

Submission on developing Ireland's Bioeconomy

(Department of the Taoiseach, 14/09/2017)

by Ciara Beausang, School of Biosystems and Food Engineering, University College Dublin

ciara.beausang@ucdconnect.ie

1. Does the broad definition outlined adequately encompass the opportunities presented by the bioeconomy?

The discussion document refers to the bioeconomy as *“those parts of the economy that use renewable biological resources from land and sea to produce food, feed, biomaterials, chemicals, pulp and paper, energy and fuels”*. However, this interpretation is not appropriate as it presents the use of our natural resources in an entirely economic context. The natural resources used and the products & services provided by the bioeconomy depend on environmental, social and economic sustainability. Furthermore, the economic functionality of the bioeconomy is a subset of environmental and social well-being (Fig. 1). We cannot have a sustainable bioeconomy in Ireland without acknowledging that the use of our natural resources impacts environmental and social well-being for current and future generations. This is recognised in the definition of the bioeconomy provided by the German Ministry of Education & Research and Ministry of Food & Agriculture, which emphasises that the use of natural resources in the bioeconomy must be within the framework of an economic system which is viable for the future¹. Furthermore, the definition outlined implies that the opportunities presented by the bioeconomy are entirely economic, when in fact the bioeconomy presents an opportunity for a fundamental paradigm shift to achieve a low-carbon sustainable future to address major challenges including food security, mitigating and adapting to climate change, and managing natural resource scarcity. **Therefore, for a definition of the bioeconomy which is appropriate in an Irish context, the environmental and social aspects of the bioeconomy and the long-term sustainability of resources used and products & services provided need to be included.**

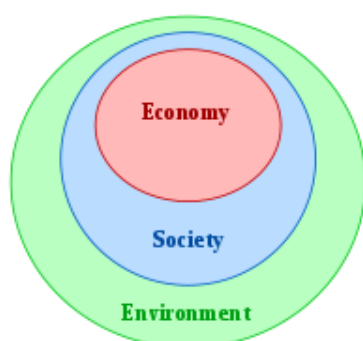


Fig. 1: The relationship between the three pillars of sustainability, in which both economy and society are constrained by environmental limits².

¹ Definition from [German](#) Ministry of Education & Research and the Federal Ministry of Food & Agriculture: “Knowledge-based production and use of regenerative resources to provide products, processes and services in all economic sectors in the context of a future-capable economic system”.

² Scott Cato, M. (2009). *Green Economics*. London: [Earthscan](#), pp. 36–37. [ISBN 978-1-84407-571-3](#).

2. How can a high-level policy statement on the bioeconomy assist in progressing the development of the priority value chains identified?

Many of the priority value-chain chains in the discussion document follow a cascading and closed-loop approach where higher value uses for by-products and residues were identified. **The national policy statement can progress the development of such value chains by acknowledging that the bioeconomy cannot be assumed to be sustainable simply because it is based on natural resources.** The functioning of the bioeconomy is dependent on the underlying well-being of our agricultural, forestry and marine systems.

Seaweed for nutrition, healthcare, cosmetic and energy applications is identified as a priority value chain. However, the conflicts of interest in the case of a licence granted for the mechanical harvest of seaweed in Bantry Bay highlights the complexity of exploiting natural resources in the bioeconomy³. The licence is the first in Ireland and Britain to permit the mechanical harvesting of seaweed and is to be used as a test case to determine if the method is sustainable. However, there is significant opposition regarding the granting of the licence due to insufficient consultation in the local area⁴. The consultation was advertised in one regional newspaper and did not state the area to be harvested or the harvesting method. The relevant local authority; Cork County Council, was not consulted. The licence was issued without the requirement of an Environmental Impact Assessment, despite the proposed area of 1800 acres to be harvested.

This example emphasises the need for the national policy statement to prioritise the sustainable use of natural resources in a local context and to recognise the need to include local stakeholders in such developments in the bioeconomy.

3. What lessons can Ireland take from the European approach, including to the Circular Economy?

The bioeconomy is frequently identified as the biological element of the circular economy. The principles of the circular economy are to use as few resources as possible in the first place, keep resources in circulation for as long as possible, extract the maximum value from them while in use, then recover and regenerate products at the end of the life cycle. **The bioeconomy must also be circular in its approach. Using natural resources in the bioeconomy requires attention to their lifestyle, environmental impacts and sustainable sourcing. This is a key concept that must be recognised in the national policy statement.**

³ <http://www.irishexaminer.com/lifestyle/features/report-will-mechanical-harvesting-of-seaweed-lead-to-ecological-disaster-448276.html>

⁴ <http://bantrybaykelpforest.com/>

4. Given the cross-sector nature of the bioeconomy, how can a national policy statement best support development?

As described in the discussion document, the national policy statement should forge consensus on the direction of the bioeconomy. At present, the discussion document presents several conflicting visions for the future direction of the bioeconomy in Ireland. For example, it suggests that the bioeconomy presents an opportunity for both economic development and exports while simultaneously reducing dependency on natural resources and imported materials. **The distinction between self-sufficiency versus an import-dependent bioeconomy in Ireland needs to be addressed in the national policy statement.** This is critical, as the discussion document states that the national policy statement should establish “Ireland’s ambition to be a global leader for the bioeconomy”. Ireland’s position as a “global leader” is open to interpretation. If an approach is taken that focuses on the utilisation of Ireland’s natural resources solely for economic gain in an export-focused context, which the discussion document currently suggests, many of the opportunities presented by the bioeconomy will not be achieved. For example, contributing to global food security is one such opportunity which is listed, yet Ireland has been a net importer of food energy in recent years⁵. **For consensus on the future direction of the bioeconomy in Ireland, the national policy statement must emphasise that priority is given to the use of Ireland’s natural resources in a local context.**

5. Can we identify a common set of principles, including in particular the application of the cascading principle, which will assist in the development of both the bioeconomy and circular economy?

