Moving forward with a science-based EU Taxonomy for hydropower

Eurelectric WG Hydro views on the final recommendations of the Technical Expert Group on Sustainable Finance

May 2020

Eurelectric represents the interests of the electricity industry in Europe. Our work covers all major issues affecting our sector. Our members represent the electricity industry in over 30 European countries.

We cover the entire industry from electricity generation and markets to distribution networks and customer issues. We also have affiliates active on several other continents and business associates from a wide variety of sectors with a direct interest in the electricity industry.

We stand for

The vision of the European power sector is to enable and sustain:
- A vibrant competitive European economy, reliably powered by clean, carbon-neutral energy
- A smart, energy efficient and truly sustainable society for all citizens of Europe

We are committed to lead a cost-effective energy transition by:

investing in clean power generation and transition-enabling solutions, to reduce emissions and actively pursue efforts to become carbon-neutral well before mid-century, taking into account different starting points and commercial availability of key transition technologies;

transforming the energy system to make it more responsive, resilient and efficient. This includes increased use of renewable energy, digitalisation, demand side response and reinforcement of grids so they can function as platforms and enablers for customers, cities and communities;

accelerating the energy transition in other economic sectors by offering competitive electricity as a transformation tool for transport, heating and industry;

embedding sustainability in all parts of our value chain and take measures to support the transformation of existing assets towards a zero carbon society;

innovating to discover the cutting-edge business models and develop the breakthrough technologies that are indispensable to allow our industry to lead this transition.

Dépôt légal: D/2020/12.105/25

WG Hydro

Contact:
Martin Schoenberg, Advisor – Hydropower,
mschoenberg@eurelectric.org

Moving forward with

a science-based EU Taxonomy for hydropower

A Eurelectric WG Hydro position paper May 2020

KEY MESSAGES

The Technical Expert Group (TEG) report is an additional step in creating a common language for public institutions, private investors and markets participants. The TEG Report recognises the decisive role that electrification will play to decarbonise the economy, supported by reliable electricity infrastructure and equipment. Meeting the objectives of the Paris Agreement will require a deep decarbonisation of the EU economy. The electricity industry is already actively contributing to this effort and committed to become carbon-neutral well before 2050. To achieve such ambition, our Decarbonisation Pathways study shows that a significant ramp-up of investments is required to reach 80-95% EU economy decarbonisation before 2050. To achieve this decarbonisation, around EUR°100°billion per year will have to be invested into generation and storage facilities from 2020 to 2045.

The Technical Expert Group (TEG) on Sustainable Finance released on 9 March the final version of the EU Taxonomy Report. With this document and its Annex, independent experts have provided recommendations to the European Commission, supporting the elaboration of an EU-wide classification tool to identify environmentally sustainable activities. **After a thorough assessment with our members and experts, we believe that especially the criteria proposed for hydropower[1] still have several shortcomings. Therefore, we call on the European Commission to consider the following points, when developing the Taxonomy Regulation implementing rules as well as when specifying requirements by delegated acts:**

- While remaining technology open, the taxonomy should drive investments into carbon-neutral and low-carbon energy sources, enabling the energy transition towards a renewable based energy system. One of these key sources is renewable and flexible hydropower, making an essential contribution to efficiently achieving the goals of the 2030 climate and energy framework as well as the 2050 long-term strategy. In this context, **we heavily oppose the view of hydropower being categorised as a transitional activity.**

- **The TEG report and its Annex fail to put forth a technology-neutral approach for renewable energy sources, as defined in RED II[2], and simultaneously neglect the scientific fact that no single power generation technology will ever achieve net 0 lifecycle emissions**, unless negative emission technologies will be applied (even in case there are no generation related emissions as it is the case for renewables like wind, solar and hydropower, there will always be emissions due to the manufacturing of equipment, transport, construction, dismantling, etc.).

[1] Eurelectric has provided already several input, reflecting the specific role of hydropower in Europe: Eurelectric position paper on the draft TEG report, the additional Eurelectric input submitted on 29 October, Information on Hydropower in Europe, Eurelectric reaction to the final TEG report as well as the Eurelectric answer to Taxonomy Inception Impact Assessment Consultation.

[2] Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (Text with EEA relevance.)

