

Black clouds looming

How Turkey's coal spree is threatening local economies on the Black Sea

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1 Main findings

Since 2009 Turkey has experienced a boom in the construction of coal-fired power plants in response to growing energy demand, increasing gas prices and its abundant coal reserves. This paper is based on an April 2013 field visit to Turkey by Bankwatch and Greenpeace Mediterranean. Combined with desk research, this report finds:

- energy alternatives like solar installations, integrated energy efficiency measures and small scale renewable energy projects that serve local needs, promote energy independence and the diversification of Turkey's energy sources, provide affordable energy, create jobs more efficiently than developing coal power are neither analysed nor discussed at the policy or project levels;
- environmental impact assessments for the planned coal power plants are incomplete, as are assessments of the cumulative impacts of the facilities planned to serve the coal plants, including mines, transport infrastructure like roads and ports and transmission lines.
- a strategic environmental assessment is missing for the power plants that expect approval for construction on the national level (between 50–86 new plants) or the regional level (13 plants planned in the western Black Sea region within a distance of 70 kilometres);
- project promoters and responsible national authorities exhibit a disregard of public concerns and offer limited access to information about the environmental, social and economic impacts of the proposed coal project on local and national economies;
- the involvement of international financial institutions lacks a strategy to address the challenges facing the Turkish energy mix, with significant offshoot impacts on their investments elsewhere in energy efficiency, renewables and small and medium-sized enterprises.

2 Turkey's energy mix

While Turkey has the second-most solar thermal capacity in Europe¹, installed capacity of photovoltaic power generation or concentrated solar plants is virtually non-existent. The Turkish government has prioritised coal-fired power as a means to achieve economic growth and energy security. According to the World Resources Institute², Turkey plans 50 coal-fired power plants with a total installed capacity of 37,000 MW. This will rank Turkey first among OECD countries investing in new installed coal capacity and fourth globally, behind only China, India and Russia.³ Some projections suggest up to 86 new coal plant projects, when accounting for those that are in the process of permitting and those that have failed the application process.

In 2011, Turkey's overall energy mix was comprised of 31% coal, 32% natural gas, and 27% petrol, with the remaining 10% composed of hydropower, wood/biofuels and wind.⁴ The Ministry of Energy and Natural Resource's energy vision for 2023 predicts a near doubling of total energy sources, with the only significant difference that use of gas would decrease in relative terms to 23% and the use of coal would increase to 37%. In absolute terms this would mean a **2.3-fold increase of coal use** in just 12 years.

Regarding electricity generation, in 2012 natural gas predominated, with 43.2%, with coal at 27.2%. Hydropower accounted for 24.2%, wind for just 2.4% and 'others' for 3%. By 2030, electricity generated from coal is expected to almost triple in absolute terms, while the use of natural gas for electricity generation is also expected to increase by around 40%.⁵ However this would still bring gas down to 23.4% of electricity generation while coal would increase to 31.8%. The Turkish Electricity Market and Supply Security Strategy Paper, 2009,⁶ has a target of

- 1 Turkey's geographical location is considerably more favorable in terms of solar energy potential, placing it well ahead many countries in the solar energy market. According to the Electrical Power Resources Survey and Development Administration (EIE) and the State Meteorology Affairs General Directorate, Turkey's average annual total sunshine duration is 2640 hours; a total of 7.2 hours per day, with an average total radiation intensity of 1.311 kWh/m² - years, (daily total 3.6kWh/m²). Turkey has the incredible potential to produce an average of 1.100kWh per square meter, if the necessary investments are made on solar energy plants. This makes Turkey the 2nd best country in Europe after Spain in terms of solar power investment potential.
<http://www.globaltrade.net/f/market-research/text/Turkey/Environmental-Technologies-Climate-Solar-Power-Market.html>
- 2 Global Coal Risk Assessment: Data Analysis and Market Research", World Resources Institute Working Paper, 2012, http://pdf.wri.org/global_coal_risk_assessment.pdf
- 3 "Coal demand among OECD countries in Europe is projected to increase on average by a mere 0.4% per year during the outlook period (from 2012 to 2017), with the bulk of this increase from growth in coal demand in Turkey. Medium-Term Coal Market Report 2012 - International energy Agency; online at <http://www.iea.org/Textbase/npsum/MTCOalMR2012SUM.pdf>
- 4 Wind is labelled 'others'. Source: Taner Yıldız (Minister of Energy and Natural Resources), addressing the General Assembly in budget talks, 15 December 2012
- 5 Demircan, Z. (2013). What Energy Mix for Turkey in 2030. Power Point Presentation. General Directorate of Energy Affairs, Ministry of Energy and Natural Resources. Wind Workshop. 26 March 2013, Ankara; online at <http://events.ewea.org/events/workshops/wp-content/uploads/2013/03/EWEA-TUREB-Workshop-27-3-2013-Zafer-Demircan.pdf> (retrieved March 28, 2013)
- 6 The Turkish Electricity Market and Supply Security Strategy Paper, 2009, http://www.enerji.gov.tr/yayinlar_raporlar_EN/Arz_Guvenligi_Strateji_Belgesi_EN.pdf

