can conclude that the background ambient air pollution is already quite high and has a trend to increase further in all three provinces, Hatay, Adana and Mersin, even without any new coal power plants built as planned. Therefore, the environmental impact of new coal power plant projects should be assessed taking into consideration these background pollution levels and sources in the region, and respective cumulative impacts.



### What is needed for a complete assessment of air quality in Iskenderun Bay

- **The monitoring infrastructure must be improved** to include/represent all major emission sources (through verification of location and number of stations), and pollutants (especially PM<sub>2.5</sub>, NO<sub>x</sub> and ozone); and the quality of data (accreditation and regular maintenance of the equipment at stations) needs to be improved;
- **Emission reporting from industries must be improved** and made transparent for public monitoring;
- **Detailed information on air quality should be provided** (including all major pollutants, especially PM<sub>2.5</sub>, NO<sub>x</sub> and ozone) and made open to public on a regular basis;
- **Independent research** on air quality should be promoted;
- **Clean Air Plans/Action Plans must be developed** and enforced in consultation with the public.

## Heavy Metals and Chemicals in Soil and Water

The region is at risk of heavy metal pollution due to intense heavy industrialisation. One study on Iskenderun Bay shows the correlation between heavy metal pollution and locations in regards to one industrial zone, including fertiliser and cement industries, iron and steel complexes, coal fired plants, a pipe line terminal and an international highway with heavy traffic. It was found that the metal ion concentrations in soil were higher in close distances to the Industrial Zone except cadmium and magnesium ions. In addition, it was observed through analytical results that the concentrations of heavy metals like iron, cadmium, zinc (Zn), magnesium and calcium are higher than the suggested guidelines of Turkish standards and the WHO. The study underlines the direct relation between excessive heavy metal concentrations and industrial activity in the region.<sup>7</sup>

An assessment of spatial distribution and possible sources of heavy metals in the soils of Sariseki-Dörtyol district in Hatay province showed that the soils in the study area are contaminated mainly by Cd, Cr and Ni. These three elements exhibit a risk for environmental pollution and pose a possible threat to human health in the research area. The studied area is contaminated from many years of random dumping of waste and free discharge effluents generated by various plants in the region.

Cadmium pollution results primarily from industrial activities and, to a lesser extent from traffic, whereas Ni contents in the study area result from parent material, phosphorus fertilizer, industries, and vehicles. The researchers also highlight the necessity of future research for determining the heavy metal emissions of plants in the region. If the heavy metal release of a plant is high, this may present serious health hazards to animals and people.<sup>8</sup> A similar research results show that in the research area between the city of Iskenderun and town of Dörtyol, it was found that available Cu, Ni, Pb, and Zn contents were above permissible and proposed limits. It is known that these metals have been used

in the production of alloys and steel, and there were many alloy and steel factories in the study area. Sources of other heavy metals in the area are probably parent material, traffic (due to a major international highway and fertilisation).<sup>9</sup>

Another study from the Hatay province shows that nitrate, sulfate, chlorine (Cl), lead (Pb), Selenium (Se), Manganese (Mn), and Chromium (Cr) concentrations of groundwater samples collected between the Deliçay and Tarsus River area exceeded the drinking water limit values defined by regulations. It was determined that pollution of soil and groundwater at Kazanlı are mostly due to intense agricultural and industrial activities.<sup>10</sup> There are a number of studies determining heavy metal accumulation in tissues of fish from the sea and lagoons in the Iskenderun Bay.<sup>11,12</sup>

There is also some evidence on concentrations of persistent organic pollutants (POPs) in soil, in relation to heavy industry in the region. For instance, in a study in Hatay, a province with one of Turkey's largest steel production, generally, all measured POP concentrations and marker trace elements for iron - steel industry (zinc, lead, and copper) were high relative to those reported previously for rural and urban areas around the world, and statistically significant relationships between several organic and inorganic pollutants further confirmed that they are emitted by common sources (iron-steel plants).<sup>13</sup>

The above mentioned and other existing studies on heavy metal contents of soil, water and animals in the larger Iskenderun Bay region give us adequate evidence to conclude that the region has already serious pollution burden due to industrial and agricultural activities and if built as planned the 16 new coal power plants would extremely add to this environmental burden and associated burden of disease in the region.

## CASE STUDY

## The Health Outlook

Medical research on the relationship between air pollution, the polluted environment and human health in Iskenderun Region is quite limited.

Between January 1993 and January 1994, a study to determine the prevalence of childhood asthma and other allergic diseases was carried out in Adana, examining 2334 children (48.5 percent boys). Asthma and the allergic diseases were recognised in 23.6 percent of the children. The symptoms of respiratory allergic diseases (asthma, rhinoconjunctivitis, wheezing) seemed to be significantly associated with the environmental factors.<sup>14</sup>

Another cross-sectional population-based study using the International Study of Asthma and Allergies in Childhood (ISAAC) protocol was carried out on 3164 school-children aged between 6-18 years during March to June 1997.<sup>15</sup> The prevalence of asthma, allergic rhinitis and eczema in the 6-18 year-old children was found to be 12.6%, 13.6% and 8.3%, respectively. The prevalence of asthma was highest in 6-10 year-old school-children (14.7%), and lowest (6.0%) in 15-18 year-old children. The prevalence of asthma diagnosed by a doctor was 5.0%. The cumulative and current prevalences of wheezing were found to be 19.0% and 13.5%, respectively. The cumulative prevalence of allergic disorders was found to be 23.4%.

In conclusion, asthma and other allergic diseases constituted a major health problem for school children in Adana.

Turkey also has a cancer registry system but it is still quite new and incomplete. With the most recent cancer registry centres established in the country, still only 47 percent of the population are covered as sample. Cancer Registry Centres were also established in Adana and Mersin in 2012, and in Hatay in 2013. Although cancer statistics are published by the Ministry of Health since 2009, however, geographical distribution of cancer cases, types, morbidity and mortality rates are not publicised, so the rate of different cancers in Iskenderun Bay cannot be determined.<sup>16</sup> An assessment of spatial relationship between lung cancer incidence rate and air quality is also needed.

**ASTHMA  
AND ALLERGIC  
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23.6%  
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Although epidemiological studies are lacking for the Iskenderun Bay region, a careful and detailed analysis of death and disease statistics would provide valuable indicative information on the burden of disease in the Iskenderun Bay which may be associated with existing environmental pollution. Turkey has death statistics (death numbers based on causes of death, distribution of causes of death numbers based on age groups, and permanent residence). However, there are a number of bottlenecks regarding the use of the available data for a scientifically acceptable analysis including a limit on the time range of the data (collected systematically only after 2009); incomplete conservation of the data into the international disease classification system (which hampers comparisons with other countries), and that data can be broken down only to the provincial level, not the districts and towns with heavy industries.

Despite all the challenges in health data and lack of research on the link between environmental stresses and diseases/deaths, given the worldwide accepted scientific evidence on how environmental pollution, particularly air pollution and heavy metal contamination, can pose risk on human health, it is important to apply preventive and precautionary approaches in project planning and implementation, including prior assessment and systematic observation of the environmental and associated health impacts of major projects, including coal-fired power plants.

- <sup>1</sup> Further information on the health impacts of different pollutants and the science can be found in HEAL's report The Unpaid Health Bill - How Coal Power Plants in Turkey make us sick (2015).
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- <sup>10</sup> Kurt, M. A. (2010). Deliçay ve Tarsus Çayı (Mersin) Arasında Kalan Alandaki Toprak Profillerinin Mineralojisi, Toprak ve Su Kirliliğinin Araştırılması [Mineralogy of Soil Profiles in the Area Between Deliçay and Tarsus Streamlet (Mersin), Investigation of Soil and Water Pollution]. PHD thesis. University of Mersin.
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## Iskenderun Bay coal-fired power plants project pipeline

Iskenderun Bay is one of the three regions in Turkey with the highest number of coal-fired power plant projects. While the existing industrial infrastructure and increasing electricity demand is used as an explanation for the need of new power plants in the region, its location with easy access to imported coal is another reason for accumulation of coal projects.