- **All electricity storage technologies, including pumped storage, should also be seen as an economic activity, making a substantial contribution based on their own performance, and not only as an enabling activity.** This is due to the fact that storage technologies, providing flexibility as well as essential system services, can and will compete on all relevant markets with other flexibility providers.

- **The TEG report and its annex fail to put forth a technology-neutral approach for electricity storage technologies.** All electricity storage technologies should be automatically eligible under the EU Taxonomy: This should also be the case for pumped storage, which is currently the only electricity storage technology of the TEG report that has to fulfil specific requirements.

- **On the basis of technology-specific standard values for life-cycle emissions, technologies that have sufficient evidence of being far below or far above the threshold of 100°g°CO_2eq/kWh should be exempted from any additional assessment.** Hydropower projects – with worldwide median lifecycle emissions of 24 g°CO2eq/kWh[3] – are well below the threshold of 100°g°CO_2eq/kWh. On this basis, investments into new as well as existing hydropower projects should be exempted from any greenhouse gas (GHG) assessment.

- **The exemption for hydropower facilities with a power density above 5°W/m^2 to conduct the PCF or GHG Lifecycle Assessment is welcomed but further clarification concerning the practical application of the power density threshold is needed**. In addition, we would like to point out that another flaw of the suggested methodology is that all possible adverse effects are attributed to hydropower, without considering the multi-purpose uses of many reservoirs.

- Hydropower is a technology which is tailor-made to a specific context. Possible adverse effects are always plant and water body specific. This means that size is not and has never been an appropriate criterion to judge whether a hydropower project is sustainable or not. No distinction should be made between micro, small, medium or large hydropower as possible positive as well as adverse effects of a plant are always site specific and cannot be related to the size of a project. **The TEG recommendation to avoid the construction of small hydropower under 10 MW should therefore be neglected.**

- Within the European Union, there is a strong environmental legislation in place: Eurelectric and its members are fully committed to the current environmental targets and objectives. As hydropower is very site-specific, ecological measures to be implemented are usually decided on a case-by-case basis by local authorities, in accordance with regional planning laws, River Basin Management Plans or protection areas. **Therefore, we call the European Commission to refer within the Taxonomy Regulation implementing rules only to existing European Union environmental legislation, that is according to recently concluded evaluations fit for purpose. It is crucial that environmental measures are and will be decided on a case-by-case basis: in order to guarantee the ecological and economic effectiveness of site-specific environmental measures, it is crucial to base them on proven scientific results, with a cost-benefit analysis (CBA) at the centre of the decision.**

[3] Most recent UN's Intergovernmental Panel on Climate Change (IPCC) data:
Schlömer S., T. Bruckner, L. Fulton, E. Hertwich, A. McKinnon, D. Perczyk, J. Roy, R. Schaeffer, R. Sims, P. Smith, and R. Wiser, 2014: Annex III: Technology-specific cost and performance parameters. In: Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

Technical Expert Group Report

The following feedback and comments follow the specific sections of the Technical Expert Group Report and its Annex, suggesting mitigation and DNSH criteria for hydropower.

For each environmental objective, the Taxonomy Regulation recognises two distinct types of contributions that can be considered Taxonomy-aligned; Economic activities making a substantial contribution based on their own performance as well as enabling activities. We welcome the inclusion of the concept of "enabling" activities in the TEG's recommendations - mirroring the Taxonomy Regulation. This concept is a positive evolution, especially for the manufacturing of "low-carbon technologies" (i.e. the manufacturing of products, key components and machinery that are essential for hydropower plants).

However, we do not understand why an additional category of "transitional activities" is introduced by the TEG report without giving further justification. **We heavily oppose the view of hydropower being seen as a transitional activity** – as it is already the case today, it will play a crucial in the energy transition and significant and indispensable shares in the electricity mix will always come from renewable hydropower generation, clearly outlined in various roadmaps and scenarios, such as the Eurelectric Decarbonisation Pathways[4].

All electricity storage technologies, including pumped storage, should also be seen as an economic activity making a substantial contribution based on their own performance, and not only as an enabling activity. This is due to the fact that storage technologies[5], providing flexibility as well as essential system services, can and will compete on all relevant markets with other flexibility providers, such as dispatchable generation assets (like reservoir storage hydropower, storing natural inflow of water in natural or artificial reservoirs for several days, months or even years) or demand side management (prosumers/active consumers with their PVs, EVs and residential batteries). As storage technologies secure a constant electricity supply at all times as well as system stability like other flexibility providers, their role should not be reduced to mere enabling activities.