30% renewable electricity including hydropower by 2023 (up from 26.6% in 2012) and the percentage of renewable energy projected by 2030 is just a little more than that, at 31.6%.

Solar and geothermal targets are negligible in the Turkish energy plans. The 2023 target for installed capacity of solar power is only 3,000 MW (10% of what Germany already possesses). The feed-in tariffs (FiT) for solar power are less than a third of those in Greece and half of the rates in Italy.⁷ It appears that the government is deliberately limiting the development of solar energy, though officially maintaining that it is protecting an emerging market. In 2013, for instance, the Turkish energy market regulatory authority set a cap of 600 MW for solar PV licenses at auction⁸. Yet given the country's renewables potential, the appetite from industry and investors in the sector, and the fact that 1.7 GW of smaller installations that do not require a license are already projected by 2018, Turkey's 2023 renewables target is entirely underwhelming.

Turkey and climate impact

In 2009 Turkey joined the Kyoto protocol as an Annex I country but refused to adopt any emission reduction targets in the second commitment period of the protocol (2013–2020). The official position of Turkey with respect to climate change mitigation is that Turkey contributes to global efforts in adherence with the “common but differentiated responsibilities” principle. Turkey's main climate mitigation actions are summarised in the Climate Change Action Plan and several sectoral strategic plans:

- Increase the share of renewables in the electricity sector (20,000 MW wind, 3,000 MW solar, 600 MW geothermal);
- Decrease the rate of greenhouse gas (GHG) emissions (7% from a 'business-as-usual' scenario; and
- Decrease energy intensity by 20% over the period 2008–2023.

These targets are vague on their implementation in practice. Given that Turkish GHG emissions more than doubled between 1990 and 2010 and are projected to triple by 2020, a 7% reduction from the 'business-as-usual' scenario is not ambitious enough⁹. Turkey's current GHG emissions total 422.4 mtCo2e, an increase of 126% when compared to 1990 levels (187 mtCo2e)¹⁰. Energy production accounts for 28.7% of GHG emissions¹¹. If government projections for increased coal use materialise, by 2023 the total annual emissions from new coal plants will be around 300 mtCo2e, 147% higher than CO2 emissions from the energy sector today and an increase of current annual emissions in Turkey by 71%.

7 <http://www.bloomberg.com/news/2012-02-29/turkey-streamlines-rules-for-small-solar-electricity-projects.html>

8 http://www.pv-magazine.com/news/details/beitrag/turkey--2013-a-critical-year-for-solar-energy-development_100010867/#axzz2fnBFxVDx

9 GHG trends and projections in Turkey, EEA factsheet 2012, online at <http://www.eea.europa.eu/publications/ghg-trends-and-projections-2012/turkey.pdf>

10 *ibid.*

11 *ibid.*

Subsidies for coal and the market response

To incentivise investments in new coal power plants, the Turkish government has granted developers some form of corporate income tax allowances through investment participation rates, exemptions from customs duties and VAT, and support for employer's contributions to insurance premiums. Investors that utilise domestic sources of coal to generate power have the right to benefit from Region-5 level support instruments, the second most beneficial in the whole regime, regardless of the actual investment location¹². Moreover, the government also helps with allocating state-owned land near domestic lignite production sites. To reap maximum benefits, developers of coal-fired power plants need obtain investment certificates by 2013¹³.