The region currently hosts two coal power plants (>50MW) in operation with a total capacity of 2410 MW. By the time of writing this report, 16 new coal power plant projects are being planned, with around 14,140 MW total installed capacity. This includes 6 licensed projects (total of 4075.50 MW), 4 projects (total of 3950 MW) in permit evaluation process, 2 pre-licensed projects (total of 1860 MW), 2 projects (total of 2400 MW) in pre-license evaluation process, and 2 announced projects (total of 1854 MW) which are not yet submitted to EPDK for licensing.

Engagement to prevent new coal plants has a long history in the region. Due to the legal interventions local groups made, "cumulative impact assessment" (assessing environmental impacts of several coal power plants, not just one and existing pollution) has been the reason for two important decisions rejecting the Atlas and Ayas coal power plant projects. A court also cancelled the environmental impact assessment reports for the Selena coal plant for lack of cumulative assessment. The requirement for cumulative assessment is now included in the Turkish Environmental Impact Regulation of 2014.

As a result of a success of joint engagement of local, national and international NGOs, in October 2015, the French energy company ENGIE announced that it withdrew its coal power plant project Ada, planned to be built in Yumurtalık, Adana with an installed capacity of 1320 MW. ENGIE is a partly state-owned company.

## HOW TO TRACK DOWN THE COAL PROJECTS IN YOUR REGION

It is important to be informed about the coal-fired plant projects in advance so that you can develop your awareness-raising, educational and advocacy strategies in a properly and timely manner, and do not miss out on opportunities for intervention - such as public consultation meetings, deadlines for legal action, etc. Coal power plant projects can be tracked at different stages, such as pre-investment, pre-licensing and licensing, and environmental impact assessment, from different sources. You can start by consulting online energy sector portals and newspapers about new announcements.

The Turkish market is quite dynamic and the process for new coal projects can change quickly. Consulting information from Turkish and international NGO networks can help to track future coal plants. Some websites:

[http://www.sourcewatch.org/index.php/Portal:Coal\\_Issues](http://www.sourcewatch.org/index.php/Portal:Coal_Issues)

<http://endcoal.org/global-coal-plant-tracker/http://karaatlas.org/harita>

### 1 FIRST STEP

Every company that wants to build a new plant needs to register with the Energy Market Regulation Authority (EPDK) and apply for a pre-license. In case the required documentation is in place and the pre-licensing evaluation is on, EPDK adds the application on its online database. Here you can search by the name and type of the plant, the company, province of construction, and you can see the status of the pre-licensing process.

<http://lisans.epdk.org.tr/epvys-web/faces/pages/lisans/elektrikUretimOnLisans/elektrikUretimOnLisansOzetSorgula.xhtml>

### 3 THIRD STEP

You can also track a coal power plant project through the licensing process, which follows pre-licensing and EIA, along with some other permitting (i.e. gaining the property rights, construction plan and permit, etc). The licensing process is again coordinated by EPDK and the authority has to announce the application and its status online

<http://lisans.epdk.org.tr/epvys-web/faces/pages/lisans/elektrikUretim/elektrikUretimOzetSorgula.xhtml>

### 2 SECOND STEP

Once a company submits the environmental impact assessment application file to the MoEU in line with the regulation's requirements, the Ministry has to announce that the EIA process has started, the application file is open for public review and opinion. The documents can be found at the Ministry's web site, where you can make a search by province of the investment. The EIA process is particularly important since you can get or ask for a variety of information and data about the project, which will enable you to raise your concerns on health impacts of coal projects on an informed basis.

<http://www.csb.gov.tr/gm/ced/index.php?Sayfa=duyuruliste&ll=1>.  
<http://www.csb.gov.tr/gm/ced/index.php?Sayfa=duyuruliste&ll=1>.  
<http://www.csb.gov.tr/iller/NameOfYourProvince> (e.g. <http://www.csb.gov.tr/iller/ankara>)

## GETTING STARTED

## Some ideas on collecting evidence

The state of the environment in which we live has significant impacts on our health and well-being. The air we breathe, the water we drink or use to irrigate our crops, the soil we use to grow our food are all integral parts of the environment we are vitally connected to. Any stress or pollution of these elements reaches us via simple to complex ecological routes, and creates a burden of disease on human health. The WHO estimates that one fifth of all death and disease in the European region is due to our environment.

Coal-fired power plants, like all other industrial facilities, release thousands of tons of pollutants into the air, the water and the soil every year, which leads to serious health impacts. In addition, they add up to current levels of pollution in receiving bodies resulting from other industries, transportation, agriculture and other sectors. They also interact with the already existing pollutants/chemicals in the environment and create secondary pollutants.

The scientific evidence on how environmental pollution affects our health is growing tremendously. Exploring the link between pollutants and diseases which can be associated with exposure to pollutants has become a research area on its own.

If you live in a neighbourhood where a new coal-fired power plant is planned to be built, it is important that you collect the existing evidence on the state of environment and evidence on current state of public health in your region. The evidence will help you assess, monitor and communicate:

- Whether public health is already under threat from current environmental pollution in your region;
- How the new coal-fired power plant (CPP) project will add up to this risk with a cumulative impact factor or create new pollution.



## COLLECTING EVIDENCE ON THE STATE OF THE ENVIRONMENT



### Start with official reports by the Ministry of Environment and Urbanisation (MoEU)

- The MoEU prepares and publishes annual reports on the state of environment in each province via its provincial directorates. You can reach these reports on the website of the MoEU General Directorate of Environmental Management, or on the website of the Provincial Directorate of the Ministry in your own city. The reports brings together data and information air, water, soil pollution, waste management and other environmental factors in the designated province.
- The MoEU has an online monitoring system for air quality in each province. You can get the data on daily air quality measurements from this web site: <http://www.havaizleme.gov.tr/Default.ltr.aspx>. You can also get consolidated data on air quality in your region from periodic bulletins by the Ministry of Environment (November 2011-October 2014: <http://www.csb.gov.tr/gm/cygm/index.php?Sayfa=sayfahtml&Id=1494>; November 2014-onwards: <http://www.csb.gov.tr/gm/ced/index.php?Sayfa=sayfaicerik&Id=1236>)



### Check the resources and scientific contacts which may be available through the universities in your region

- The professors of environmental sciences in the city university may have research studies on the environmental pollution in your region. These studies will help you have a comparative understanding of existing environmental burden on local people.
- Since these research studies may have complex scientific language, you may consider asking for help from the university professors or students of environmental sciences in your city to support you in your search and assessment.
- Identify if there are any inconsistencies between the official data and data collected via independent researches. These inconsistencies may be points of further access to information requests and demands to improve environmental and health monitoring in your region.



### Set your references for a healthy assessment of the state of environment in your region

- Search for the national and international environmental standards to be able to compare the environmental status in your region. It is always safe to make or refer to a comparison of national and international standards to be able to see any possible gaps and demand for stricter regulations on environmental polluting industries. For example, there is no legal regulation on PM2.5 air pollution concentrations in the Turkish environmental legislation; but the WHO sets guideline limits for human health.
- A list of useful national and international legislation on pollutants from coal-fired power plants is given in Part 2 of this toolkit.

## GETTING STARTED

# COLLECTING EVIDENCE ON THE STATE OF HEALTH



### Start with official reports by the Ministry of Health

- The Ministry publishes, together with the Turkish Statistical Institute, statistics on causes of deaths, although they can't be broken down to regions/cities. Still they provide a general understanding of burden of disease in Turkey. HEAL's report "The Unpaid Health Bill in Turkey" includes a review of this data underlining possible interconnections with poor air quality in the country.



### Identify health and medical resources

- Public health departments of medical faculties or health organisations are rich resources of information on the state of health. For example, the Society of Public Health Specialists publishes annual reports on Public Health in Turkey with a wealth of data compiled through researches on site or meta-analyses.
- Ask for any specific epidemiological studies from these resource persons, which may help you highlight the link between the environmental burden and associated health burden in your region.



