Hybrid Event:

The potential of Osmotic Energy to produce clean permanent electricity and green hydrogen - Accelerating the European Union's energy transition

Tuesday 5 July 2022, 13:00 – 14:30 CEST

Hybrid event organized at the European Parliament, Strasbourg – Room N2.1 / WebEx

Co-hosted by MEP Maria da Graça Carvalho & MEP Christophe Grudler

Speakers:

- **MEP Maria da Graça Carvalho**
- **MEP Christophe Grudler**
- **Carlos Morais Pires,** Cabinet Member of European Commission for Innovation and Research
- **Nicolas Heuzé,** Co-founder & CEO, Sweetch Energy
- **Alessandro Siria,** Researcher at France's national scientific research centre (CNRS)
- **Frédéric Storck**, Director of Energy transition and innovation at Compagnie Nationale du Rhône (CNR)
- **Dr. Frank Neumann**, Director, Institute for Infrastructure, Environment and Innovation (IMIEU)
- **Vincent Berrutto**, Head of B5 Unit on "Innovation, research, competitiveness, and digitalization", DG ENER, European Commission

Welcome Remarks

MEP Maria de Graça Carvalho

"Without the help of technological solutions, the Europeans are not prepared to change their lifestyle"

MEP Ms. da Graça Carvalho stressed that one of the biggest challenge is to obtain clean, affordable and available energy for all of the Europeans. **It is important for the climate, the economy, but also for peace in Europe**. She emphasised that osmotic energy is a solution that needs to be scaled up and enter the market. Moving on, she regretted that the EU did not set the same ambitions on developing research, innovation and technology. To conclude, she stated that "*without the help of technological solutions, the Europeans are not prepared to change their lifestyle*".

MEP Christophe Grudler

"The deployment of renewable energies is no longer an option but a must to reach our climate neutrality objectives by 2050"

MEP Mr. Grudler stated that "***the deployment of renewable energies is no longer an option but a must to reach our climate neutrality objectives by 2050***". Moving on, Mr. Grudler mentioned his priority to support domestic market and its actors. In this regard, osmotic energy "*is the most promising energies of the years to come*". As shadow rapporteur for the revision of RED, **Mr. Grudler** announced that **a target for innovative technologies has been included in the compromises ahead of the Industry Committee vote which includes a definition of osmotic energy identified as renewable energy**.

Introductory Speech

***Carlos Morais Pires**, Cabinet Member of European Commissioner for Innovation and Research*

> **"Not only there is a need for political intention to implement hydrogen energy, but also investments of Horizon Europe to accelerate the transition to doubling the transition"**

Mr. Morais Pires stated that there is a need for investments and use of innovation for energy transition. Moving on, he underlined that **within the Fit for 55 package, a part is dedicated to the use of hydrogen and its potential in terms of energy production**. Moving on, Mr. Morais Pires mentioned that "*not only there is a need for political intention to implement hydrogen energy, but also investments of Horizon Europe to accelerate the transition to doubling the transition*". In this regard, he mentioned that it is expected to bring together all stakeholders that would like to invest on research and innovation.

Presentations

***Nicolas Heuzé**, Co-founder & CEO, Sweetch Energy*

> **"Energy transition cannot wait. Sweetch Energy's goal is to make osmotic energy available at a large scale in 2024"**

Mr. Heuzé emphasised that osmotic energy is a domestic energy, zero emission, permanent massively available and so far intact. Moving on, he mentioned that **Sweetch Energy took advantage of the nanotechnology breakthrough to develop nano-scale membranes** which allow to generate much higher current. Moving on, Mr. Heuzé emphasised that the technology INOD (Ionic Nano Osmotic Diffusion) used by Sweetch allows to unlock the potential of osmotic power. Moving on, he stated that "*energy transition cannot wait. Sweetch's goal is to make osmotic energy available at a large scale in 2024*". To conclude, he underlined that **blue osmotic energy represents a massive option for energy transition**.