The FiT for renewable energy pale in comparison. Two main shortcomings of the incentive system are that FiT are much lower in comparison with EU countries, and secondly need to be guaranteed for 15–20 years, instead of 10 years as planned by the Turkish FiT law.

The big picture becomes even more concerning when we know that Turkey is a country specifically vulnerable to the effects of climate change, assuming a constant increase of expenses to mitigate climate change.

Plant type	Price (USD cent/kWh)	Domestic manufacturing addition (USD cent/kWh)	Maximum incentive (USD cent/kWh)
Hydroelectric	7.3	2.3	9.6
Wind	7.3	3.7	11
Geothermal	10.5	2,7	13.2
Biomass (including landfill gas)	13.3	5.6	18.9
Solar photovoltaic	13.3	6.7	20
Concentrated solar power	13.3	9.2	22.5

Another deficiency with incentives for solar energy is that until December 31, 2013, legislation limits support for solar power capacity to 600 MW. However interest in solar energy has taken the Turkish Electricity Distribution Company (TEDAS) and local distribution companies (LDCs) by surprise. Currently over 250 applications for non-commercial PV installation (non-eligible for FiT) await approval for connection to the grid. This interest in non-commercial-scale PV systems is significant due to high electricity bills. Additionally 1.7 GW of unlicensed, commercial-scale projects are forecasted for installation until 2018¹⁴.

12 <http://www.invest.gov.tr/en-US/infocenter/news/Pages/090413-turkey-coal-reserves-used-for-power-generation.aspx>

13 <http://gastopowerjournal.com/markets/item/1538-turkey-incentivises-use-of-domestic-lignite-for-power-production-to-curb-gas-import-dependency#ixzz2ShkQTFYq>

14 Read more: http://www.pv-magazine.com/news/details/beitrag/turkey--more-pv-details-merge_100010885/#ixzz2Sgh3qerl

3 From the big picture to the local level

Two case studies of public finance and the impacts on the Turkish people

Case 1 – Coal power developments at the Amasra cultural site

A magnificent view opens from the top of a steep woodland leading to the shores of the Black Sea. Several villages spread across the forest, and rocky coves, sandy beaches and fishing ponds frame Amasra and its fortress. Referred to in the Iliad as Sesimus, the ancient walls of the fortified city dominate and give a romantic charm to the



View on Amasra (Image: Bartın Platformu)

place. The city is one of the closest seaside destinations to Ankara, bringing thousands of tourists every weekend even during the off season. For many years the site has also been proposed as the location of a massive coal-fired power plant.

Overview

In 1999, the first proposal for a 150MW thermal power plant was rejected. In 2005 the project was revived by Turkey's Hattat Holding¹⁵ when it obtained permission to explore for coal reserves in Amasra and the near-by Bartın. In 2007 three shafts were opened, two of which were greenfield developments. With the mining permit in tow¹⁶, Hema Enerjji, Hattat's energy firm, applied for a permit to construct a new 1320 MW coal-fired power plant in 2008. In 2010 Hema requested another permit for a second coal plant, bringing the total of proposed coal-fired

¹⁵ Hattat Holding operates in the defense, automotive, automotive parts and systems, agricultural machinery, engineering tools, and most recently, energy sectors.

¹⁶ Permission for electricity generation is provided more easily for companies that have local mining operations. (The Republic of Turkey Official Journal, January 15, 2013, Decision No. 2013/4288)

power plant capacity in Amasra to 2640 MW. Both of these plants are just three kilometres from Amasra proper, between the villages of Gümü and Tarlaağzı. Hattat holding and its two daughter companies, Hema¹⁷ and Batı Karadeniz Elektrik Üretim A.Ş.¹⁸, signed a deal with the Chinese Datong Coal Mine Groups to operate the coal mine. Meanwhile in May 2013 Turkish media also reported on a deal with China's Harbin Electric International worth USD 2.4 billion for the construction of the coal thermal power plants in the Amasra area¹⁹.

