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--- by email only ---

03 June 2021

Recent WBA letter to EASAC member academies

Dear Dr Rakos,

We have been informed by some of our member academies of your letter to academy presidents concerning EASAC's work on forest biomass use in conversion of coal-fired electricity generation. As a matter of principle, we welcome engagement with stakeholders and have had multiple conversations with some of your members on this issue – IEABioenergy, SveBio and Enviva among them. In view of this, we were surprised that you should choose to send a circular letter to our academies without further dialogue. Nevertheless, we have read carefully your communication. In the present letter, I will address the issues you raise, independently of any replies you may receive from the individual EASAC member academies in receipt of your letter.

EASAC's role is to provide scientific analysis to policy-makers and the public, and the science leads to the inevitable conclusion that increasing the harvest of wood from forests to replace coal in power generation leads to an initial increase in carbon dioxide emissions to the atmosphere (for the reasons you are no doubt aware of and are clearly enumerated in our and many others' papers). This injection of additional CO₂ to the atmosphere is compensated if the forest regrows but this takes time, giving rise to the concept of 'carbon debt' and a 'payback period' before a switch from coal to forest biomass can make any net reduction to atmospheric CO₂ levels.

Since the purpose of renewable energy is to reduce the level of CO₂ in the atmosphere, this payback period needs to be limited if regulations are to meet their climate objectives. Our contribution to this debate has been to explain that, to meet climate objectives, woody

biomass in electricity generation should deliver net reductions in carbon emission (relative to the fossil fuel emissions they replace) within a period consistent with Paris Agreement targets.

We had a useful dialogue with IEABioenergy last year which helped separate science and policy (see <https://easac.eu/news/details/iea-bioenergy-critique-of-easac-publications-on-forest-bioenergy/>). We found the main points of difference centered around what carbon payback periods were acceptable and on what basis (e.g. whether it is of concern that Paris Agreement targets might be overshoot before longer-term reductions were achieved). EASAC's view is that overshooting Paris Agreement targets is an unacceptable risk for a technology subsidized to mitigate climate change, and that policy-makers should consider restricting renewable energy subsidies to biomass uses with payback periods of less than 10 to 20 years. Since last year, it has become apparent that the 1.5° target is even closer ([WMO Global climate update](#)) and the danger of overshooting has grown rather than weakened. Since many of the companies that you represent are reliant on public subsidies for contributing to climate mitigation, we are quite frankly surprised that EASAC's conclusions should strike you as unscientific and be opposed by the weight of your organization's influence.

I would now like to turn to the specific assertions you make concerning our activities. Firstly, you say that EASAC states that biomass energy is worse than coal. As would be clear if your extracted 'quotes' were placed in their proper context, EASAC has had a very strong voice in seeking the fastest possible move away from fossil fuels (see for example our paper on [Transformative change](#)). Moreover, we have repeatedly stated that some local high efficiency uses of forest biomass can deliver short payback periods (indeed our Environment Director made this point at a recent webinar organized by the Royal Swedish Academy of Sciences), and that these can be regarded as equally valuable from a climate perspective as solar or wind. However, the payback periods for much of the stemwood feedstocks used in the larger (electricity only) bioenergy facilities can be very long, usually several decades, and thus contribute to overshooting the Paris Agreement targets. Our advice to policy-makers remains that this is a risk which should be avoided. From a climate perspective, technologies which increase atmospheric CO₂ levels without any indication of *when* they may be reversed, can be seen as worse for the climate than the counterfactual case, whether they replace natural gas, oil or coal. Yet another scientific paper showing this is a fully justified concern has just been published (<https://www.frontiersin.org/articles/10.3389/ffgc.2021.642569/full>).

A second theme of your critique is to suggest a conflict of our work with that of the IPCC. On the contrary, we see our work as building on the two key areas of risk and uncertainty identified by the IPCC — that of the payback period (para 2.6.1.2 of [IPCC land report](#)) and that related to transparent accounting (Chapter 6.50). Our work has allowed us to develop policy advice on those areas that have been left unfinished by IPCC, so policy-makers can differentiate between the more 'climate negative' and potentially 'climate positive' forms of bioenergy from our forests.

You also assert that we disagree with the JRC report. As we explained in a letter to one of your member organisations only recently, this is not the case. What we drew from the JRC report (and stated in a [press release](#)) was that there were few types of woody biomass that

were able to deliver climate benefits (relative to fossil fuels) over periods less than 30 years that are of low risk to biodiversity. The JRC study did not include some of the main types of biomass that are important to some of the larger European power stations fired by imported pellets, but other studies (starting with Agostini et al. in 2014, Stephenson and Mackay 2014, the UK Ricardo study and other references cited in [our review in Global Change Biology Bioenergy](#)) put payback periods in the same range. Hence our statement that the additional information provided in the JRC report (combined with previously available literature) supported our arguments on the need to focus on carbon payback periods and the extent to which they are compatible with meeting Paris Agreement targets.

I hope the above is helpful in allowing you to take a more analytical approach to forest bioenergy. The situation has changed greatly since the first support of bioenergy flowed from the EU's 2009 Renewable Energy Directive. The role of forests as a carbon stock and sink has risen on the agenda, as has reversing biodiversity loss – hence the statement in the EU's 2030 biodiversity strategy that burning of whole trees for bioenergy should be minimised.

We hope that you will be able to assist your members in adjusting their expectations and practices to the new environment where renewable energy needs to deliver a very swift reduction in atmospheric levels of CO₂ at the same time as making optimum use of the role of forests in carbon stocks and biodiversity.

In conformity with our transparency commitments, we will be sharing this correspondence with our member academies and also place it on our website.

Yours sincerely,



Professor Christina Moberg
President, EASAC
Past President, Royal Swedish Academy of Sciences

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