### Digging deeper - Search for even more evidence

- If you cannot reach particular data or information on the state of environment and health (i.e. burden of disease statistics) or information on coal-power plant projects in your region, you can apply to official access to information mechanisms. You may ask for legal assistance from the provincial bar or voluntary lawyers to support you in the application process.

**Ministry of Health:** <http://bilgiedinme.saglik.gov.tr/>; **Ministry of Environment:** [http://www.csb.gov.tr/turkce/index.php?Sayfa=beb](http://www.csb.gov.tr/turkce/index.php?Sayfa=beb;);

**Energy Market Regulation Authority:** <http://www.bimer.gov.tr/Forms/pgMain.aspx>



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# Efforts from Turkey's health and medical community to end coal power generation and work towards a healthy energy future



## Turkish Health Community calls for a coal phase-out

In October 2014, five Turkish medical organisations, led by the Turkish Medical Association (TTB), stated their concerns about coal power plants, highlighting that these plants have a significant impact on the health of the Turkish population. They call on the Turkish government not to go ahead with the building of new plants, make binding the use of best available techniques for existing plants and start the phase out of coal plants.



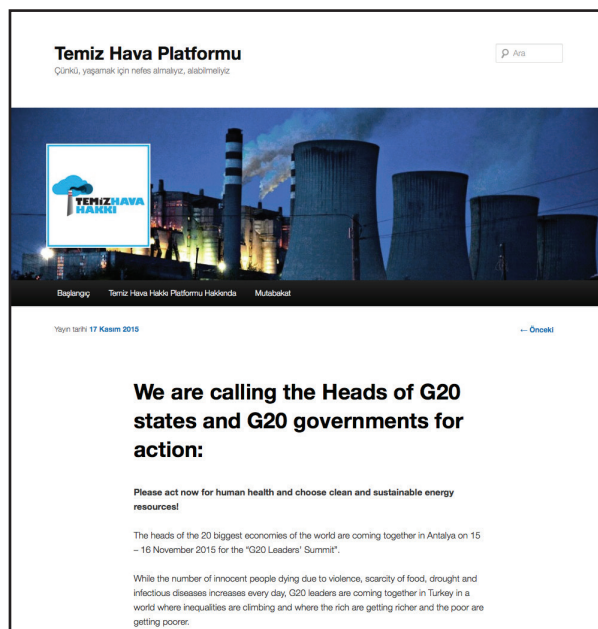
See the press release here:

<http://www.ttb.org.tr/index.php/Haberler/komurlu-4871.html>

## Right to Clean Air Platform

Since November 2014, TTB and specialty associations who are active in public health issues, together with environmental NGOs, regularly meet and consult each other on the increasing coal threat the Turkish population faces. The Right to Clean Air Platform was established with the initiative of this group in October 2015 for advocacy purposes against the Turkish Government's energy strategy based heavily on coal power from the health dimension of the issue.

One of the first actions of the Platform was a call to G20 Leaders who met in Antalya, Turkey in November 2015. The Platform urged G20 Leaders to phase-out coal, stop fossil fuels subsidies and agree on an international binding climate agreement at the UN climate talks UNFCCC COP21 in Paris, December 2015, highlighting the risks climate change brings to humanity as the biggest health challenge of the 21<sup>st</sup> century.



See the letter here: <http://temizhavaplatformu.org/g20-call/>

## GETTING STARTED

### Bursa DOSAB Project

A coal-fired power plant is planned to be built in the city centre of Bursa in the DOSAB industrial zone. Settlements as close as 750 m to the planned facility mean people will be even more exposed to air pollution than normal, and the factories are known for their high air emissions. Bursa Chamber of Medicine, as well as the Society of Public Health Specialities and Turkish Thoracic Society became parties to the legal proceedings.

The professors of public health in the city university are also actively involved in the public engagement against the CPP Project.



**See a report by Professor Pala, a member of the Bursa Chamber of Medicine on health impacts of coal power plants:**  
Pala, K. (2014). Kömürlü Termik Santrallerin Sağlık Etkileri, Türk Tabipleri Birliği Bursa Tabip Odası, Bursa.

### Case study: Yatagan coal power plant

The health community was involved in coal power generation discussions since the early 2000s. TTB had site investigations on health impacts of Yatagan CPP, one of the oldest lignite-fired plants in Turkey, and published a comprehensive report. TTB's investigation found that there were twice as many patients being treated for respiratory tract problems in the Yatagan state hospital than in hospitals in Mugla, with no coal plants. For bronchitis, asthma and emphysema, the rate was three times as high.

The report was used in legal cases against the CPP in the city centre of Yatagan, where dust filters and desulfurisation systems were not installed for years, and when installed did not operate properly.



**See full report on health impacts of Yatagan CPP:**  
<http://www.ttb.org.tr/kutuphane/yatagan-rpr.pdf>;

### Social Costs of Energy Choices

In 2004, TTB published a report on social costs of energy policies, particularly coal and nuclear power and clean renewable resources.

The report concludes that there is a need of a comprehensive comparison of the risks of energy resources, communication of risk and risk perception in society in energy decision processes. It also identifies nine principles in environmental health for "health for all": equal rights, inter-sectoral approach, public participation, democracy, international cooperation, promotion of environmental health, subsidiarity, sustainable development, and the precautionary principle.



**See full report here:** Gürsoy, U. (2004). Enerjide Toplumsal Maliyet ve Temiz ve Yenilenebilir Enerji Kaynakları, Türk Tabipleri Birliği Yayınları Ankara

# Efforts from around the world to end coal and work towards a healthy energy future



## Kolkata Call to Action

The World Federation of Public Health Associations (WFPHA) brings together over 100 associations from across the world. In February 2015, the WFPHA adopted the Kolkata Call to Action: Healthy People – Healthy Environment.

The WFPHA calls upon health care providers, government leaders, and all representatives of civil society to take urgent action to mitigate environmental conditions that are contributing to the deaths and disease of millions of inhabitants of our small planet. The Call to Action underlines that the profound threat to human health from global warming and resulting climate change is central to the challenges of this century. There is a need for national and international policies to ensure there is a rapid transition away from fossil fuels over the next decade to ensure the health of national populations and humanity's future.

**The WFPHA advocates for a rapid phase out of coal for electricity production and greater investment in renewable technologies, and commencing action to divest from any assets held by all public health associations that include investment in fossil fuel projects or infrastructure.**



### See the Kolkata call to action:

[http://www.wfpha.org/images/events/150216\\_Kolkata\\_Call\\_to\\_Action\\_FINAL.pdf](http://www.wfpha.org/images/events/150216_Kolkata_Call_to_Action_FINAL.pdf)

## The Lancet Commission on climate change and health

The Lancet is one of the most renowned medical journals in the world. In June 2015, a special Commission on climate change published their findings, following a review of the evidence. The Lancet warned that climate change is potentially catastrophic to human health, and could overturn.

However, **the Lancet also found that tackling climate change could be the greatest global health opportunity of the 21st century.**

**The Lancet issued ten recommendations for policy-makers which includes the demand on a rapid phase out of coal-power generation from the global energy mix, to protect cardiovascular and respiratory health.**



### More information here:

<http://climatehealthcommission.org/the-report/>

## GETTING STARTED

### WHO Air Resolution

In May 2015, the WHO adopted the first ever resolution on air quality and health. The resolution urges Member States to strengthen their efforts in 14 ways to improve air quality, for example through developing multi-sectoral cooperation and measures; enabling health systems to take a leading role in raising awareness; facilitating relevant research; improve surveillance. Requests are also included for WHO.

**The resolution highlights that promoting energy efficiency and expanding the use of clean and renewable energy can have co-benefits for health and sustainable development and stresses that the affordability of this energy will help maximize these opportunities.**



**More information here:**

[http://apps.who.int/gb/ebwha/pdf\\_files/WHA68/A68\\_R8-en.pdf](http://apps.who.int/gb/ebwha/pdf_files/WHA68/A68_R8-en.pdf)

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### UK: Call to end coal power by 2025

In June 2016, the UK health community added their voice to the growing chorus urging the UK government to phase out coal power generation by 2025. Signatories include Dr. Fiona Godlee, Editor-in-Chief of the British Medical Journal, Dr. Peter Carter, Chief Executive of the Royal College of Nursing, and Dr. Clifford Mann, President of the Royal College of Emergency Medicine. Health groups call for a concrete and credible plan to take coal power stations offline. The leaders underline that making a swift exit from coal would help to save thousands of lives, protect public health and reaffirm the UK government's commitment to climate leadership.