Historical and cultural heritage at stake

The plans for expansive coal power developments in and around Amasra threaten the area's tourism potential and unique historical and cultural heritage. In 2007 then Minister of Tourism acknowledged Amasra as a tourist destination and said no power plants would be built. In 2013 Amasra was added to UNESCO's World Heritage tentative list. The Amasra region is also rich in natural heritage – just ten kilometres from the city begins the Küre Mountains National Park, which hosts the most intact examples of Black Sea moist karst forest ecosystems in the world. The park is one Europe's 100 forest hotspots in need of protection²⁰.

However, the current Minister of Tourism said that neither Gümü nor Tarlaağzı are culturally-significant, even though the two villages are situated along an ancient Roman road and within the territory of the Kuskayasi Road Monument of Roman Emperor Julius Claudius Cermonious Galius Aquilla²¹. Moreover the government's West Black Sea Development Agency recently published the first draft of its "2014–2023 West Black Sea Region Plan," which analyses the region's potential for economic development and points to the proposed thermal power plant as the number one threat to Amasra.

Concerns over process

Procedural and permitting issues associated with assessing the impacts of the two coal projects have led to concerns about how serious the project promoters consider environmental and social issues. The environmental impact assessment (EIA) procedure for the two power plants is not yet complete, and locals are concerned about its quality. In 2010 EIA information meetings regarding the Amasra and Bartın plants were cancelled due to local protests, with the Ministry of Environment later cancelling the process entirely. In 2012 the process was re-opened, with the projects rebranded as the Batı Karadeniz Entegre Power Plant and Hema Entegrated Power Plant.

The EIA meetings were then supposed to take place in summer 2013 but due to ongoing local protests, the timing has not yet been established. On the EIA process for the Batı project, a recent letter from the Minister of Environment in response to a query from a Turkish

17 <http://www.hemaenerji.com/enerji-grubu-projeleri/amasra-tas-komuru-projesi>

18 <http://www.hemaenerji.com/enerji-grubu-projeleri/bati-karadeniz-amasra-termik-santrali-projesi>

19 <http://www.hurriyetdailynews.com/turkish-and-chinese-companies-ink-24-billion-coal-based-power-plant-deal.aspx?pageID=238&nid=46666>

20 http://www.kdmp.gov.tr/alt_detay-en.asp?id=10

21 (MS41–54) Dough in relief carved into the rock statue of the king and the Roman eagle as a symbol of sovereignty and has two inscriptions <http://amasraamasra.wordpress.com/2012/11/28/amasra/>

congressman said the plant was rejected, citing its location i.e. the same area as the already cancelled Bartın and Amasra plants. The EIA process for the Hema plant is still on going, even though it is located in the same area as the previously cancelled plants. Additionally, due to the low caloric value of the coal reserves (2000–3000 kcal), an enrichment plant is planned in order to reach a caloric value required for the boilers (TPP 6000–7000 kcal). The coal enrichment plant and its impacts are not assessed in the EIA report.

Moreover substantial information about the location of the tailings dam and ash treatment plans are missing. A port, capable of docking large ships, is planned in the village



Protests at an EIA meeting in November 2010, (Image: Bartın Platformu)

Gömü next to the power plant. A separate EIA is in progress for this project.

There are rumours that the company is currently seeking immunity from an EIA process by lobbying to have parts of the related regulations changed.

Questionable reserves

Since 1952, state-owned coal mines have actively explored the Amasra region, with peak production in the mid-80s totaling over 300 000 tonnes per year. In 1994 a privatisation decision on the company was issued but not executed. Since then, production declined to less than 100 000 tonnes per year up until the second half of 2000s, at which time the unexplored part of the reserve was granted to Hema.

Yet in spite of waning extraction, in 2005 Hema received the mining rights for another 20 years, with a possible extension for another ten, citing the region's vast coal reserves. At the same time, a 2011 report from the Turkish Court of Accounts about the state of operations at Amasra adds another layer of doubt about the prospects for coal exploration in the region, "...due to the geological nature of the area, full mechanization cannot be utilized, and the production is necessarily relying on human power" and continues "The sales price of coal is calculated according to importation costs, thus there is no possibility to increase prices" and "Revenues cannot even pay for labor costs, the unit is in constant loss..."²²

22 Turkish Coal Institution – Amasra Coal Plant Unit Year 2011 Report, Turkish Court of Accounts, <http://www.sayistay.gov.tr/rapor/kit/11TTKAmsy2011.pdf>

Hema claims that the Amasra coal mine project will extract five million tonnes annually, making it the largest coal mine in Turkey and Europe. The new coal exploration attempts to reach deep underground reserves, 75% of which are located between 250 and 1000 metres below the surface²³.