Technical Expert Group Report – Annex

Mitigation criteria – Metric & Threshold

The new metric proposed (ISO 14067) for the life cycle assessment (LCA) of electricity production activities is a step forward. With the new standard, the focus has now shifted from a management-oriented approach (reflected by ISO 14044 previously used) towards a product perspective. This is positive but we still strongly believe that this standard does not give sufficiently detailed advice on how or what exactly would be required in a LCA analysis. Therefore, we recommend to complement the selected ISO standard with other relevant ISO standards depending on the technology in question and to explore the possible use of existing international standards for Life Cycle Assessment.

As mentioned during the September 2019 consultation, **the proposed LCA should be uniformly applied in form of technology-specific standard values instead of project-specific individual assessments to avoid unnecessary administrative burden**. On the basis of those technology-specific standard values, technologies that have sufficient evidence of being far below or far above the threshold of 100°g°CO_2eq/kWh should be exempted from the LCA assessment. **On this**

[4] https://cdn.eurelectric.org/media/3457/decarbonisation-pathways-h-5A25D8D1.pdf

[5] The LTS of the European Commission estimates that pathways that focus more on electrification in end-use sectors will see a need for high deployment of storage (of about six times of today's levels) to deal with the variability in the electricity system.

basis, investments into new as well as existing hydropower projects should be exempted from the LCA assessment.

The TEG report and its annex miss to put forth a technology-neutral approach for renewable energy sources, as defined in REDII[6], and simultaneously neglect the scientific fact that no single power generation technology will ever achieve net 0 lifecycle emissions, unless negative emission technologies will be applied (even in case there are no generation related emissions as it is the case for renewables like wind, solar and hydropower, there will always be emissions due to the manufacturing of equipment, transport, construction, dismantling, etc.). The TEG criteria trying to assess climate change mitigation are not technology neutral for renewable energy sources, as hydropower faces specific criteria. The criteria also lack to reflect the benefits of hydropower as a low-carbon backup technology for variable energy sources in order to secure a continuous supply of electricity.

The exemption for hydropower facilities with a power density above 5°W/m² to conduct the PCF or GHG Lifecycle Assessment is welcomed. A derogation for hydropower facilities should be kept in the future as recent scientific data clearly show that hydropower projects – with worldwide median lifecycle emissions of 24°g/°CO_2eq/kWh[7] – are well below the threshold of 100°g°CO_2eq/kWh, whereas an average hydropower facility apparently has lower life cycle emissions than the average PV facility, and is similar to the average wind farm (in this context, please see especially the Eurelectric input to the draft TEG report related to hydropower and the additional Information on Hydropower in Europe).

Further clarification concerning the power density threshold is needed. It is not clear how this threshold should be applied:

- The area (m^2) for the power density is not defined (area currently under water, average area flooded, etc.). Especially for run-of-river power plants, it remains unclear where exactly the reservoir area begins and ends.
- The G-RES tool uses the flooded reservoir area for emission calculations but the total reservoir area for power density.
- No advice is given how the power density criterion should be used for complex hydropower systems, such as storage and pumped storage systems with multiple reservoirs, single power plants with multiple reservoirs upstream, or cascade hydropower plants.
- The power density threshold cannot be applied in case hydropower technologies without a dam are realised. This can be the case for drinking water hydropower plants and also when matrix turbines or hydrokinetic/floating turbines are used.
- In case existing plants will be retrofitted (for instance with new generation units), the TEG report does not give any indication how the added power should be assessed related to the existing reservoir.
- There is a lack of information and guidance how a consecutive reduction of life cycle emissions will be achieved, monitored and assessed.

[6] Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources

[7] Most recent UN's Intergovernmental Panel on Climate Change (IPCC) data:
Schlömer S., T. Bruckner, L. Fulton, E. Hertwich, A. McKinnon, D. Perczyk, J. Roy, R. Schaeffer, R. Sims, P. Smith, and R. Wiser, 2014: Annex III: Technology-specific cost and performance parameters. In: Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

In this context, we would also like to point out that many lowland hydropower plants (with a small generation unit and a relatively big and shallow reservoir), might not reach a power density of 5°W/m^2, even though lifecycle emissions will be well below the threshold of 100°g°CO_2eq/kWh[8].