***Alessandro Siria**, Researcher at France's national scientific research centre (CNRS)*

> **"Osmotic energy can be used as electricity power plant but also for other applications such as the production of hydrogen and green hydrogen"**

Mr. Siria stated that to understand osmotic energy, it is necessary to understands how fluids behave. He affirmed that focusing on small scale fluids behaviour allow to take benefits and develop new tools. In this regard, he mentioned that a fundamental breakthrough have been made in using novel class of nano-scale materials. Mr. Siria stated that "**the use of fluids at the nano-scale is a direct and short path between fundamental and the lab and application**". Moving on, he underlined that what makes osmotic energy interesting is the amount of salty and fresh water that can be used and translated in a very large value of potential energy using worldwide. Finally, Mr. Siria stated that the problem is that ***"to go to the lab from industry, there is a need to scale up and create useful material for real-size membranes"***. To conclude, he stated that "***osmotic energy can be used as electricity power plant but also for other applications such as the production of hydrogen and green hydrogen***".

***Frédéric Storck**, Director of Energy transition and innovation at Compagnie Nationale du Rhône (CNR)*

> "**It is necessary to develop renewable electricity but the time has come to develop flexibility and storage means in order to get the most value out of these energies**"

Mr. Storck mentioned that **CNR's interest in osmosis is the mix of electricity generation that potentially meets their six strategic ambitions for 2030**. The first mission is to develop the Rhône and its many uses in a responsible manner. Second is to accelerate the production of renewable energy. Third, develop the storage and flexibility of renewable electricity. In this regard, he stated that "***it is necessary to develop renewable electricity but the time has come to develop flexibility and storage means in order to get the most value out of these energies***". Fourth, increase the company performance. Fifth, increase the company's performance which includes working with different start-ups to obtain new technologies in order to achieve those targets. Finally, **support territory in meeting climate challenge**. As an

energy provider, Mr. Storck stated that the aim is to contribute to accelerating the development of renewable energies to meet the objectives of the Paris Agreement as well as to develop complementary electricity production.

Dr. Frank Neumann, *Director, Institute for Infrastructure, Environment and Innovation (IMIEU)*

"Not only osmotic energy is a renewable power generation but a circular economy promoting environmental improvement and employments"

Dr. Neumann stated that "*osmotic energy is not only a technology for renewable electricity generation but it can also include circular economy approaches, promoting environmental improvement, being integrated in already existing water management infrastructure of a site, and with it promote local employment*". Moving on, he mentioned that **it is not easy to go from the lab to the market and produce osmotic energy, as was the experience of the demonstration projects partly already financed by the European Union, in natural environment, and existing infrastructure at sites in The Netherlands, Denmark, Italy up to date**. Good news of these projects is that even in delicate natural environments, with the right mitigation measures the environmental effects of Osmotic Energy are benign, even for production at larger scale. He underlined that dealing with natural waters, in contrast to fluids in the lab, can be challenging. First, regarding the technology to pump / pass large volumes of water passing through the modules can be challenging with the membranes. Second, the composition of the water as it is not the same in every river and seas and may need each time fine tuning. Another challenging aspect is to develop the membranes at a low cost but at the same time, at a high quality level. In order to accelerate development of Osmotic Energy, a close collaboration, focused on upscaling between the different partners as started on the international INES platform is highly advisable to reduce investment risk in order to learn from prior experience In this regard, Dr. Neumann stated that ***"the current and proposed policy and regulation offers a strong new stimulus from lab to market".***

Vincent Berrutto, *Head of B5 Unit on "Innovation, research, competitiveness, and digitalization", DG ENER, European Commission*

"While the 2030 targets can be met with existing technologies, the 2050 zero emissions require developing new clean energy solutions"

Mr. Berrutto stated that to achieve the aim of 40% of renewable in the final EU energy consumption by 2030, the Commission proposed to scale up and speed up renewable energy in every sectors. However, he underlined that "***while the 2030 targets can be met with existing technologies, the 2050 zero emissions require developing new clean energy solutions***". In this regard, osmotic energy can often permanently supply electricity while offering growth and jobs in Europe. To conclude, he stated that **it is important to exploit all the instruments to support innovators for moving from the lab to the market**.

Closing Remarks

MEP Christophe Grudler

"The EU needs to support the technology from the lab to the market"

Mr. Grudler recalled that innovation, research and development are needed in Europe and that there is a need to embrace the EU's leadership. To conclude, he emphasised that "*the EU needs to support the technology from the lab to the market*".