Environmental problems

The Amasra region faces a number of environmental problems from coal power developments. The coal deposits are located beneath the aquifer zone, and the risks of coal exploration on the drinking water have not been assessed nor discussed with locals. One greenfield exploration, the Kavşaksuyu – Selen Su field, is located in the area of a water reservoir that serves drinking water to 100 000 people every day²⁴. The chairman of Hattat Holding, the 29th wealthiest person in Turkey²⁵, has personally requested rights for the exploration of this reserve, according to a meeting with the Minister of Environment and Forestry, the governor, members of the Bartın congress and other local bureaucrats.²⁶ Two other deposits pose negative environmental impacts as they are situated close to the coast and can significantly impact the balance between salt and fresh water in the coastal basin.

The Amasra coast zone is recognized as a fish reproduction area by the Turkish environmental authorities. The thermal plant cooling system will use sea water and have significant impacts on fish reproduction, a process which has yet to be assessed.

Social issues

Since the first proposal for a coal power plant appeared in 1999, strong opposition has galvanized locals around this issue. Concerned citizens, with support from both the mayors of Amasra and Bartın and one of the two Parliamentarians from the region (the other from the governing party) organised the 'Bartın Platform' – a citizens' coalition against coal power plant developments in the region.

In 2010 the platform rejected an investment proposal at a public hearing on the EIA, stating in letters to the responsible state authorities that the region is designated for tourism development in regional spatial plans prepared by the state²⁷. If energy is to be produced here, it should come from wind power generation for which this region has the proven potential²⁸.

23 Bartın–Amasra Thermal Power Plant Report, 2008, Ankara, Union of Chambers of Turkish Engineers and Architects, <http://www.ivmedergisi.com/files/amasra2008.pdf>

24 According to Municipality of Bartın, who is responsible with this operation

25 <http://www.forbes.com/profile/mehmet-hattat/>

26 Bartın Congressman Yalçınkaya: Hema Wants The Kavşaksuyu Water. Online at <http://www.bartinhalkgazetesi.com/Haber.php?id=3871> (retrieved July 21, 2010)

27 For more arguments brought up against the coal-fired power plant, see Bartın Platform's 36 reasons for not granting a coal plant permission in Amasra: <http://www.bartınplatformu.org/bizden-haberler/196-36-soru> (TR).

28 The Amasra region is one of the two regions with the highest wind speeds. See this map by the Turkish State Meteorological Service http://www.mgm.gov.tr/FILES/arastirma/ruzgaratlası/107_tra9mart.jpg (TR) – The map is included in this website: <http://www.mgm.gov.tr/arastirma/yenilenebilir-enerji.aspx?s=ruzgaratlası>.

Since the closure of mining operations, Amasra focused on developing its touristic potential, investing in new ports, restaurants and accommodation. Local agriculture products and fish are offered in the markets and shops, and sometimes daily visitors to the region exceed 40 000 people. Annual statistics from the Bartın province suggest that 400 000 tourists seek accommodation each year, creating employment and providing business opportunities for the whole province. According to Mete Ayyıldız, owner of a well-known restaurant in Amasra, "I'm the third generation owner of this place, we are doing very well and we want Amasra to keep and protect a tourist-oriented economy".

Mining exploration has also brought with it unfair labour conditions. The Chinese company in charge of mining explorations, Datong, has hired Chinese workers with a wage of USD 100 per month, well under the Turkish minimum wage of about USD 400. In addition, due to poor safety precautions, accidents frequently occur during shaft construction, with the latest in June 2013 resulting in the death of one and the injury of two Chinese workers.²⁹ Even former miners are disillusioned about the possibilities for work in the mines or the power plant. Hema should have begun extraction in 2010, but so far no local coal has been produced, and only 40 people from the village of Tarlaağzı, three kilometres from Amasra, are currently working for Hema. The residents of Tarlaağzı have refused to sell their agricultural land for plant construction and related facilities.