**More information here:**

<http://www.thetimes.co.uk/tto/opinion/letters/article4479983.ece>



## Poland: Using health evidence to prevent new coal plant

The evidence on premature death and health cost caused by the future 1GW coal plant in Czczcott, Poland, helped to overturn an environmental permit to build the plant. HEAL calculated that Czczcott would lead to annual health costs of at least 30 million EUR, and add to already poor air quality in the region where the plant would be located. This evidence was used in a lawsuit by an environmental organisation, which led to the overturning of the permit. The whole project is currently on hold.



### More information here:

<http://env-health.org/news/latest-news/article/poland-future-czczcott-coal-plant>  
<http://www.env-health.org/news/latest-news/article/health-costs-of-the-planned>

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## Serbia: Ministry of Health calls for inclusion of health in energy decisions

In June 2015, the then Deputy Health Minister of Serbia, Professor Dr. Berislav Vekic stated that health protection needs to be considered in energy choices, and that long-term effects on population health in Serbia should be taken into account when developing energy policies.

The Serbian health ministry was one of the first countries to be involved in political debates on energy decisions.



### More information here:

<http://www.env-health.org/resources/press-releases/article/clean-air-would-promote-better>

## FROM INFORMATION TO ACTION

**Six tips on environmental health communication**

*When you use the information provided in this health toolkit or any other health information, please be aware of the following:*

1

**Use simple, clear language**

Scientific studies are hard to understand for the average citizen who does not have a health background. Try to reword the evidence in a language that is easily understood by everybody.

2

**Identify your target audience**

Decision-makers, investors, journalists or the public will respond to different arguments being made. For example, decision-makers and investors are more likely to listen to economic (cost) arguments, while journalists always look for health messengers. Before you communicate your concerns it is therefore important to have a strategy and identify who you want to direct your message to.

3

**Make the local link**

Citizens, journalists and decision-makers are more likely to hear your message if you make the link to their life and surroundings. Collect information on how healthy or unhealthy people are in your region and include it in your communication (without carrying out new research). You can also look for others that will help to communicate with the public (see next point).

4

**Find allies and messengers**

Together we are much more powerful than by ourselves. Look for doctors and health experts in your region who can help you with interpreting the data and are also available to speak in public. You can find the list of health groups that have been active to prevent new coal plants under "Useful contacts".

5

**Look for good practice**

In Turkey and around the world, more and more health organisations are speaking out about a healthy energy future, and the need to phase out coal power generation. Spreading the word about what others are doing shows that you are not alone in your struggle and helps to make your case.

6

**Last but not least: Be aware of uncertainties in the evidence**

Air pollution is one of the most researched topics in environmental health, and there is no doubt that polluted air impacts our health in many ways. When it comes to the impacts of air pollution in Turkey the picture becomes less clear because there are important data gaps. For example, the number of people dying from cancer is not available for all regions. When you communicate on a certain study or health problem you should therefore always be aware of the limitations of the evidence and not overstate the case. But data gaps can also be an opportunity to demand more epidemiological studies and transparency in health statistics.

## Six tips on developing your messaging on coal and health

The six tips below allow you to bring together powerful messages for successful and impactful communication.

1



### Use clear and to the point messages

Journalist and the general public are not experts on the topic of health, air quality and coal power generation. So the outreach messages should be clear and written in a way for everybody to understand. This means that long sentences should be avoided. Detailed scientific concepts that are only understood by the scientific community need to be translated into everyday language.

2



### Create targeted messages (sub-messages)

One key step for getting the message heard by different target audiences is to include targeted messages. Journalists and civil society have different topics or issues they are interested in, and start to listen to. Showing different aspects of the issue will increase your chances to reach a broad audience.

Targeted messages could include the social, environmental (spatial) and economic topics that are related to your core messages. Using these can increase the attractiveness of the messages.

3



### Use different media tools and build connections

Information channels and media tools have diversified in last 30 years, and access to information is now much easier. There are now a range of specialised and diversified media channels and tools to reach smaller target audiences. Easier access to information has also transformed the public's approach to searching: for example, individuals can set up filters for their searches on the internet, which will present the most interesting messages for individuals. For example, if you wish to reach a younger audience, you should build connections through social media and look at current trends. You could also refer to pop culture elements.

4



### Go local, go universal

If your message is related to local issues, linking your message with the broader political and cultural issues will increase your potential audience. In cases where your core message is related to universal issues, inserting elements that relate your messages to a local context will increase their attractiveness.

5



### Personalise your messages

Powerful messages include details about the impact on daily life and society. Thus, associating the messages with this is mind is very important to empower your target audience.

6



### Present your message in different ways, with emphasis

The people who will disseminate your message and the media channels will filter your message according to their political and cultural preferences. Presenting your message in different ways may increase your chances of it being picked up. For example, the message "The world is phasing out coal, Turkey should too" could be presented in different ways to different media outlets, such as by stressing the beginning "The World is phasing out coal" as the main message. The information on Turkey would then be the targeted message.

## FROM INFORMATION TO ACTION

### Guidelines for writing a good press release

1

#### Draw attention with a good headline

The beginning of a press release is the most important part, just as it is with a magazine article, a book or a promotional leaflet. A strong headline (and, for that matter, email subject line when you send out the press release) will pull in journalists seeking good stories. Your headline should be as engaging as it is accurate. A good headline should not be more than 50 characters. If your headline is longer than 50 characters, try to divide the headline into sub-headlines.

2

#### Get right to the point in the first paragraph

As journalists are busy people, you should assume that they will only read the first sentence and then scan the rest – and even that's a generous assumption. Get the message of your press release out quickly. Every important point should be addressed in the first few sentences. The subsequent paragraphs then give supporting information.

6

#### Use spacing and bold characters

Adding spaces to the press release will ease reading the document. In addition, writing some of the key words that you want to be seen in bold characters will also help you to lead the press to read your key messages.

3

#### Include facts

It's easy to fill up a page with a creative, colorful narrative. Leave the artistry to the writers – pack your press release with hard numbers that support the significance of your message. If you make a claim about a certain development, for example more coal plants will be build, you need evidence to back it up. Quantify your argument and it will become much more compelling.

5

#### Include quotes whenever possible

There is a source of natural colour that cannot be replicated: quotes. Including a good quote from a local doctor, for example, or an asthma patient will give a human element to the press release, as well as being a source of information in its own right.

4

#### Make your press release grammatically flawless

Proofread your press release – and let a few other people proofread it as well – before sending it out. Even a single mistake can dissuade a journalist from taking you seriously.

8

#### One page is best -- and two is the maximum

As with most good writing, a shorter version is usually better. Limit yourself to one page, though two pages is acceptable. This will force you to condense your most salient information into a more readable document – something journalists are always looking for.

7

#### Provide links for more information

The page limit on your press release does not stop you from directing the readers to sources of more information. Providing relevant links to your group or website, where prospective writers can learn more about your mission and what you have already accomplished, is a crucial element to the release. Do not make journalists search on their own for more information – guide them as quickly as possible to the most relevant additional information.

9

#### Include your contact information

A common oversight that can render a press release less impactful is a lack of contact information for journalists to follow up with. Whether you or somebody else in the group or organisation is the point of contact, do not forget to include an email address and phone number.





### Sample messages

*These messages can be used in your communication with local authorities, fellow citizens, the media and investors to explain the health threats of coal-fired power plants.*



## Coal-fired power plants are a double threat to our health

One large coal-fired power plant emits thousands of tons of hazardous air pollutants each year, which contribute to air pollution, harming our health. In addition, coal-fired power plants also release large amounts of CO<sub>2</sub>, which fuels climate change. Climate change threatens health because of more frequent and more intense heat waves, air pollution can be greater, and allergy seasons prolonged. The elderly, children, those already suffering from health problems, or poor people are likely to be hit the hardest.



