

Assessment on behalf of

WWF

of the application for a provisional decision by

DONG ENERGY GMBH

in the permitting procedure for a

**HARD COAL FIRED
POWER PLANT IN LUBMIN
(MAX. 3700 MW)**

EXECUTIVE SUMMARY

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1. Executive Summary

On behalf of [WWF](#), Ökopol has examined the documents of the energy company [DONG](#) which has submitted an application for a provisional decision on the building and operation of a hard coal-fired power station with a nominal output of 1,600 MW (3,700 MW peak performance).

The analysis led to the following results:

- On the basis of its calculations, the applicant conveys the impression that the requirements of the Federal German Clear Air Guidelines (TA-Luft) are complied with. However, a share of the calculation bases is false, making its compatibility with the Clean Air Guidelines questionable.
- In accordance with the Federal German Immission Act, the impact on protected matter (man, vegetation, etc.) must be taken into account in the approval process. On multiple occasions this has not taken place, in particular with regard to the future burdening of the Greifswalder Bodden.
- DONG contravenes the [ESPOO Convention](#) which regulates that, in the case of projects which have significant impacts on neighbouring states, the impact in these states has to be taken into account; a pre-requisite for approval is environmental sustainability.
- DONG does not take into account obligations laid down in the [HELCOM Convention](#) (the goal of which is to minimise entry of particularly harmful substances such as mercury and dioxins into the Baltic Sea area).
- DONG does not take into consideration the [Water Framework Directive](#) (which has the better water quality of European fresh and coastal waters as its goal).
- The total propagation calculation by DONG was calculated using a level that was 9 % too high for the propagation velocity of the emissions, which leads to a greater distribution of emissions. The calculated atmospheric, soil and water burdens are thereby lower than are to be expected.
- It is not permitted for an increased emission velocity to be assumed at the planned location. This is only allowed when the flue is sufficiently isolated so that no tall buildings are to be found in a tenfold distance (1100 m). There are tall buildings at this location and more are planned. A correct propagation calculation would render higher burdens in these cases.
- The Environmental Impact Analysis of DONG demonstrates that the nitrogen input in woodlands already currently exceeds the critical burden levels 2- to 4.5-fold. Similarly, it was also established that there is already a critical burden today as a result of the planned gas and steam cogeneration plants, also in the case of the special protection areas which react very sensitively to nitrogen input. The calculation of the additional nitrogen burden by DONG assumes that the hard coal-fired power station emits less than 1 mg/m³ ammonia. However, a two- to fourfold quantity is realistic, especially since DONG has not provided the relevant technology and does not intend for the compliance of the level to be continually monitored.
- Therefore, the additional burden that can realistically be expected amounts to 6 % of the current quantity (DONG: 1.5%). The additional burden is substantial, meaning that woodlands and rare ecosystems with low nitrogen levels are endangered.
- DONG bases its assumptions regarding the deposition of ammonia over the endangered grassy areas on a velocity of 1.5 m/s. This does not correspond to a worst-case scenario for the endangered areas since two- to threefold deposition velocities are possible. An additional burden can arise hereby, amounting to 12 to 18 % of the current - and already critical -

burden. This results in a high hazard potential for woodlands and rare ecosystems with low nitrogen levels in the surroundings of the planned power station.