Economic viability

According to the EIA, the 1320 MW planned power plant will require 3,389,200 tonnes of coal annually just one year after construction finishes. Hema claims it will extract 5 million tonnes annually, but the amount of coal supplying the thermal power plant will be much lower, as the local coal needs to be enriched.

There are thus doubts that local coal will be used at all due to the economic viability and technical difficulties, as described in the report cited above by the Turkish Court of Accounts. The production costs of local extraction are estimated between USD 80–150 per tonne, as the coal reserves are deep below sea level. Currently the world price for coal averages USD 60 per tonne. While Hema committed to begin extraction in 2010, production has yet to begin, raising questions about the technical feasibility of reaching these deposits.

So far one of the strongest arguments by the government in support of this greenfield development has been the use of local reserves. Yet concerns about the viability of exploring local coal reserves and thus the ability of investors to tap incentives reserved for utilising domestic sources to generate power could significantly call into question the economic sustainability of the project.

29 Stope Collapse in Amasra, 1 Dead, 2 Injured. Online at <http://www.bartın.info/guncel/page/guncel/amasrada-gocuk-1-olu-2-yarali-h8904.html> (retrieved June 11, 2013)

Case 2 – The power plants at Çatalağzı – a case of heavy environmental and social impacts with three new coal plants within 40 kilometres of the Amasra area

Project description

Çatalağzı in the province of Zonguldak is a traditional coal mining centre where the state electricity company has since 1948 managed two 150 MW units at the Çatalağzı Power Plant (CATES). Since July 2010, the private company ZETES (Zonguldak Eren Termik Santrali), owned by EREN (Eren Enerji Elektrik Üretim A.Ş.), has operated three units including one of 160 MW (ZETES-1) and two of 615 MW (ZETES-2). In 2012 Eren applied for a license for two new 660 MW units (ZETES-3). In total the surrounding villages and environment are threatened by 1690 MW of coal-fired facilities and another projected 1320 MW.

With the first unit completed in 2008, EREN contracted the remaining two to China National Machinery and Equipment Import and Export Corporation (CMEC), which brought around 1,500 workers from China to Çatalağzı.³⁰ Technology suppliers including Chinese boiler supplier Dongfang and turbine-generator Shanghai.

In 2009 EREN constructed a new coal port, the largest on the Black Sea with enough capacity for 170,000 DWT (deadweight tonnes) ships.

Environmental problems

Over the years a number of severe effects on people's health and environment have been identified. Around 20 percent of children are born with underdeveloped lungs, asthma and chronic obstructive pulmonary disease (COPD) widespread, and cancer rates are steadily increasing. Incidents of cancer were the subject of a state study that concluded these were due to "the frequent use of cigarettes," as quoted in the EIA for ZETES 3, rather than health impacts from pollution in the region.

The coal power stations burn a total of 17,000 tonnes of coal each day, releasing radioactive ash and heavy metals that pose risks to human health. Already in 2003 before the new plants began operations, the concentration of heavy metals in the region was estimated at two to five times higher than the average in Europe for iron, cobalt or arsenic³¹.

During the field visit other problems were observed – water contamination of the local tributary due to leaking ash, water treatment plants in the existing mine area, coal transportation infrastructure and with the storage of ash.

30 "Chinese workers live up the Turkish coal town" by Altay Atli <http://www.sarkekspressi.com/?p=150>

31 Mosses as indicators of atmospheric heavy metal deposition, around a coal-fired power plant in Turkey, Güray Uyar^{1*}, Muhammet Ören¹, Yılmaz Yildirim² and Mahir Ince, PSP

There is no ash landfill at the ZETES 1 and 2 plants, although this was a precondition in the EIA in order to secure an electricity license. A landfill for a typical coal fired power plant of 500–1000 MW requires about 30 to 60 hectares (74 to 148 acres).

A visit to the ash pond where ash and sludge are watered before landfilling revealed that this is not happening, raising concerns about the air pollution in the area. Sheep and goat herds graze on the edges of the pond, raising questions about the management of the area and measures to limit the contamination.