[http://env-health.org/IMG/pdf/20052015\\_hr\\_coal\\_report\\_turkey\\_final.pdf](http://env-health.org/IMG/pdf/20052015_hr_coal_report_turkey_final.pdf)

## Air pollutants harmful to health

Because the average lifetime of a plant is 40 years, hazardous emissions would continue for decades. The air pollutants released from a coal-fired power plant include PM, SO<sub>2</sub>, NO<sub>x</sub> and heavy metals, such as mercury. The WHO and many studies have demonstrated that these pollutants are harmful to health. PM is particularly harmful, because the tiny parts can even enter the bloodstream. SO<sub>2</sub> and NO<sub>x</sub> react in the air to form particulate matter and ozone, which again impact health.



[http://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0004/193108/REVIHAAP-Final-technical-report-final-version.pdf](http://www.euro.who.int/__data/assets/pdf_file/0004/193108/REVIHAAP-Final-technical-report-final-version.pdf)

## Air pollution impacts adults and children

Health impacts of air pollution include cardiovascular and respiratory disease (heart attacks, strokes, lung cancer, increase in asthma attacks and possibly causing asthma, aggravation of chronic obstructive pulmonary disease (COPD) which is a chronic lung disease, but also impacts on children's healthy development.



[http://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0004/193108/REVIHAAP-Final-technical-report-final-version.pdf](http://www.euro.who.int/__data/assets/pdf_file/0004/193108/REVIHAAP-Final-technical-report-final-version.pdf)

## WHO says air pollution causes cancer

The International Agency for Research on Cancer (IARC) of the WHO says outdoor air pollution causes cancer in humans. The WHO says that indoor and outdoor air pollution are both among the leading avoidable causes of disease and death globally, and the world's largest single environmental health risk.



[https://www.iarc.fr/en/media-centre/iarcnews/pdf/pr221\\_E.pdf](https://www.iarc.fr/en/media-centre/iarcnews/pdf/pr221_E.pdf)

## Coal as main source of brain harming mercury

Coal-fired power plants are the main source of mercury, a highly toxic heavy metal. In Turkey, over 10 tonnes of the heavy metal were emitted from plants in one year, mostly into the air. Mercury has been shown to impact the development of the brain and nervous system of children.



[http://env-health.org/IMG/pdf/20052015\\_hr\\_coal\\_report\\_turkey\\_final.pdf](http://env-health.org/IMG/pdf/20052015_hr_coal_report_turkey_final.pdf)

## Coal power increases respiratory problems and hospitalisations

In a study conducted by TTB to investigate the health effects of the coal-fired power plant Yatagan, there are twice as many patients being treated for respiratory tract problems in the Yatagan state hospital than in hospitals in Mugla, with no coal plants. For bronchitis, asthma and emphysema, the rate is three times as high.



<http://www.ttb.org.tr/kutuphane/yatagan-rpr.pdf>

## FROM INFORMATION TO ACTION

**Sample open letter to an investor**

*The following can be used for an open letter to a potential investor for a new coal plant, be it Turkish or international. The letter should include both recent scientific evidence as well as information on the local situation.*

Dear,

It has come to our attention that **[insert name of company]** plans to build a new coal-fired power plant in **[insert name of location]**. **[Insert name of your organisation and 1-2 sentences description]** would like to express our concerns about these plans, for the health of people in the Iskenderun Bay region and beyond.

Coal-fired power plants are a particular threat to health, because in addition to releasing large amounts of CO<sub>2</sub>, a large plant also emits thousands of tons of hazardous air pollutants such as particulate matter (PM), sulphur dioxide, nitrogen oxides and heavy metals such as mercury. These pollutants contribute to poor air quality in the Iskenderun Bay region and beyond, which then harms the health of adults, people who are chronically ill and our children.

There is no scientific doubt that the pollutants released by coal-fired power plants harm people's health. The World Health Organization (WHO) recently reviewed new scientific evidence and warned that particularly children's health is affected by air pollution, even already in utero. The International Agency for Research on Cancer (IARC) of the WHO also confirmed that outdoor air pollution causes cancer.

A recent analysis also highlighted that there are already high health costs from the about 20 existing coal plants in Turkey. Air pollution from these plans causes 2,876 premature deaths in Turkey, over 4,300 hospital admissions and 637,643 lost working days every year, with health costs of up to 10.72 billion Turkish Lira. Plans of the Turkish government for quadrupling coal capacity in our country, including the plant in **[insert location]** would lead to skyrocketing health costs.

We are concerned that the pollution from the plant would particularly affect people in the vicinity of the plant. **[Insert some description of the area, any health evidence that is available, to give the human story to the letter]**

**[Insert name of organisation]** therefore calls on you to drop plans to build the plant in **[insert name of location]**.

Regards,

**[Name]**

**[Job position]**

**[Organisation]**

**[Logo]**



## Sample open letter to the Health Ministry

Dear Minister [insert name] / Dear Mrs./ Mr. [insert name - if you are addressing somebody in the ministry]

I contact you from [Insert name of your organisation and 1-2 sentences description] about an important issue for disease prevention in Turkey, that is the quality of the air that we breathe and the role that coal power generation plays in it.

There is an increasing body of evidence that demonstrates the harmful impacts of air pollution on our health: the World Health Organization (WHO) recently reviewed the state of the evidence and found that the harm to health of air pollution may have been underestimated. Air pollution is not only a risk factor for cardiovascular and respiratory disease, it is also harming the healthy development of children, and even linked to the rise in diabetes. The International Agency for Research on Cancer (IARC) of the WHO found that outdoor air pollution causes cancer.

In Turkey, according to the European Environment Agency (EEA), 97.2 percent of the urban population are exposed to unhealthy concentrations of particulate matter (PM10). PM is especially harmful to health, because the particles can enter deeply into the body and can even cross into the bloodstream. No information is available on the extent of exposure of the population to PM2.5, the smaller pollutants.

Even though air quality is influenced by many different factors, my organisation [insert name] is particularly concerned about the contribution of fossil fuel energy generation to air pollution, with its harmful effects on our health. A recent report by the Health and Environment Alliance (HEAL), endorsed by leading Turkish health and medical organisations, showed that already the existing 20 coal-fired power plants cause health costs of up to 10.72 billion Turkish Lira every year. We are worried that the plans of the Turkish government to increase coal power capacity by four will lead to a significant increase in health impacts from air pollution, and would counter any efforts by the Ministry of Health in disease prevention.

Minister [insert name], the different forms of energy generation are closely linked to our health, either through health harm caused by fossil fuels, or through health benefits, for example from renewable energy. We would like to encourage you and your ministry to become more involved in energy-related matters, be it at national or at the local level. For example, health considerations are often not part of an environmental impact assessment for a new coal plant, or calculations are not done properly. The expertise by the health ministry could greatly improve these assessments to ensure that the health of the Turkish population is adequately considered.

Your contribution to energy political decisions will be an indispensable part of any disease prevention efforts in Turkey.

We would be pleased to provide any further information in a personal meeting.

Regards,

[Name]

[Job position]

[Organisation] [Logo]

## Legal Toolbox

### TURKISH LEGISLATION RELEVANT FOR COAL POWER PLANTS AND TOOLS TO APPLY THEM FOR HEALTH PROTECTION

In Turkey, there are laws and legal requirements in place to regulate emissions from coal fired power plants, and to ensure a good overall level of air quality. Below is a list of legislation for reference, which can be used as a tool to check if current coal power plants comply with the national standards, and which may inform discussions about plans for new coal power plants.

#### Emissions from coal power plants

Coal-fired power plants currently fall under the requirements of the Regulation on Industrial Air Pollution Control<sup>17</sup>. The regulation sets legally binding emission limit values (ELVs) for sulphur dioxide, nitrous oxides, and dust (under which particulate matter is subsumed), different for those with at least 50 MW of total rated thermal input (i.e. large combustion plants) and those with total rated thermal input below 50 MW. The law also requires operators to get a permit in compliance with the Regulation on Environmental Permit and License<sup>18</sup> for operating or constructing a combustion plant from the national authorities, for which it has to be shown that the plant at least complies with those emission limit values that have been set.