The suggested methodology attributes all possible adverse effects to hydropower without considering the multi-purpose uses of many reservoirs. In multipurpose reservoirs, the total emissions of the reservoir cannot be attributed only to hydropower, as the main reservoir's purpose is in many cases not the generation of electricity, but rather water storage for irrigation, drinking water, navigation, recreation, etc. Due to climate change, multi-purpose uses of reservoirs will become even more important: This fact is not considered in the TEG report.

The EU Taxonomy will be a crucial tool to navigate the transition to a low-carbon economy. The European Commission, when specifying requirements by delegated acts, should guarantee a level playing field for all storage technologies: **All electricity storage technologies should be automatically eligible under the EU Taxonomy. This should also be the case for pumped storage, which is currently the only storage technology of the TEG report that has to fulfil specific requirements.**

The TEG report pursues only a very narrow approach to sustainability. While the UN definition of sustainability balances economic, social and environmental perspectives, the proposed approach solely focusses on the environmental dimensions, thus neglecting other important contributions of hydropower to sustainability. It is overlooked that hydropower renders numerous additional services besides the generation of renewable electricity, such as ecosystem services (cleaning of rivers from litter, mowing concepts for dams to secure biodiversity, river restoration, etc.), water quantity management (flood prevention, drought mitigation), power services (provision of storage and flexibility; ancillary services), local livelihoods (infrastructure built and/or preserved, supply of drinking water, barrier to saline water intrusion), economic growth and regional development (tourism, navigation).

Do not significant harm assessment

Within the European Union, there is a strong environmental legislation in place: Eurelectric and its members are fully committed to the current environmental targets and objectives. As hydropower is very site-specific, ecological implementation measures are decided on a case-by-case basis by local authorities, in accordance with regional planning laws, River Basin Management Plans or protection areas. All hydropower plants in the European Union have to comply with local, regional, and national environmental legal foundations as well as EU law, whereas the latter already covers all environmental media and essential areas, such as

- waste specific aspects (also of construction sites) are already covered by the Waste Directive (2018/85);
- all European surface water related aspects are covered within the Water Framework Directive (2000/60/EC), which is according to the outcome of the recent Fitness Check (December 2019) fit for purpose and flexible enough to deal with rising issues, such as climate change;
- within the framework of a broader EU biodiversity policy, the EU Birds Directive (2009/147/EC) and the Habitats Directive (92/43/EEC) remain highly relevant and are still fit for purpose (according to the 2016 Fitness Check).

[8] A recently performed calculation by our member shows that even when the power density threshold is missed (3.4°W/m^2 of a Finnish lowland hydropower plant, referring the total area of the plant), the lifecycle emissions only amount up to 11.34°g°CO_2eq/kWh.

Therefore, we call the European Commission to refer within the Taxonomy Regulation implementing rules only to existing European Union environmental legislation – that is according to recently concluded evaluations fit for purpose –, instead of imposing new and not scientifically proven criteria that could be ecologically- as well as cost-ineffective.

Climate Change Adaptation

Climate change is the biggest threat to our environment. The impacts are global, but the measures to decrease GHG emissions, such as the use of renewable energy sources, are local. **With its low-carbon footprint, hydropower is crucial in mitigating climate change.** It can provide significant volumes of renewable low-carbon electricity, both base and peak load. Hydropower provides quick and cost-efficient flexibility – necessary given the increasing shares of other variable renewable sources.

Due to climate change, extreme weather conditions are more frequent. The ability to adapt to a changing climate largely depends on our reactions to lower the impact of extreme weather events. **Hydropower plants with storage capacity help us to avoid flood disasters and provide water in dry seasons.** Integrated water management will therefore become a crucial tool in adapting to climate change.

Water

Europe's hydropower is a climate-friendly energy source providing sustainable electricity since all environmental, economic and social aspects are taken into account. This is ensured by obeying the respective legal frameworks (such as the Water Framework Directive, or the Birds and Habitats Directives) and by applying voluntary criteria on sustainable development (like the Hydropower Sustainability Assessment Protocol), including social, environmental, technical and economic considerations.

