Aalto University
School of Engineering

Implications of the upcoming EU energy policy package for the Bioenergy sector

Sam Cross

From forthcoming report under BEST programme:
Sam Cross (Aalto), Mikko Hongisto (VTT), Sanna Syri (Aalto) ***Current and potential future regulatory frameworks for bioenergy and their influence on the defined value chains in the BEST project***

07/12/2016

Warning: this presentation contains some assumptions about the EC proposal of 30-11-2016 which is not yet public!

This presentation limits to consideration of proposal for biomass in the new RES directive under the above package, other proposal EU on Energy Markets, could also impact

For latest info in the next days, follow the twitter feed: #EnergyUnionPackage

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Why would biomass sustainability criteria at EU level be needed?

Supply side:

- Biomass imported to EU: Presents general concerns as to its origins >> Slide 6
- EU Agri-biomass – concerns about food competition, land use change
- EU Forestry – some issues over carbon balance, but for sustainability at EU-level less concern due to good national forestry laws in most MS, but there are concerns over competition with other wood users for roundwood

Why would biomass sustainability criteria at EU level be needed?

Demand side:

- Use of biomass in electricity only plants represents inefficient use of the primary resource >> Slide 8
- Subsidised biomass co-firing could be seen to support the continuation of coal-fired generation in contradiction to climate objectives

Sustainability: Biomass imported to EU

Key issue:

Verifying the origin and life cycle of the imported regime. Notably may be from a region with insufficient local regulation on environment protection.

Why is imported biomass needed:

Very simply, the ambitions for bioenergy production in the EU exceed the biomass resources available in the EU…especially for utility scale bioenergy in central Europe

>>>> see next slide

Ambitions for bioenergy supply far exceed primary resource availability

	SUPPLY: Estimated potential supply in 2020		DEMAND: Estimates from scenarios in first phase of BEST project[2]	
	Pöyry/ EURELECTRIC Projection 2020 [1]	NREAP Projection 2020 (member state estimates in NREAPs)	2020 NREAP Baseline	EC 2030 Climate package
TOTAL	1415 TWh	1603 TWh	2027 TWh	2265 TWh

Thus, estimates of biomass demand significantly exceed estimates of supply from EU-27 e.g. by 400-600TWh in 2020; even **without** considering additional demand from transport biofuel production (additional demand of about ~600TWh in 2020)

Therefore, <u>imported biomass is crucial</u>, but its sustainability is uncertain

[1]EURELECTRIC, S. Cross (ed.), and J. Bjerg (ed.), "Biomass 2020: Opportunities, Challenges and Solutions," 2011.
[2]Cross S, Wahlroos M, Syri S (2014) *EU-level Scenarios for primary biomass demand to 2020 & 2030* Report to BEST project

Significant plans for electricity-only biomass – supply side concerns

Countries can be identified from data who have significant plans for electricity-only biomass but where there is little installed CHP/corresponding heat networks e.g. BE, NL, ES, UK

	Expansion 2012-2020 (from National Renewable Energy Action plans)			
Country	Electricity		Heat&cooling	
	GWh	%	GWh	%
Belgium	6936	169 %	13577	135 %
Netherlands	7757	87 %	8362	90 %
Spain	6223	104 %	9804	22 %
United Kingdom	12900	97 %	40042	731 %
EU-27 total absolute and relative increase	**96033**	**70 %**	**279852**	**36 %**

These countries typically intend not only to import a lot of biomass, but also to combust it in existing coal plants, at efficiency under 30%

Source: [2]Cross S, Wahlroos M, Syri S (2014) *EU-level Scenarios for primary biomass demand to 2020 & 2030* Report to BEST project

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Recognition of the sustainability issue at EU level

Since 2009 directive, EC has recognised the sustainability issue for the electricity and heat sectors, with reports on the issue in 2010 and 2014 >> both of which did not bring forward criteria

However, EC has commissioned a wide range of background report in the run up to the forthcoming proposal….

EC background reports

e.g.

- *Study on the sustainable and optimal use of biomass for energy in the EU beyond 2020* PricewaterhouseCoopers, Vito, TU Wien, Utrecht University, INFRO, Rutter Soceco
- *Carbon impacts of biomass consumed in the EU* - Forest Research UK, VTT, North Energy, Alterra
- *Study on impacts on resource efficiency on future EU demand for bioenergy,* IISA, Idufor, EFI, Oeko Institute, IEEP.