This Turkish regulation is harmonised with the repealed European Union (EU) Directive on Large Combustion Plants (LCPD); but not with the current Industrial Emissions Directive (IED). Unfortunately, the regulation also has many loopholes. For instance, on the contrary of the EU Directive, large combustion plants are not yet asked to apply best available technologies (BATs). In addition, there are several derogations for the existing plants. For instance, the regulation enables existing coal-fired power plants, which are currently state-owned and are in the process of privatization, to operate without an emission permit until 31.12.2017. If the plant is not going to operate more than 20,000 hours until 31.12.2019, then it does not have to comply with the ELVs to that date.

Lignite burning plants are a special case, along with any other high sulphur fuelled plants: they fall under the requirement for desulphurisation rates (92 percent for plants between 100 MW and 300 MW; and 95 percent for plants >300MW), which means that they do not have to comply with the emission limit values for sulphur dioxide. National and EU emission standards for some of the most hazardous air pollutants are listed in Annex 2 of the Unpaid Health Bill Turkey report.

A major gap in the current Turkish legislation is that there are no provisions on public participation and access to information; which enable that the “permits for new installations, any substantial change in the operation of an installation or updating of a permit/permit condition should be open to public discussion by the regulator as early as possible to ensure efficient participation.”<sup>19</sup>



#### TAKE ACTION:

The Ministry of Environment and Urbanisation in Turkey monitors if plants comply with emission limit values and keeps data from local monitoring sites. However, there is no publicly accessible database of emissions from industrial facilities in Turkey. You could make a request under the Right to Access to Information Act for the emissions and environmental permit status of an existing coal power plant in your region and use this information to assess how much the power plant contributes to local air pollution.

<sup>17</sup> Regulation on Industrial Air Pollution Control. RG: 03/07/2009-27277; Amended: RG: 20/12/2014-29211.

<sup>18</sup> Regulation on Environmental Permit and License; RG: 10/09/2014-29115.

<sup>19</sup> TEPAV (2015). Turkey's Compliance with the Industrial Emissions Directive. TEPAV: Ankara. [http://www.tepav.org.tr/upload/files/haber/1427475571-5.Turkey\\_\\_\\_s\\_Compliance\\_with\\_the\\_Industrial\\_Emissions\\_Directive.pdf](http://www.tepav.org.tr/upload/files/haber/1427475571-5.Turkey___s_Compliance_with_the_Industrial_Emissions_Directive.pdf)



## FROM INFORMATION TO ACTION

## Background air pollution

As air pollution comes from many sources and is a local, national and international problem, it is important to look at the overall levels of air pollution, the so called ambient or background concentration.

The Turkish Air Quality Assessment and Control Regulation<sup>20</sup> sets standards, i.e. concentration limits, for a number of hazardous air pollutants. These standards include both target and limit values and number of times that the standards cannot to be exceeded in any calendar year. Currently there are limit values in place for pollutants such as sulphur dioxide (SO<sub>2</sub>), nitrogen oxide (NO<sub>2</sub>) and coarse particulate matter (PM10). However, the limit values in the Turkish regulation are much higher than the WHO's air quality guideline values; and target values are to reach even the interim targets of the WHO only by 2019 for SO<sub>2</sub>, by 2024 for NO<sub>2</sub>. For ozone O<sub>3</sub>, the long-term target value is to be achieved by 2022, and will be still higher than the WHO guideline of 100 µg/m<sup>3</sup> 8-hour mean. For the PM2.5, which is of particular concern to health as it causes the highest health impact, there is no limit or target value in place in the Turkish legislation.

The limit values are legally enforceable, meaning that the government has to comply with them. In addition, in the case that the limit values are exceeded in any particular region or sub-region, the Ministry of Environment together with its provincial directorates, is obliged to prepare a "clean air plan" and an "action plan", in consultation with the public.

National, EU and WHO standards for ambient air concentrations of some of the most hazardous air pollutants are listed in Annex 2 of HEAL's Unpaid Health Bill Turkey report.



## TAKE ACTION:

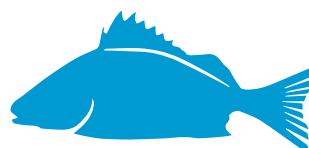
Check the air quality situation in your area with the data from the local monitoring station for SO<sub>2</sub>, NO<sub>2</sub> and PM10. Have a look at Annex 2 to see about the health effects of air pollutants and where the WHO recommends concentration limits should be. Analyse the situation in your area over a longer time interval. Obtain weather data (wind directions) for the same period in order to determine potential point sources. Coal power plants in the region might contribute to high concentrations. Attract the attention of media and authorities (i.e. Ministry of Environment and Ministry of Health) and inform the public if thresholds are exceeded. Ask the authorities about their action plan for clean air and demand to participate in development and monitoring of these plans.

## Mercury Emissions

Mercury emissions from coal power plants are the largest anthropogenic source of mercury emissions worldwide. 80 percent of mercury emissions are emitted to air.

The Regulation on Industrial Air Pollution Control sets an emission limit value of 0.05 mg/m<sup>3</sup> for solid fuel combustion plants. However, there are no standards for mercury concentrations in the ambient air quality regulation.

The Turkish Regulation on Water Pollution Control<sup>21</sup> does not set a binding standard for mercury discharge in surface waters from power plants as it does for many other industries. Discharge limit values must be included into legislation and have to be applied in permits for coal power plants.



## TAKE ACTION:

Check if the permit/EIA application for a planned coal power plant is correctly applying the mercury emission limit value from the power plant to the atmosphere. Technical experts may be able to provide independent calculations also on the mercury discharges to surrounding water bodies. Submit your concerns in the public consultation process.

<sup>20</sup> Air Quality Assessment and Control Regulation, RG: 06/06/2008-26898; Amended RG: 5/5/2009-27219)

<sup>21</sup> Water Pollution Control Regulation, RG: 31/12/2004-25687; Amended RG:13/2/2008-26786

## FROM INFORMATION TO ACTION

### International commitments of Turkey

As air pollution is also a transboundary problem, there is an international process in place to tackle it for the European region. Turkey is part of the UN's Economic Commission for Europe's Convention on Long-range Transboundary Air Pollution (CLRTAP). However, the country only ratified one of the Convention's protocols (EMEP). Turkey therefore does not have national emission ceilings or thus reduction commitments for sulphur dioxide, nitrous oxides, volatile organic carbons (VOCs), ammonia, and fine particulate matter (PM2.5) emissions that are set by the Gothenburg protocol, Turkey only submits NOx, NMVOC, SOx, CO and PM10 emissions data within the framework of the annual national inventory; but no PM2.5, heavy metals, or POPs emissions are reported to the Convention secretariat.



### TAKE ACTION:

Ask the national authorities if and when they are planning to ratify the CLRTAP Gothenburg Protocol, and if there are any assessments on how building a new coal power plant could endanger the country's commitments under the convention.



### Public access to information and public participation

The Air Quality Assessment and Control Regulation aims at informing the public on air quality via information and alert thresholds. The Ministry of Environment has an online database of air quality monitoring results, where one can find daily measurement results from air quality monitoring stations. The ministry also publishes monthly, seasonal and annual reports including verified monitoring data.

However, there is no legislation in place in Turkey which makes accessible to the public detailed information on the emissions and the off-site transfers of pollutants and waste from individual industrial facilities, industrial activities or economic sectors in specific regions/river basin districts of the country. On the other hand, the Law on Right to Access to Information is in place since 2004 and it enables the citizens to request any information/data within the records of the public institutions as defined by the law. This law can be used to identify the contribution of the existing coal-power plants in your regions to the low air quality.

The law also comes handy to get information about the burden of disease and public health status in a given region which is under risk of pollution by existing and future planned coal power plants.

In the different steps of building a new coal power plant - environmental impact assessment, pre-licensing, construction plan approval - opportunities to have your say and make your concerns known through public participation will become available. However, there may be restrictions, and inefficiencies for administrative and political reasons.



