

## Environmental and Social Data Sheet

### Overview

Project Name:	<b>Membrane Technology Environmental Conversion</b>
Project Number:	2016-0192
Country:	Spain
Project Description:	The project concerns the construction of a new membrane cell facility for the production of chlor-alkali with a capacity of 65,000 tonnes per year of chlorine and 71,500 tonnes per year of caustic soda, using Best Available Technology (BAT).
EIA required:	no – Annex II screened-out
Project included in Carbon Footprint Exercise <sup>1</sup> :	no

(details for projects included are provided in section: “EIB Carbon Footprint Exercise”)

### Environmental and Social Assessment

#### Environmental Assessment

The direct impact of the project on health and environment is considered to be significant, i.e.

- *Elimination of mercury emissions:* The use of the membrane technology instead of the mercury technology will result in the elimination of mercury emissions which amount to 0.7 g Hg per tonne of chlorine capacity<sup>2</sup>. The promoter will need to close two mercury units - one on the site in Torrelavega and another in Pontevedra. This will thus lead to an annual reduction of 68 kg of mercury emissions. Based on a vast number of scientific research on the health impacts of mercury exposure, a study on the effects of mercury cell chlor-alkali plants (MCCAP)<sup>3</sup> in Europe estimated the EU annual health benefits in the range of EUR 25-30 per gram of atmospheric mercury emissions eliminated<sup>4</sup>. The environmental benefits due to reducing mercury emissions are considered to be of the same order of magnitude as the estimated health benefits<sup>5</sup>. This would imply that phasing out the 68 kg mercury emissions from the promoter's MCCP would result in annual health and environmental benefits of at least EUR 2 million.
- *Reduced carbon footprint of the promoter's chlorine production:* The use of membrane cell technology has significant benefits in terms of specific energy consumption compared to the mercury based technology. Furthermore, the presence of the brine producer on site eliminates salt drying and brine transportation related GHG emissions. This will result in the reduction of the promoter's carbon footprint by

<sup>1</sup> Only projects that meet the scope of the Pilot Exercise, as defined in the EIB draft Carbon Footprint Methodologies, are included, provided estimated emissions exceed the methodology thresholds: above 100,000 tons CO<sub>2</sub>e/year absolute (gross) or 20,000 tons CO<sub>2</sub>e/year relative (net) – both increases and savings.

<sup>2</sup> [www.eurochlor.org/media/95274/annual\\_report\\_final-light.pdf](http://www.eurochlor.org/media/95274/annual_report_final-light.pdf)

<sup>3</sup> 'Status Report : Mercury cell chlor-alkali plants in Europe', Concorde East/West Sprl, October 2006

<sup>4</sup> Health benefits are based on neuro-developmental impacts – specifically loss of intelligence – of methylmercury exposure in the US due to fish consumption. The figure of €25/g Hg emissions eliminated is a conservative estimate based on human methylmercury exposure from both marine and freshwater fish.

<sup>5</sup> 'The impact of REACH on the environment and human health', DHI Water&Environment assigned by DG Environment, ENV.C.3/SER/2004/0042r, September 2005

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25% (estimation by EIB services) – from 1.1 to 0.8 tonnes CO<sub>2eq.</sub> per tonne chlorine produced

- *Integrated, more circular chemical site:* Being integrated into a larger scale industrial site enables synergies, resulting in improved material and energy efficiency and a maximised valuation/utilisation of the by-products produced on-site – i.e. hydrogen, water and steam. As such, the collaboration between the promoter and the salt mine leads to significant gains in productivity against other chlorine sites and significant reductions of waste streams, greenhouse gas and other pollutant emissions. An innovative element provided by this project is the recycling opportunity of the depleted brine – which will be used in the brine production process. This will result in further reducing waste water generation and water consumption on-site.

### **EIB Carbon Footprint**

Overall CO<sub>2</sub> emissions are mostly indirect (scope 2 emissions) – the estimated CO<sub>2</sub> emissions of the project in absolute terms are 41,000 tonnes of CO<sub>2eq.</sub> per year. The majority is associated with electricity consumption. Membrane technology is much more efficient than mercury cells; this will in fact mean a significant reduction of the absolute CO<sub>2</sub> emissions associated with the promoter's chlorine production – estimated at about 25%, as indicated above.

Other indirect CO<sub>2</sub> emissions result from steam consumption. The steam will be provided by Solvay which uses co-generation boilers for their own carbonates plant. This means the chlor-alkali use of steam is residual. The usage of hydrogen to offset fossil based steam production will further reduce CO<sub>2</sub> emissions.

### **Public Consultation and Stakeholder Engagement**

The environmental permitting process in the framework of the Industrial Emissions Directive has been launched, including the public participation.

The promoter publishes each year a sustainability report in accordance with the Global Reporting Initiative – Version 4: see <http://www.cuf.pt/en/sustainability> .

### **Other Environmental and Social Aspects**

The production processes are water dependent with high electricity and raw materials demand. The promoter is aware of its impact on resources and energy. By continuously monitoring the water, energy and raw materials consumption, as well as of the GHG emissions, the company has a clear view on its environmental impact and has been continually optimizing its processes to improve the water, energy and operating efficiency.

The quest for continued improvement and fostering the use of best practices led to the implementation of the following management systems:

- Certified under ISO 9001:2008 regarding its Quality Management System since 2003;
- Certified under ISO 14001:2004 regarding its Environment Management System since 2007;
- Certified under OSHAS 18001:2007 due to compliance with every requirement governing Workplace Health and Safety, as required under this international standard, since 2013;

The quantity of other atmospheric emissions, such as NO<sub>2</sub>, SO<sub>2</sub>, particles, CO, TOC and heavy metals is monitored; thereby ensuring average readings are within the legal limits for these emissions.

In 2015, the company continued with the Leak Detection And Repair (LDAR) program (under EN 15446:2008, EPA -453/R-95-017 and EPA 21), which started in 2008 and is designed to

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detect and eliminate fugitive emissions of volatile organic compounds. In the year 2015, the results of this program were reflected in a 44% decrease.

Due to the activities on site, accident prevention is key. The company's concern with regard to safety is reflected in the promoter's adherence to the Euro Chlor Safety Commitment guidelines and its full compliance with the Seveso III requirements.

## Conclusions and Recommendations

The project concerns the change of an existing installation within an integrated chemical site, with the proposed change in itself not exceeding any threshold as set out in Annex 1 nor will it lead to any significant adverse effects on the environment. For this reason the project is considered an Annex II activity under the EIA Directive which was screened out by the Competent Authorities - an Environmental Impact Assessment was thus not required. The chlor-alkali membrane cell electrolysis unit and ancillary equipment will be fully BAT compliant. The process for receiving the renewed Integrated Environmental Permit has been launched, including the environmental assessment and public participation procedure which form part of this permitting process.

The Promoter will undertake to timely inform the Bank on:

- the approval the Integrated Environmental Permit (IPPC permit) from the Competent Authorities as required under the EU Industrial Emissions Directive;
- the approval of the building permit, and;
- the decommissioning works and progress of the two mercury units in accordance with the IED requirements (Chlor-Alkali BAT Reference document 2014 - 2013/732/EU) as well as Regulation (EC) No 1102/2008 on the banning of exports of metallic mercury.

Considering the above, the project is acceptable for Bank's financing.