



Opening Statement

Joint Committee on Enterprise, Trade and Employment

Further Scrutiny of the EU Legislative proposal for the Net-Zero Industry Act.

Wednesday 5th July 2023

Chair, members of the committee, TDs, and Senators, thank you for the invitation to contribute to today's important discussion regarding the EU Legislative proposal for the Net-Zero Industry Act.

By way of background, I am the Director of the AMBER research centre and Professor of Surface and Interface Chemistry at the School of Chemistry, Trinity College Dublin. I am joined here today by my colleague Amy Sweetman who is our Communications and Public Affairs Manager. **AMBER** is the SFI (Science Foundation Ireland) Centre for Advanced Materials and BioEngineering Research. The Centre brings a multidisciplinary partnership between leading academics in Advanced Materials Science, BioEngineering and Industry. As well as the academic lead for the centre, much of my work centres on sustainability and the circular economy. I work with the ISO and CEN (global and European standard agencies) through our own NSAI developing standards for the circular economy which will start to be implemented by 2025. I also work with AMI 2030 on the role of materials in achieving net-zero.

AMBER are at the forefront of driving advances in materials science and bioengineering and translating research excellence into new discoveries and devices. Our research develops technology to address industrial and global challenges from novel data processing and memory applications, energy storage and energy-efficient devices, regenerative medicine, and drug delivery systems through to sustainability of materials and associated technologies towards supporting key national targets such as our zero-carbon 2050 target.

Established in 2013 and now in its 10th year AMBER will seek renewed funding at the end of 2023 with the aim of continuing and advancing our important materials science research and becoming a centre of excellence.

For clarity, although everyone here is well aware of these facts, and anyone on this planet is a stakeholder when it comes to the climate, it is pertinent to outline, why Net Zero? To my mind the United Nations summarises it best, "The science shows clearly that in order to avert the worst impacts of climate change and preserve a liveable planet, global temperature increase needs to be limited to 1.5°C above pre-industrial levels. Currently, the Earth is already about 1.1°C warmer than it was in the late 1800s, and emissions continue to rise. To keep global warming to no more than

1.5°C – as called for in the Paris Agreement – emissions need to be reduced by 45% by 2030 and reach net zero by 2050”. Recent IPCC (Intergovernmental Panel on Climate Change) data suggests that the 1.5°C target is very likely to be missed without accelerating actions. Of particular relevance is Ireland’s missed 2020 target goals (a targeted 20% cut of 12.2 million tonnes of carbon dioxide, or 25% of our 2020 target) despite several COVID19 related lockdowns limiting transport. In 2021 our emissions increased by more than 5% on 2020 figures. Of particular relevance today is the stark fact that in 2021 emissions from energy generation increased by 17.6% on 2020 figures largely due to an increase in coal use (+245% increase) and a decrease in renewable energy for electricity generation (EPA data).

Because of these stark facts, AMBER generally welcomes the Net-Zero Industry Act however before this EU legislation progresses there are distinct issues with the current proposal that must be addressed. The first is that this act focuses on building a strong and resilient renewable energy solution (materials and products) supply industry in the EU with technologies being manufactured in the region. This becomes somewhat unclear in the proposal and the challenges are under-estimated.

You will have read our submission which outlines several such issues, but for the purpose of this initial discussion we will briefly outline the main issues as we would see them.

Technologies identified with the Act are comprehensive, including

1. Solar photovoltaic and solar thermal technologies,
2. Onshore wind and offshore renewable technologies
3. Batteries / storage technologies
4. Heat pumps and geothermal energy technologies
5. Electrolysers and fuel cells
6. Sustainable biogas/biomethane technologies
7. Carbon capture and storage (CCS) technologies
8. Grid technologies

However, these technologies should be prioritised (particularly in Ireland), i.e. where can investment provide the quickest and most extensive contribution to emission reduction? Where can we develop industry opportunities around material, component, and product manufacture?

A summary is required of each technology in terms of:

- A. *stage of development and ease of deployment,*
- B. *its estimated importance as a contribution to energy demands and*
- C. *the research that is needed.*

Independent assessment of the technologies should be seen as an important parallel activity.

Pillars 1 and 2 of the Act both mention technologies for CO₂ abatement which is not explicitly related to renewable energy production. We recognize that all forms of renewable energy are not carbon neutral requiring carbon intensive materials and technologies with downstream impacts in material end-of-life, disposal and raw material depletion. Both CO₂ capture and storage as these Pillars mention, is a vital consideration for climate change reversal however it would be our recommendation that CO₂ be legislated for separate to this Act. In the near-term, it does not offer a solution to direct energy emissions and is unlikely to make fossil fuel energies sustainable.

Regarding Pillar 4 and the need for enhancing the workforce. We welcome the recognition that a ‘new’ highly trained and educated work force is needed but we have reservations around the

required education and training being carried out through as of yet poorly detailed Net-zero Academies. A focus on delivering training from current suppliers should be prioritised.

Pillar 5 is of direct relevance to research providers in Ireland and Europe. Many of the proposed technologies are early stage, low TRL and practical solutions at demonstration and even laboratory levels. How might research priorities be identified and how might they interface to the Net-zero academies? We need much closer links to innovation actions, policies and funding in this space.

We will also point out that there are barriers to this policy, many of the critical raw materials are from outside the EU, there are supply chain challenges in terms of existing channels for integrated circuits, materials including plastics/adhesives/metals as well as components and products. We would also see issues because the down stream effects of these technologies have not been considered including the circularity of materials and components and their end-of-life.

We would also emphasise that this act should not be seen as a route to climate compliance. Energy is about one third of Ireland's greenhouse gas emissions. This act focusses on electricity supply but electricity cannot meet the energy demands for all industry sectors. The act is based on EU policies driving towards 70 and 80% of all electricity generation through non-fossil sources by 2030 and 2050 respectively. This could result in a 70% decrease in energy related emissions by 2050 but this now emphasises the critical need for changes in industry, agriculture and construction.

Finally, we welcome the opportunity to contribute to today's discussion which we hope will be the first of many interactions between the scientific community and legislators not just on this piece of legislation but on policy going forward.