Also consultation completed in 2016 in which both industry and NGO stakeholders supported some form of sustainability criteria, though predictably differing in scope!

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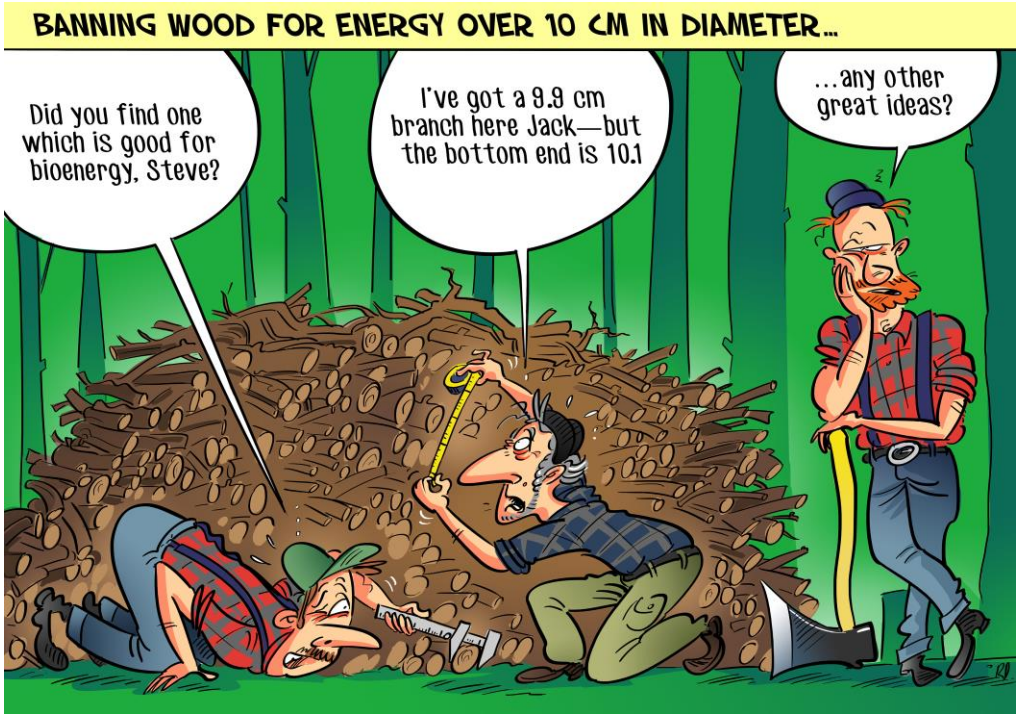
EC options for addressing sustainability:

1. Baseline scenario: Reliance on existing 2030 proposals & national policies (“Do nothing+”)
2. Extend existing sustainability criteria for biofuels in transport to biomass for heat and power
3. Option 2 + further develop sustainability requirements for forest biomass together with inclusion of LULUCF emissions in national commitments under Paris agreement
4. Option 2 or 3 + energy efficiency requirement for heat and power installations
5. Option 2 or 3 + cap on the use of certain feedstocks (e.g. roundwood)

Concerns on some of the options, e.g. limits on use of roundwood…



…..good for job creation only!

Source: AEBIOM

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What is the EC actually going to propose:

Indications from leaked draft directive suggest options 2, 3 and 4 combined:

1. For all biomass heat and power counted as Renewables under EU obligations, and/or given RES support subsidies:

Application of sustainability criteria with GHG saving requirement; extension of similar criteria for agri biomass to those existing for biofuels in transport (with some apparent modifications)

2. *For all Biomass power generation receiving RES support subsidies:*

Power will be produced in high efficiency CHP installations

General provisions on sustainability criteria

- All forms of biomass used for transport, heat and power **required to meet sustainability and GHG emissions savings criteria**
- Biomass must not originate from biodiverse areas, whether the biomass is of agricultural or forest origin
- Land use change requirement for land converted for production of agricultural raw material >> ineligible if carbon stock loss not recovered in a ”reasonable period” by the produced biomass
- No production of biomass from peatland if it is drained for the purpose

Greenhouse gas savings criteria

- **70 % saving over fossil fuel comparator** for bioenergy produced in installations starting operation after January 2021
- Possible further requirements for subsequent years

- *NB: AEBIOM, European Biomass Association has been asking for 60%, may not be entirely satisfied with this)*

