



76TH CAIRO CLIMATE TALK REPORT

Diversifying Energy Mixes: The Potential of Green Hydrogen

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On the 6th of July 2021, the Cairo Climate Talks (CCT) hosted their 76th panel discussion in which scientists, policy experts and private sector representatives from Germany and Egypt discussed the potential of investing into green hydrogen for the future.

Most governments have pledged carbon neutrality and joined the common targets of the Paris Agreement, as the climate emergency is no longer a matter of the future, but a reality. The commitments aim to combat impacts of climate change and mitigate the effects of emissions. Moderator of the panel discussion, Omar S. Ibrahim, stressed how these pledges now need to be translated into action.

He explained in the opening remarks that "where possible, electrification based on renewables is the most cost-effective and most efficient option for decarbonization. However, there are some sectors that have power needs which cannot be met by electrification. Industry and transportation make up 35% of global greenhouse gas emissions, which is where we find the hard-to-electrify end-uses. Iron and steel, cement, chemical production, along with heavy transportation such as shipping, aviation and heavy-duty trucks are all significant CO₂ emitting activities which are hard, or completely impossible, to electrify."

"TRANSITIONING THESE SECTORS TO ZERO CARBON NEEDS FRESH THINKING, BECAUSE WITHOUT ADDRESSING THESE HARD-TO-ELECTRIFY SECTORS, THE CLIMATE WILL CONTINUE TO WARM."

- OMAR S. IBRAHIM

Stefanie Sörensen, Deputy Head of German Development Cooperation in Egypt, opened the discussion on behalf of the Embassy of the Federal Republic of Germany. She stressed on the importance of building bridges between countries to tackle the big challenges of humankind, such as climate change. According to Sörensen, "global energy consumption is set to grow by 50 per cent by 2050; in developing countries and emerging economies it will increase by as much as 70 per cent; this means that green hydrogen is essential to a successful energy transition and to achieving international climate goals."

"Energy derived from green hydrogen is considered a revolution in the field of renewable energy" added Dr. Ahlam Farouk, Advisor and Head of Central Department for Energy & Enhancing the Industrial Environment, who opened the event on behalf of the Ministry of Environment of the Arab Republic of Egypt. She emphasized the importance of green hydrogen globally and for Egypt as "the best choice for the environment and an attractive solution to reduce emissions" and while it is still new in the Egyptian context, it has great potential when added to the Egyptian energy mix.

The German government has been committed to its Energiewende, transitioning from nuclear and fossil fuels towards renewable energy since the 1990s explained Dr. Kathrin Goldammer, Managing Director of Reiner Lemoine Institute. The German energy market was deregulated for EU integration and coupling it to other European markets, and hence encourages vital competition especially in green energy production. Supported by strong policy-measures and subsidies, 50% of Germany's energy demand is now sourced from renewable energies.

However, the phasing out of fossil fuels and nuclear energy (on a fast track since the 2011 Fukushima catastrophe) is starting to reach the industries hard to decarbonize. This is where green hydrogen comes in as an attractive solution – as it is more mobile than other energy sources.

As Martin Neussel, Head of the Joint Committee for Energy Efficiency (JCEE) at the German Development Cooperation (GIZ), underlined: "Green hydrogen is not an energy source, but green hydrogen is actually an energy carrier – as it converts a source of energy to be transported." What makes green hydrogen unique is that it "is produced solely and 100% by renewable energy, so there are no emissions produced, unless maybe through marine transport but pipelines will reduce this cost." As such it allows green energy to be used beyond its production site and offers new trade opportunities for the future and is hailed as one of the most promising solutions to lead global commitments to reduce emissions to success.

Egypt is looking at a double-win situation according to Dr. Nahla Ismail, Head of Renewable Energy Group at the Centre of Excellence at the National Research Centre (NRC). Firstly, its environment and climatic conditions offer yet untapped potential for renewable energy production (especially wind and solar), and secondly its strategic location between Africa, Europe and on the Suez Canal's access to Asian markets, makes it a vital player in global energy trade.

