2018-IP06: Industry working towards a 2-degree target featuring the LEILAC plant official ground-breaking event

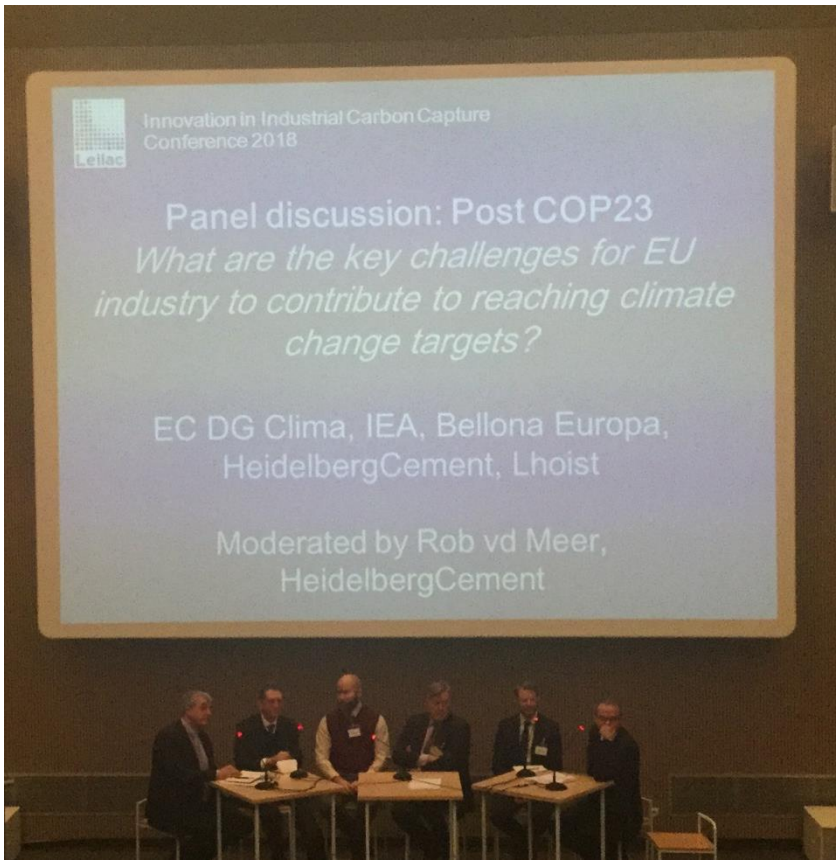
As part of the IEAGHG's focus on CO_2 capture on heavy emitter industries, I attended the LEILAC workshop which took place in Liege (Belgium) on the 7-8th February. LEILAC, acronym of Low Emissions Intensity Lime and Cement, is a R&D collaborative project funded under the H2020 framework (€12M with €9M in kind contributions). As part of their dissemination activities, LEILAC delivered a workshop covering the lime and cement industries and their approach to mitigate CO_2 emissions.

The first day's agenda opened with the overview from our colleagues from IEA, who commented on the investments on CCS in the last period and the reuse of CO_2 (released or not in the industrial site). HeidelbergCement highlighted on the promising technologies to achieve zero CO_2 emissions during the lifetime of the concrete, summarizing the use of green energy, production of surplus energy for its re-use, re-carbonation of the concrete after use and recycle as aggregates/sand in new concrete. After that, EuLa (European Lime Association) gave an overview of the lime production not only within the cement sector but in other industries such as iron and steel, chemicals production, or other construction materials. 70% of the CO_2 emitted during the lime production is due to the process itself, by means of the reactions involved. As part of a decarbonizing strategy, several measures can be implemented, such modification in the equipment (kilns), use of waste heat, energy recovery from hydration, increase of energy efficiency for electricity savings and use of a more environmental fuel. However, those strategies would represent a 13% of CO_2 reduction by 2050 and CCS&CCU become key approaches to decarbonize the lime sector. In that regard, access to public finance during learning and development phases together with consistent support and crosscutting activities along different sectors will inspire progress and integration of CCU. EC DG Climate Action introduced the 2020 and 2030 targets set up in 2014 by the European Council and how the funding scheme and enabling policy are working towards the development of CO_2 transport and storage cluster and national climate and energy plans.

During the afternoon, presentations about the LEILAC technology described more in detail the technical specifications and challenges. In this concern, LEILAC technology has been previously tested for magnesite and will be applied to the lime and cement production via a pilot plant (240 tons of raw meal/day for cement production). Aiming to capture the 95% of the process-related CO_2, the LEILAC technology is expected to be installed in the Heidelberg plant in April 2019 without significant impact on operability of the original cement plant. As main aspects to define within the project lifetime (2016-

2020), we can find the temperature, impact of corrosion and scale formation and calcination level. Finally, those characteristics will clarify the capital cost and the future of LEILAC technology for its scale-up and integration.

In addition to LEILAC initiative, ECRA presented their carbon capture project for the cement industry and the two production sites selected for demonstration, located in Colleferro (Italy) and Retznei (Austria), with 20.9 and 29.4 €M of estimated plant cost. While the consortium will continue working in technical and safety aspects of the oxyfuel operation and its reliability in the cement production environment in 2018, this project is pending on funding decisions for its implementation. In that concern, the EBRD (European Bank for Reconstruction & Development) presented their view on innovation in financing CCUS, including project examples such as the Egypt's cement industry and their estimations



During the second day, attendees had the opportunity to listen to the representative from Bellona, who explained a combination of decarbonizing solutions for the cement production. The challenging scheme would include carbon capture, international transportation infrastructure and CO_2 re-use not only for fuels production. Additionally, a presentation from Heidelberg-Cement about the role of the plant manager gave an interesting point of view of CCS in industrial environment, combining safety/health actions, environment issues, quality of the product and optimization of processes and costs.

During the afternoon, we were lucky to visit the Heidelberg cement plant, which offers a sustainable production and planned land for the LEILAC equipment. As highlight from our visit, the production manager emphasised the need of a circular economy in the process. For example, they use biomass from textile and plastic waste while selling the plastic waste from packing. Those details increase the revenue, making the process more profitable.

As main conclusion from this workshop, cutting down emissions in industry is essential to achieve the international environmental agreements. Carbon capture is indispensable to decarbonize industries as lime or cement productions but it must be part of a more complex but economically feasible scenario, which must include: enhancement of process efficiency, use of green fuels, implementation of a circular economy scheme, CO_2 transportation infrastructure and reuse of CO_2. As part of this initiative, LEILAC will demonstrate their emerging carbon capture technology within a cement

production environment. We are looking forward to seeing the advances of this system in the near future.

For more information on the LEILAC project: https://www.project-leilac.eu/

For more information on previous IEAGHG activities on CCS in the cement sector:
http://ieaghg.org/docs/General_Docs/Reports/2013-19.pdf
http://ieaghg.org/docs/General_Docs/Reports/2008-3.pdf

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