A study conducted by Hakan Kutoğlu from Zonguldak's Bülent Ecevit University indicates an increase in the surface and soil temperature of Çatalağzı by four degrees. Kutoğlu has warned against the potential consequences of the temperature rise on human health: "Experts from different research fields should investigate the consequences of the rise in temperature. The experts should also conduct studies about the effect of the thermal power plants on human health."³²

The owners of the EREN power complex have not fulfilled promises to launch a system through which the plant's flue gases can be monitored online by authorities. The plant also committed to heating houses in Çatalağzı using the cooling water from the power plants. An April 2012 report from the Scientific and Technological Research Council of Turkey (TÜBİTAK) shows that it is possible to heat some 1.5 million houses using cooling water from the ÇATES and EREN power complexes, preventing the emission of 5 million tonnes of carbon dioxide gas and 100,000 tonnes of sulfur dioxide.



*Fish entering the cooling system of the ZETES plant.
(Image: Bartin Platformu)*

The current heating system uses sea water, which can raise water temperatures and impact Black Sea flora and fauna. A video from January 2013 of the cooling system of the ZETES plant shows an enormous amount of fish entering the cooling system.

32 Zonguldak's thermal plants blamed for rise in cancer cases, 13/01/2013, <http://www.todayszaman.com/news-303858-zonguldaks-thermal-plants-blamed-for-rise-in-cancer-cases.html>

Because of the environmental problems with the current ZETES 1–2 plants and the quality of the EIA report, the EIA permit for the two new units was appealed in court by a local initiative committee. In April 2013 the court put the project on hold. Instead of appealing the court decision, EREN submitted a request to the environmental authorities to increase the current power capacity of one plant, which is a simpler procedure than acquiring an EIA permit for two new blocks.

Social issues

“Coal is our bread and butter” was the slogan that guided the development of the Zonguldak region for decades, and new coal developments normally are not met with local opposition. However during public consultations on the EIA for the ZETES plants, critical voices were present. Residents of Catalgazi, well aware of the negative impacts of the existing thermal power plant, asked for health analyses and regular monitoring of emissions³³. The failure of EREN to comply with EIA commitments has exacerbated local concerns. The court decision to suspend the EIA for the new ZETES–3 plant shows that the concerns of the local initiative committee are well founded.

Negative attitudes towards Chinese involvement are not yet visible, at least for now, but questions are being raised behind closed doors. Earlier this year, Harun Akin, a Parliamentarian from Zonguldak, brought the issue to the fore by questioning whether the deployment of Chinese workers was really necessary: “Importing workers from China at a time when there are a lot of unemployed in Catalgazi is questionable. Bringing technical personnel from China is one thing, importing workers to take advantage of cheap labour is another.”

33 <http://www.todayszaman.com/news-303858-zonguldaks-thermal-plants-blamed-for-rise-in-cancer-cases.html>

4 Conclusions

Cumulative environmental impacts

The Black Sea is one of the most remarkable seas in the world. While almost cut off from the rest of the world's oceans since the 1960s, eutrophication of the Black Sea has occurred because of excessive amounts of nutrients from rivers and coastal countries, leading to radical changes in the ecosystem. This has had a major transboundary impact on biological diversity and use of the sea, including fisheries and recreation³⁴. In 1992 countries located on the Black Sea signed the Convention on the Protection of the Black Sea Against Pollution. Article 11 of the Convention requires parties to adopt and harmonise legislation to prevent pollution activities on the continental shelf³⁵. The 2009 Strategic Action Plan for Environmental Protection and Rehabilitation of the Black Sea envisages the harmonisation of EIA and SEA procedures and environmental standards³⁶. Therefore it is surprising that no cumulative impact assessments have been done about the development of these 13 new power plants, including the three in Zonguldak already in operation, that will be operating in an area of just 80 kilometres along the Black Sea coast. All power plants will use sea water for cooling systems, with direct impacts on water quality from the operation of tailing dams and ash deposits, mining operations and the transportation of imported coal. Air pollution will also impact the fragile habitats in the area. For the 86 new coal plant projects in the pipeline, Turkey is also missing any attempt at a cumulative or strategic environmental impact assessment according to EU legislation.