"EGYPT IS AT THE FOREFRONT OF CREATING FRIENDLY CONDITIONS FOR LARGE SCALE EUROPEAN INVESTMENT INTO GREEN HYDROGEN, AS THE EUROPEAN MARKETS HAVE A MUCH HIGHER DEMAND THAN NEIGHBORING COUNTRIES."
- DR. NAHLA ISMAIL

Proof of these investments are the recently announced Memorandum of Understanding (MoU) between Egypt and German company Siemens, as well as the planned MoU with thyssenkrupp Industrial Solutions. Egypt's Country CEO & Executive Board Member at thyssenkrupp Andreas Beckers joined the discussion and reinforced Dr. Nahla's statement. While he welcomed the increased competition around green hydrogen in Egypt and stressed the potential that comes with being adjacent to the European market, he also highlighted the pioneering role Egypt has in the field: "in the early 1950s the Suez high dam was using hydropower to produce green hydrogen – and then from green hydrogen to green fertilizers. What a great success story."

Martin Neussel cautioned the audience that sustainability is about reducing energy consumption through energy efficiency, but that industries that are difficult to electrify are looking at hydrogen as a solution – and not always green hydrogen, as hydrogen can be produced through nuclear or fossil energy sources.

While Germany has already introduced a National Hydrogen Strategy as well as a foreign policy approach through the initiative H2global, the panelists concurred that Egypt is currently implementing research facilities and conducting feasibility studies to soon announce their own green hydrogen strategy, offering regulatory measurements for emission rights and reduction certificates as well as reaching their own ambitious 2035 energy transition milestones.

MARTIN NEUSSEL

HEAD OF JOINT
COMMITTEE FOR ENERGY
EFFICIENCY (JCEE)
GERMAN DEVELOPMENT
COOPERATION (GIZ)

Martin Neussel is currently the head of project for the GIZ project the Egyptian-German Joint Committee on Renewable Energy, Energy Efficiency and Environmental Protection (JCEE) and co-chair of the Development Partners Group Energy and Environment. He has been an advisor to e.g. the EU, BMWi, BMU and BMZ, focusing on policy dialogues, knowledge management on low emission strategies in the MENA region (DIAPOL-CE), and worked for the German Energy Agency (dena) on Energy Efficiency and Renewable Energy in the German Energy Transition.

He has a combined background in Mechanical Engineering with a special focus on Renewable Energy as well as in Applied Environmental Sciences.

Andreas Beckers is the Country CEO and Executive Board Member for thyssenkrupp Industrial Solutions Egypt, effective February 2021. His career with Uhde in 1995, chemical plant engineering entity within the thyssenkrupp and has held a number of managerial functions during his 26-years at thyssenkrupp, such as e.g. Head of Business Development & Opportunity Management and Corporate Spokesman.

Andreas Beckers studied Chemical Engineering at R.W. Technical University Aachen, Germany, and graduated in 1994 as Diplom-Ingenieur.

ANDREAS BECKERS

COUNTRY CEO & EXECUTIVE
BOARD MEMBER
THYSSENKRUPP INDUSTRIAL
SOLUTIONS EGYPT

DR. NAHLA ISMAIL

HEAD OF RENEWABLE
ENERGY GROUP CENTRE
OF EXCELLENCE
NATIONAL RESEARCH
CENTRE

Dr. Nahla Ismail is a Professor in Nanotechnology and Renewable Energy materials at the National Research Center. She worked on hydrogen storage at the EU project FUCHSIA (Part of the 5th Framework Energy Program), at TU Darmstadt, and as principal investigator in 5 international scientific grants. She received her Ph.D. in Materials Science and Engineering from Technical University Dresden.

Dr. Ismail was awarded the best young chemist in Arab world 2011 from the Organization for Women in Science for the Developing Country (OWSD) and earned Misr Elkhir Awards for best publication in 2010 and 2011, she also supervised several Master and PhD students.

Dr. Kathrin Goldammer is Managing Director of Reiner Lemoine Institute and is responsible for scientific and financial management. She is an expert in energy technology and management and has many years of experience in the energy sector, energy policy, and policy advice. She is a former board member and current Regional Manager of Hydrogen Power Storage & Solutions East Germany e. V. (HYPOS) and was a founding member of the [Women in Green Hydrogen](#) network in 2020.

Dr. Goldammer holds a Diploma in Electrical Engineering from TU Berlin and received her PhD in Physics from Humboldt Universität zu Berlin in 2007.

DR. KATHRIN GOLDAMMER

MANAGING DIRECTOR
REINER LEMOINE INSTITUTE

BACKGROUND INFORMATION:

Cairo Climate Talks are conceived, organized and hosted as a cooperation between the German Embassy in Cairo, the Egyptian Ministry of Environment, the German Academic Exchange Service (DAAD) and the German Corporation for International Cooperation (GIZ).



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