### TAKE ACTION:

If you live in an area where the air quality is lower than the national standards and there are one or more existing coal-fired power plants; make an information request to the Ministry of Environment for the emission data from these facilities, as well as the status of their emission permits, the status and efficiency of the treatment units.

Also make information application to the Ministry of Health on burden of disease data on cardiovascular and respiratory health as well as cancer data in your region. The information will help you make informed comparisons with other regions with less air pollution problem; and will set the basis for future comparative analysis of the impacts of coal-fired power generation in case there are new plant projects in your region.



## Environmental Impact Assessment (EIA)

New coal power plants with at least 300 MW thermal power have to undergo a mandatory Environmental Impact Assessment (EIA) before a building permit can be issued, as foreseen by the Regulation on Environmental Impact Assessment<sup>22</sup>. For smaller power plants, the authorities subject the project to an EIA on a case-by-case basis or by applying general criteria in a screening procedure. The project developers have to document all foreseeable impacts on the environment which should be complying with existing environmental regulation. Public consultation is an important component of the EIA process, which has often been able to hold up or completely stop a coal plant proposal.

## TAKE ACTION:

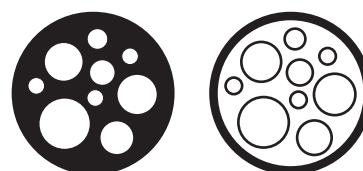
Check if an EIA has been carried out properly and if a zero-intervention option was included in the assessment. Check also the Ministry of Health, Public Health Institute or its provincial directorate is asked to provide an opinion on the project's possible public health impacts. Urge the health and other involved authorities to publicise their submitted opinion via the law on right to access to information.

However, it is also important to keep in mind that the possible impacts on public health are not part of an EIA, and the consultation and involvement of health professionals is not required.

A review of the EIA reports of seven coal-fired power plant projects shows that these reports neither review the current public health status in the project impact area, nor assess the health impacts of the project. However, it has been observed that provincial directorates of the Ministry of Health, the only health authorities consulted in EIA process, usually approve the assessment with a short review stating that "the project is appropriate on the condition that it is in line with laws and regulations". Between December 1993 – April 2015, all of the seven EIA applications for coal-fired power plant projects in Hatay and Yumurtalik/Adana were approved by the Ministry of Environment. Only two of these EIAs were cancelled by administrative courts based on legal interventions of the local groups.<sup>23</sup>

## Integrating health assessment in EIA - your checklist

The public health commission of the Turkish Medical Association (TTB) has recently published a public health checklist for legal experts and expert witnesses who review EIA reports of projects.<sup>24</sup> The checklist includes health considerations for the review of an EIA report such as: the impact on health; what kind of impact and its duration and timing; the geographic extent of impact; the likelihood, magnitude, and permanence (i.e. severity) of impacts; measurability of impact; health data availability/data gaps; the quality of evidence; population affected, and distribution/equity of impacts, risk groups; the composition of the EIA team (any health experts?); and also availability of information on burden of disease (morbidity and mortality data) for the project region specifically on those diseases associated with environmental, particularly air pollution, i.e. reproductive and developmental disorders, diseases and disorders of nervous and endocrine systems, immune system, respiratory and circulatory systems.



## TAKE ACTION:

Use this checklist to assess the environmental impact assessment that is carried out for a new coal plant, and make the gaps in health assessment known to local and national authorities.

<sup>22</sup> Regulation on Environmental Impact Assessment, RG: 25.11.2014- 29186

<sup>23</sup> Gürsoy, U. (2015). "Çevresel Etki Değerlendirmesi Raporlarının Değerlendirmedeği Çevre: İnsan Sağlığı" [The Environment That EIAs Do Not Assess: Human Health], in Hatay'ın Çevre Sorunları ve Çözüm Önerileri Sempozyumu Bildiri Kitapçığı [Symposium on Environmental Problems of Hatay and Solution Suggestions], Proceedings, 28-30 May 2015. p:19. Eds.: M. Yipel, A. Kaya, İ. O. Tekeli. Greater Municipality of Hatay and Mustafa Kemal University.

<sup>24</sup> Yavuz, C. I., and Gürsoy, U. (2016). Çevresel etki değerlendirmesi (çed) raporu düzenlenmesi gereken tesislerin ÇED raporlarını değerlendiren hukukçular ve bilirkişiler için halk sağlığı yoklama (check) listesi. Unpublished paper. Source: Personal communication.

## ADDING VOICES AND HUMAN STORIES

# GUIDELINES FOR COLLECTING TESTIMONIES

Testimonies, such as written quotes or a short video from a spokesperson, can be a powerful tool to explain and make people understand the personal impacts and threats of coal power generation, in addition to the evidence. Testimonies are often included and used by many journalists in articles; yet they are not intended to replace scientific evidence or to be used as part of research.

**The guidelines below can help you in your collection of stories from local individuals and groups.**



## WHAT CAN TESTIMONIES BE USED FOR?

1. Increase in media coverage and impact of communications on coal and health
2. Mobilisation of health groups and professionals including doctors, nurses, patient groups
3. Mobilisation and awareness raising of the public and individuals
4. To underline points made in a presentation
5. To make social media outreach more impactful
6. To influence policy makers at local or national level, international level

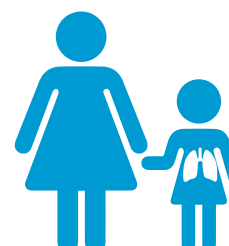
### Which form?

Testimonies can be in a written form (either 1-2 sentences as a quote or longer article giving the background on where people live), or as a short video of approximately 1 minute. It is advisable to do a trial run before any video recording, and brief the person before about the content of the testimony.



### Who should be a priority?

- Doctors and nurses: general practitioners and nurses in local hospitals, respiratory doctors, paediatricians, speaking about observations on the health of the local population and air pollution (if possible, making a comparison to the health situation in another province)
- Health affected groups: E.g. Mother of a child with asthma, patients with lung disease, speaking about their worries on air pollution, and days with difficulties breathing



## ADDING VOICES AND HUMAN STORIES

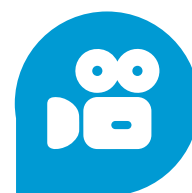
### What to watch out for when you write a longer text for a testimony

- Who is the person speaking, what is her or his role in the community?
- What are the details on the future coal plant, how many people would be affected?
- Include a personal observation on the air quality situation, on days when pollution was particularly bad
- Describe how the people are coping with the problem
- Demands or wishes from the person giving a testimony



### Things to watch out for when you record a video

- Carefully choose the background that will paint the picture of the testimony: Video and pictures (for accompanying written story) should be set up in adequate setting that underline the story that you will be telling (for example hospital, at home, coal plant in the background)
- Show the person in a respectful, mindful manner. Never intrude on privacy or grief. Respect the feeling of the bereaved
- Try to encourage her/him to share emotions, such as concern for children, fear or hope. The emotional parts will be the most memorized part of the video. Be respectful and grateful for everything that the person shares
- Try to create as natural environment for the filmed person as possible. If possible (in terms of the light, sound etc.), let her/him choose the best place for the interview (garden, home etc.), that will let feel her/him the most natural & relaxed.



### What to explain before recording a video

- Brief the interviewee before and explain what is expected of them and how much time they have
- Explain how the video will be used
- When speaking, interviewee's should use simple language and try to avoid technical terms
- They should use short sentences as much as possible
- They should make their argument in 20 second long (or less) sound bites if possible



### What to avoid during your conversation with someone – both you and the person being interviewed

- Do not move around too much (especially your hands) – but do not remain immobile
- Do not touch your face, tie, or wave your arms about too much
- Do not wear check patterns or narrow stripes
- Do not use any jargon at all unless you are using it as an example of jargon
- Do not use acronyms
- Do not sit directly towards the camera, try to sit at a slight side angle





## ADDING VOICES AND HUMAN STORIES

### STATEMENTS BY ISKENDERUN BAY MEDICAL PROFESSIONALS



**Professor Dr. Neslihan Önenli Mungan, Chair, Adana Chamber of Medicine, Pediatrician**

Being a physician means being at the pulse of social developments. A physician cherishes life the most, as s/he has taken the oath to keep people alive. S/he's promised to look out for not only patients or human beings, but also all living things, the tree, the soil, the water, the air, under any circumstances.