Economics of the coal power plants development

Apart from the environmental impacts, the question remains about how this investment strategy will impact the energy sector and the country's economy. As the case studies above demonstrate, millions of tonnes of coal and lignite will be imported from undefined sources (and costs) abroad – Russia, Ukraine, South Africa, Brazil or Indonesia.

This dominance of coal in the energy mix might compromise the planned 30 percent increase in the share of renewables by 2030, which is reflected in Turkey's climate change action plan,

34 http://ec.europa.eu/environment/enlarg/blackseafactsfigures_en.htm

35 Art.11 from the Black Sea Convention. Pollution from activities on the continental shelf

1. Each Contracting Party shall, as soon as possible, adopt laws and regulations and take measures to prevent, reduce and control pollution of the marine environment of the Black Sea caused by or connected with activities on its continental shelf, including the exploration and exploitation of the natural resources of the continental shelf.

The Contracting Parties shall inform each other through the Commission of the laws, regulations and measures adopted by them in this respect.

2. The Contracting Parties shall cooperate in this field, as appropriate, and endeavour to harmonize the measures referred to in paragraph 1 of this Article.

36 http://www.blacksea-commission.org/_bssap2009.asp

where industrial and household energy intensities are projected to decrease by 20 percent. As the recent experience in Europe suggests, significant investments in renewables and energy efficiency will be undercut by the need to keep thermal (and nuclear) plants running, even when they are not necessary per se but merely maintained as “cold” energy reserves.

Internalising the costs of coal mining and electricity production disrupts most economic projections. Massive coal imports will bring another type of energy dependence for Turkey in a moment when renewable technologies are cheaper and more efficient than ever.

Financing

The Turkish financial sector is getting behind the twin objectives of the government to increase energy production and decrease import dependency, mainly through coal-fired power plants.

According to finance sector projections, 50,000 MW of power capacity is scheduled to be installed in Turkey by 2023. While funding for 20,000 MW has been secured, the remaining 30,000 MW has yet to confirm financing. The Turkish banking sector, though, is confident that it can provide the project finance and have identified domestic coal projects as one of their priorities.

International financial institutions (IFIs) including the World Bank, the European Investment Bank and the European Bank for Reconstruction and Development have supported Turkish energy developments, particularly as Turkey progresses in liberalising its energy market. The EBRD's country strategy for Turkey says: “Recent reforms in the energy sector – especially to promote private sector participation, energy savings and renewables – as well as in the areas of competition law, labour market efficiency, improvements in the business environment and promotion of regional trade reinforce the prospects for sustainable growth and development.”

Nonetheless, the stuttering competitiveness of renewable energy and energy efficiency measures, as a result of high subsidies for coal power plants (not to mention the impacts of climate change), are not discussed in by the IFIs in their strategic documents for Turkey.

Both the EIB and the EBRD have supported sustainable energy and investments to strength the competitiveness of the Turkish economy through support for Turkish financial institutions. Since 2009 the EIB has supported the Turkish financial sector with more than EUR 4 billion in credit lines, or roughly 44 percent of the bank's portfolio in the country. Key Turkish partners for both banks to date have been AkBank, DenizBank, FinansBank, GarantiBank, İşBank, VakıfBank and YapıKrediBank.

The same Turkish banks are also the main actors in the development of future coal power plants. For example, İşBank and Garanti Bank are the main financiers of Eren's plans for the development of the ZETES 2 and ZETES 3 coal plants.

Determining who are the final beneficiaries of EIB and EBRD investments in Turkey's financial sector is no easy task: such information is not publicly available, as in every country where these development banks do business. At the same time, both banks' assessment of their main partner banks is not available, in terms of their standards and capacity to deliver on European objectives. Both the EBRD and the EIB should be transparent about whether their loans to these financial intermediaries is supporting the construction of new coal plants in Turkey.



*Protests against coal power plants in April 2011
(Image: Bartın Platformu)*

Internalising the costs of coal mining and electricity production disrupts most economic projections. Massive coal imports will bring another type of energy dependence for Turkey in a moment when renewable technologies are cheaper and more efficient than ever.



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