- No special measures for the separation of mercury and dioxins/furans have been planned by DONG at the location. Its stipulation that 75 % of the mercury in the electric filter will be separated is unrealistic. Such a separation level can only be reached in the case of low temperatures in the electric filter, which are not planned at the power station. Thus, it is to be assumed that at least 50 % will be emitted from the flue.
- DONG does not commit itself to an adherence to low mercury coal. Since the input of high-quality coal types with a low mercury content is regarded as the best available technology (BAT), DONG deviates from the BAT definitions in this case.
- Without a special mercury separation and without minimisation of the mercury content in the coal, it is expected that the atmospheric threshold level of 0.03 mg/m³ mercury will be substantially tapped during actual operation, with the result that up to 1.1 tonnes of mercury can enter the environment annually.
- Due to the main wind directions at the power station, approx. 550 kg of mercury emissions will be borne directly into the Baltic Sea. In the medium to long term, a large share of the remaining mercury will enter the Baltic Sea (via soil erosions and rivers). As a consequence, the Baltic Sea will be burdened with approx. 1 additional tonne.
- In this way, the planned power station conflicts with the obligations of the HELCOM Convention for the abatement of mercury emissions. Germany has committed itself to reducing the entry of harmful substances into the Baltic Sea. The power station increases the input levels substantially.
- Currently, Germany contributes approx. 30 kg to the mercury burden of the Baltic Sea via the air pathway. As a result of the planned power station, the mercury input in the Baltic Sea stemming from Germany increases 17-fold.
- The mercury content of the Baltic Sea and in particular in the Greifswald Bodden is already considerably too high. This is documented by assessments of sediments and fish (in particular predatory fish which are at the end of the food chain). The mercury input in the Bodden will be trebled by the power station planned by DONG, increasing from 4.5 kg annually to 13 kg annually. Near to the power station, the mercury input will treble, rising to 18 kg annually. In total, 12.9 kg of mercury would enter into the Bodden annually, i.e. 260 kg in 20 years.
- The additional emissions conflict with the goals of the Water Framework Directive which defines mercury as a substance that has to be reduced as a matter of priority. Currently, targets for the good quality of European waters are being determined. The target level to aim for is 50  g/litre mercury; as an alternative, the water quality can be assessed on the basis of the mercury content in fish, which should not exceed 20 µg/kg fresh weight. Currently, up to 250 µg/kg is being measured in the case of bass from the Baltic Sea. The average level of the examined bass in the Greifswalder Bodden amounts to 90 µg/kg; in the case of roaches, the amount is 110 µg/kg.
- The applicant has not drawn up the worst-case scenario required by law for basic atmospheric pollutants. The assumed emissions are set much too low. This is the case for all heavy metals except mercury and in particular for Benzo(a)pyren. Benzo(a)pyren indicates carcinogenic PAH (polycyclic aromatic hydrocarbons). The actual emissions of the substances can be eightfold higher than assumed in the application and are usually estimated as high as this in the worst-case scenario.

- The concentrations of carcinogenic PAH in the region would double in the worst-case scenario and the protective level would be tapped by up to 70 %. The pre-requisites for air quality in a seaside resort are thereby exceeded.
- The emissions arising from the power station which result from the present calculation also lead to considerably increased burdens due to heavy metals, especially cadmium, thallium and nickel. In the surroundings of the plant, an additional burden of up to 13.4 % of the protective level for human health was calculated. These inputs also burden the Bodden and the Baltic Sea to a substantial degree. The previous cadmium inputs in the Baltic Sea that were due to Germany can rise fivefold (+ 500 kg annually). The dioxin and furan inputs can double as a result of the power station (+ 2 g annually). These additional emissions also conflict with the HELCOM Convention, which intends an abatement of them.
- The measured levels logged over a six month period in Freest and Lubmin showed very high nickel concentrations in the dust deposits at both locations in December 2006. These exceed threefold the level regarded as the annual average for the safeguarding of health. The reasons for this were not identified. A quarter of the protective level was measured for the remaining 5 months. Impermissibly, the December level was not incorporated in the immission prognosis during the calculation of the maximum burden in the close surroundings. At the site of maximum burden, the total burden would tap the protective level by 81 %.
- In the case of Lubmin, the future burden from nickel was calculated at 76.6 % of the protective level (incl. the December level). With regard to the air quality at sea resorts, it is officially required that the atmospheric burden in all areas of the sea resort is generally tapped by less than 60 %. The impacts on the sea resort were not taken into account.
- The applicant did not analyse the impacts on the Bodden and the foodstuffs extracted from it which involve additional heavy metal and dioxin/furan emissions. Systematic data collection on the initial level of pollution in fish and sediments is lacking. Yet it is known that the initial levels of pollution in the Bodden is substantial, which prohibits - in conjunction with the obligations of the HELCOM Convention and the Water Framework Directive - further burdening by means of long-lasting contaminative substances.
- The power station does not correspond with the state of technology in many aspects. In particular, the best available technology is defined in the case of new coal-fired power stations as that which has daily levels of between 5 und 10 mg/m³ dust emissions. Yet a threshold level of 20 mg/m³ was proposed by the applicant, meaning that operational levels of 5-17 mg/m³ are to be expected. In terms of the annual average, approx. double the amount of dust will be emitted than would be the case if the best available technology were used (max. 375 tonnes annually instead of 750 tonnes).
- The low level of dust separation also means that use of the best available technology for the separation of dust-related heavy metals is not planned.
- The applicant has not committed itself to compliance with a maximum sulphur content in the coal. Yet the input of coal types which are low in sulphur is defined as the best available technology for abatement of SO₂ emissions.