Human health cannot be thought of independently from the living environment. Therefore, any threat to the environment is also a threat to our health and future. The right to clean air, clean water and healthy food, as they are included in the universal human rights declaration, are our indispensable and irrevocable rights and priorities.

It is vital for us to learn and communicate with the public on how future coal power plants in Iskenderun Bay would jeopardise these fundamental rights, and how they would create irreversible damage to the environment, which will endanger not only our region but the whole country, not only us but our children and grandchildren. We live in an era in which the world is shifting rapidly from fossil fuels and Western countries closing their coal power plants. We, too, must shift, with no more delays, to renewable energies which have less environmental impacts, and we should act all together on this. Otherwise, due to environmental pollution from future coal power plants, we will have to face an increasing burden of disease as well as children born with anomalies, and underdeveloped brains.

When the issue is assessed in terms of health economics, there is a serious unpaid health bill as presented by HEAL and the Turkish Medical Association. In light of all valuable information and foresights provided by the experts, our target should be to prevent new coal power plants; and instead create a viable environment in our region and sustainable future with renewable energy choices.

**Professor Dr. Tacettin İnandı – Chair, Hatay Chamber of Medicine, Public Health Specialist**

Iskenderun Bay, particularly the Hatay province, has been facing an accumulation of environmental problems over the last decades mainly due to the intensification of heavy industries, industrial agricultural activities and heavy traffic from international highways in the region. An increase in the region's population brings additional challenges of diversified environmental problems, and the healthcare infrastructure is inadequate to tackle the associated health burden.

Energy investments, including dozens of coal power plants, booming without any proper planning are expected to add up vastly to these social costs. In order to prevent high social costs, it is of vital importance to carry out a cumulative impact assessment of each specific coal power plant project, to consider possible impacts together with other existing and planned industrial and energy investments in our region. The coal projects should also be subject to a health impact assessment in light of current scientific evidence and with an approach that puts public health and human life first.

We, as the medical doctors, demand an energy strategy for Iskenderun Bay and Turkey that diverts from fossil fuels, first and foremost coal, to renewable energy resources with the lowest possible impacts on nature and human health.



## ADDING VOICES AND HUMAN STORIES

### **Dr. Ful Uğurhan - Chair, Mersin Chamber of Medicine, Occupational Physician**

Our primary responsibility, as medical doctors, is to prevent diseases before they occur. Otherwise, it is much harder to tackle health problems when we take into account the subsequent treatment process, diagnosis, medication and rehabilitation services. Above all, respecting the right to live is our top priority from a medical ethics point of view. This is why we approach energy investments on the basis of the precautionary principle by taking into consideration their possible impacts on human health. Coal-fired power plants, just like nuclear power plants, are unacceptable energy choices for us because of the environmental burden, particularly air pollution and heavy metal contamination, and the associated human health risks they create.

In 2013, the World Health Organization's International Agency for Cancer Research (IARC) classified air pollution as carcinogenic to humans. More and more scientific studies show that exposure to air pollution and heavy metal contamination causes cardiovascular, respiratory and neurological diseases, resulting in premature deaths.

In light of all the current scientific evidence, we as health professionals consider the actions that we take in order to stop coal power generation in Mersin and our region as a medical duty. We urge authorities to act responsible and to build a rational energy future for Turkey, excluding coal and other fossil fuels.



### **Dr. Sadun Bölükbaşı – Chair, Environmental and Consumer Protection Association, Primary Health Care Physician**

We are going through a time in which the sustainability of life is under threat. We move towards an even darker future with coal-fired power plant projects which will deepen our dependency on fossil fuels.

In the Çukurova region and Iskenderun Bay where we live, our air, soil, water and sea will be polluted by heavy metals, radiation and acid rains associated with coal-fired power plants. The carcinogenic effect of these pollutants is evident in association with time and dosage of exposure. An increase in lung diseases is inevitable in from increasing air pollution.

Yet, we can create a bright and healthy future without exposure to any of these risks if we choose to generate electricity with the right planning from sun and wind power, which are free and indefinite sources of energy. Access to clean air, water and food are primary human rights and number one condition for a healthy life.

# Useful contacts and further information

## Turkish health and medical organisations

Right to Clean Air Platform - <http://temizhavaplatformu.org/>

Turkish Medical Association (Türk Tabipleri Birliği – TTB) - <http://www.ttb.org.tr/>

Turkish Society of Public Health Specialists (Halk Sağlığı Uzmanları Derneği – HASUDER) - <http://www.hasuder.org/>

Turkish Thoracic Society (Türk Toraks Derneği – TTD) - <http://www.toraks.org.tr/>

Turkish Respiratory Society (Türkiye Solunum Araştırmaları Derneği – TÜSAD) - <http://www.solunum.org.tr/>

Turkish Occupational Medicine Society (İş ve Meslek Hastalıkları Uzmanları Derneği - İMUD) - <http://imud.org.tr/>

Turkish Neurological Society (Türk Nöroloji Derneği) - <http://www.noroloji.org.tr/>

Turkish Society of General Practitioners (Pratisyen Hekimlik Derneği - PHD) - <http://www.phd.org.tr/>

Adana Chamber of Medicine (Adana Tabip Odası) - <http://www.adanatabip.org.tr/>

Mersin Chamber of Medicine (Mersin Tabip Odası) - <http://www.mersintabipodasi.org.tr/>

Hatay Chamber of Medicine (Hatay Tabip Odası) - <http://www.hataytabip.org.tr/>

## Turkish environmental organisations

Environmental and Consumer Protection Association - <http://cetko.org/>

Iskenderun Environmental Protection Society - <https://www.facebook.com/groups/179437885556051/>

Osmaniye Kastabala Environmental Platform - <http://kastabala80.blogspot.com.tr/>

Mersin Environment and Nature Society - <https://www.facebook.com/MersinMerced>

Coordination on Climate Justice - <http://HYPERLINK> "<http://www.iklimadaleti.org>" [www.iklimadaleti.org](http://www.iklimadaleti.org)

Ecology Collective - <http://ekolojikolektifi.org/tr/>

TEMA - <http://tema.org.tr/>

Greenpeace Mediterranean - <http://www.greenpeace.org/turkey/tr/>

Yuva Association - <http://yuva.org.tr/>

WWF Turkey - [www.wwf.org.tr/](http://www.wwf.org.tr/)

Green Thought Society - <http://web.yesildusunce.org/>

Environmental and Consumer Protection Association - <http://cetko.org/>

## International health and medical organisations and collaborations

Health and Environment Alliance (HEAL) - [www.env-health.org](http://www.env-health.org)

Global Climate and Health Alliance - <http://www.climateandhealthalliance.org/>

Healthy Energy Initiative - <http://www.healthyenergyinitiative.org/>

World Federation of Public Health Associations <http://www.wfpha.org/>

European Federation of Public Health Associations <https://www.eupha.org/>

World Health Organization (WHO) – Air Pollution and Health [http://www.who.int/topics/air\\_pollution/en/](http://www.who.int/topics/air_pollution/en/)

World Medical Association (WMA) - <http://www.wma.org>

## International Environmental and Climate Organisations

CAN Europe - [www.caneurope.org](http://www.caneurope.org)

350.org - [www.350.org](http://www.350.org)

## Further reading

Lancet Commission on climate change and health

<http://climatehealthcommission.org/the-report/>

World Health Organization (WHO) – final report of REVIHAAP project

[http://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0004/193108/REVIHAAP-Final-technical-report-final-version.pdf](http://www.euro.who.int/__data/assets/pdf_file/0004/193108/REVIHAAP-Final-technical-report-final-version.pdf)

UN Agency on Cancer Research (IARC): Outdoor air pollution and cancer

[https://www.iarc.fr/en/media-centre/iarcnews/pdf/pr221\\_E.pdf](https://www.iarc.fr/en/media-centre/iarcnews/pdf/pr221_E.pdf)