The TEG as well as future implementing rules of the EU Taxonomy Regulations should not try to set additional environmental criteria but rather ensure consistency and coherence with the existing EU environmental legislation. Strategic planning and horizontal planning (including positive as well as adverse aspects on all environmental media, biodiversity and climate change) are already covered by Strategic Environmental Assessments as well as Environmental Impact Assessments today. The European Commission should abstain from setting new, additional targets concerning water within the Taxonomy Regulation implementing rules as they could interfere with objectives set by national authorities, such as within the national River Basin Management Plans.

Especially, when implementing EU environmental legislation, it is crucial that measures are based on proven scientific results and cost-benefit analyses. Hydropower is a technology which is tailor-made to a specific context. Possible adverse effects are always plant and site specific. Therefore, size is not and has never been an appropriate criterion to judge whether a hydropower project is sustainable or not. No distinction should be made between micro, small, medium or large hydropower as possible positive as well as adverse effects of a plant are site and water body specific and cannot be related to the size of a project. **The recommendation to avoid construction of small hydropower under 10 MW should therefore be abated.**

We strongly oppose the statement in the Annex of the TEG report that all necessary mitigation measures should be implemented to reach good ecological status or potential, in particular regarding ecological continuity and ecological flow. Implementing all measures would lead to unsatisfactory solutions and unnecessary costs. Cost- as well as ecological effectiveness can only be guaranteed, if projects and measures are assessed site-specifically, taken into account the needs and targets of the specific site, water body as well as local fauna and flora.

In this context, we would like to highlight that there are even cases where an ecological continuity will not make sense at all:

- where fish migration is (was) prevented due to other (natural) barriers;
- where no suitable habitats can be found or created up-/downstream;
- where no water type specific habitats can be realised;
- at dams, where no significant ecological improvements are expected;
- where a separation of species makes sense and is also preferred for environmental reasons, such as the protection of specific populations from disease or displacement; in case autochthonous populations exist above the barrier to migration; where the migration of neozoa has to be prevented.

Pollution

It has to be pointed out that hydropower is a very site specific technology which is adapted to local needs as well as ecological and environmental conditions of the respective water body. Hydropower does not contribute to water scarcity or water pollution as water is neither modified qualitatively nor quantitatively. Hydropower makes use of the waters' kinetic energy by running it through turbines and gives back the identical volume further down-stream. Hydropower can change landscapes but also create opportunities for other users such as agriculture and tourism. The tailor-made adaptation of hydropower stations to local conditions enables an optimal utilisation of the resource and minimises any possible negative impacts on biological systems. Compared to other technologies, there is hardly any pollution (local, air) or waste production from hydropower generation.

In addition, we would like to point out that the EU Directive 2006/44/EC is no longer in force, therefore, the reference to this Directive in the Annex of the TEG report should be disregarded.

Ecosystems

Multiple measures to mitigate the environmental effects of hydropower plants have already been carried out due to obligations in the original permits, tailored to the specific plant, site and waterbody. Frequently, these obligations include limits for water levels and discharges, and different kinds of measures to mitigate or compensate effects on land, roads, river beds and fish species. Very often, specific monitoring and evaluation programmes are also implemented – generally, they should only be realised in case the costs are proportionate to the ecological benefit. In this context, it has to be highlighted that the implementation of measures can lead to significant losses of renewable generation and valuable flexibility within the power system – also accompanied by corresponding economic losses to operators. **It is crucial that the measures to be set are decided on a case-by-case basis, based on proven scientific results, with cost-benefit analysis (CBA) at the centre of the decision.**

Eurelectric pursues in all its activities the application of the following sustainable development values:

Economic Development

- Growth, added-value, efficiency

Environmental Leadership

- Commitment, innovation, pro-activeness

Social Responsibility

- Transparency, ethics, accountability

Union of the Electricity Industry - Eurelectric aisbl
Boulevard de l'Impératrice, 66 – bte 2 - 1000 Brussels, Belgium
Tel: + 32 2 515 10 00 - VAT: BE 0462 679 112 • www.eurelectric.org
EU Transparency Register number: 4271427696-87