Provisions for certification schemes

- **Strengthened role of voluntary international and national certification schemes for verification** (EC notes positive experience with current schemes, e.g. those for transport biofuels)
  - EC will set out detailed implementing rules for such schemes
  - Such voluntary schemes must regularly report activity to EC
  - Member states to supervise schemes accredited by national accreditation bodies

Provisions for greenhouse saving requirement

- **All forms of biomass will be required to demonstrate greenhouse gas saving requirement,** similar to the existing requirements for transport biofuels. Greenhouse gas accounting methodology to take into account following:
  - Default values for defined production pathways
  - Fossil fuel comparators for heat and power to be based on an EU average
  - Account to be taken of conversion of solid and gaseous biomass to final energy (heat and power)

Inclusion of land use change carbon stock/emissions requirement

- **<u>Full carbon effects of conversion of land for bioenergy fuel production should be accounted for as part of the overall GHG saving calculation</u>**

- Calculations should be based on methodology of the IPCC*

- Principally represents adjustment of earlier transport biofuel requirements, and extension of these requirements to agri biomass used for heat and power production

*EC to revise the guidelines of 10 June 2010 for the calculation of land carbon stocks for the purpose of Annex V to Directive 2009/28/EC (RES Directive)

Provisions for forest based biomass

- Directive proposal is compatible with July 2016 Effort Sharing Regulation on Land Use, Land Use Change and Forestry (LULUCF) of July 2016

- Key new provision is that forestry biomass for heat and power subject to risk-based assessment (should not be too burdensome)

- Specific provisions include e.g. forest biomass cannot be obtained from *”forest……where there is no clearly visible indication of human activity and the ecological processes are not significantly disturbed”*

Provision for plant efficiency requirement

- Support schemes & “Counted” RES-Electricity for installations above 20MW to be limited to highly efficient power & heat installations*

- But it appears there will be some exclusion to this for member states demonstrating that power-only Biomass is key for security of supply (e.g. Estonia appears to be claiming this)

- Question is whether latter provision could be justified by other MS with large biomass power-only investments e.g. Belgium (UK may escape requirement due Brexit)

*As defined Art 2, 2012/27/EU).

New provisions for biogas

- One notable special provision for biogas producers

  The costs of connecting new producers of electricity and gas from renewable energy sources to the electricity and gas grids should be objective, transparent and non-discriminatory and due account should be taken of the benefit that embedded local producers of gas from renewable sources bring to gas grids.

>> Unclear what effect of this will be, but could be beneficial to biogas infeed to gas grids

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Indicative implications for Finnish bioenergy sector – Bioenergy producer and users

- Added administrative burden for forest owners and forest biomass suppliers.
- Burden for plant operators for additional verifications on fuel supply

Indicative implications for Finnish bioenergy sector – Bioenergy producer and users

- Unlikely that any locally produced biomass ineligible, unless produced on former peatland (if peatland in Jan 2008)
- Notably appear to be no added burden on waste plants (typically over 50% waste classed as RES for EU obligations)
- Good point is that some competition for biomass resources for power-only plants in other countries may be shut out = lower resource costs

Indicative indication for biomass technology/service suppliers

- Added demand for combined heat and power plant, as power-only plant can no longer receive support (But market in power-only boilers declines, although many of these are anyway upgrades of existing coal plants)
- Also increased efficiency demand for heat only boiler at all scales could benefit boiler suppliers
- Additional demand for sustainability verification and certification services – enhanced market for biomass know-how

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What next?

- Final directive released 30.11.16, **may be changes!**
- Debate in Parliament and Council during 2017+, lobbying efforts required
- Detailed assessment of directive and its implications are certainly needed in co-operation with governmental and industry lobbying efforts, and like-minded actors across EU
- We will cover the directive in our final report by end December 2016, but assessment of its implications will be very limited by timescale
- Some form of assessment of the directive by (former) BEST partners would be highly appropriate, to take expertise forward to enhance Finland's position vis-a-vis the new EU proposals

Acknowledgements

- Partner in work on BEST project, Mikko Hongisto, VTT
- Supervisor, Prof Sanna Syri (Aalto)
- Assistance from the following:
  - AEBIOM, European Biomass Association
  - European Commission, Secretariat General
  - EURELECTRIC

Thanks for your attention!

Sam Cross
samuel.cross@aalto.fi
+358 50 409 6615
#SamJBCross

Linkedin: **https://fi.linkedin.com/in/sam-cross-7574a0**
Researchgate: **https://www.researchgate.net/profile/Sam_Cross**