A cascading approach will be fundamental for the development of the Irish bioeconomy and will be integral to the framework in the national policy statement. The value pyramid provides a suitable model to illustrate the potential value and impact of natural resource use in a cascading approach (Fig. 2).

⁵ http://www.antisce.org/sites/antisce.org/files/colin_doyle_feeding_the_world_sustainably.pdf

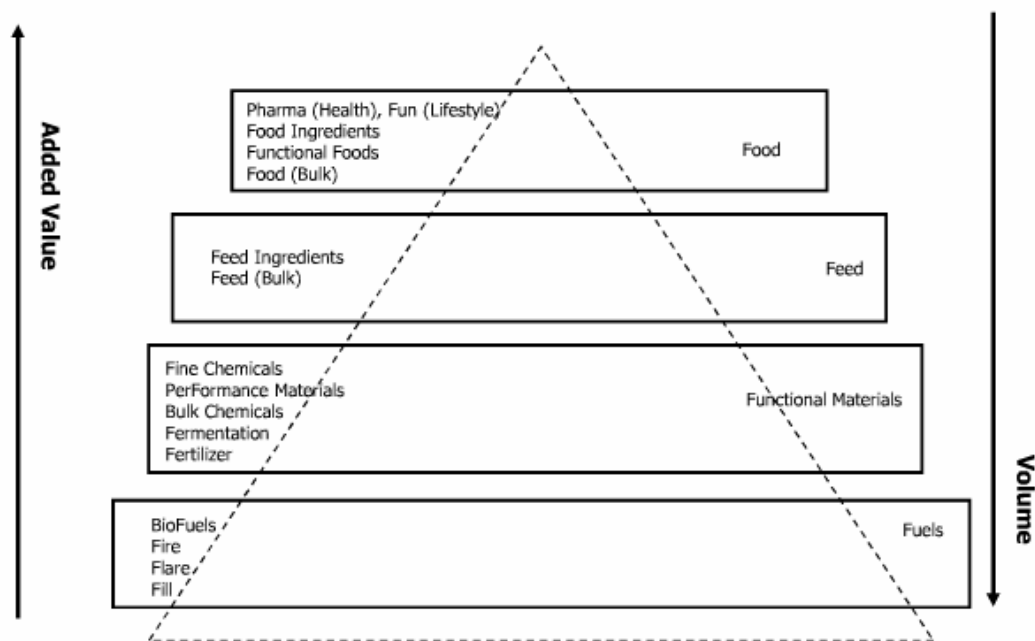


Fig. 2: Biomass value pyramid⁶

6. How can a national policy statement support local and regional cooperation around the use of renewable biological resources?

The discussion document states that the national policy statement may consider “*frameworks for engagement with local authorities to promote bioeconomy developments*”. **Engaging with local authorities will be fundamental in developing the Irish bioeconomy, and their participation must be acknowledged in the national policy statement.** This is evident from the bottom-up approach taken by Tipperary County Council to be designated as a model demonstrator region for the bioeconomy.

7. How can waste policy, including an examination of the definition of waste, best support developments in the bio and wider circular economy?

According to the European Waste Framework Directive, certain specified waste shall cease to be waste when it has undergone a recovery (including recycling) operation and complies with specific criteria. **The national policy statement can support developments in the bioeconomy by recognising that the recovery and reuse of carbon from end of life or waste products has significant potential as a feedstock.**

⁶ <http://library.wur.nl/WebQuery/wurpubs/436887>

8. How can we stimulate market demand for bioeconomy products? What is in it for the consumer?

The State should be a leader to promote bioeconomy products and the national policy statement should include public procurement as means for transitioning to the bioeconomy. However, the questions *“How can we stimulate market demand?”* and *“What is in it for the consumer?”* as well as the statement included in discussion document *“Consumer demand will ultimately determine the success of biobased products”*, present the bioeconomy in an entirely economic context. It is widely acknowledged that changing consumer behaviour and consumption patterns will be required to ensure long-term sustainability for our natural resources. This is recognised in Goal 12 of the Sustainable Development Goals; *“Ensure sustainable consumption and production patterns”* and is implicit in the principle to use as few resources as possible in the first place in the circular economy. The opportunities for consumers in the bioeconomy do not only include the availability of more sustainable products, the environmental and social benefits for consumers should be acknowledged.

9. What is the most appropriate mechanism to coordinate development and monitor progress?

Coordinating development:

The development of a national policy statement demonstrates that the bioeconomy does not fall under responsibility of a single government department or agency. However, due to the multi-functional use of natural resources in the bioeconomy, there are significant risks if the development of the bioeconomy isn't sufficiently monitored and governed. Such risks include developments being governed solely by markets and technologies, competition between food supply and other potential uses of biomass, and the of over-exploitation of natural resources and loss of biodiversity. While certain departments and other relevant stakeholders will have greater responsibility for some areas of the bioeconomy than others, the development of the bioeconomy cannot be monitored on a sector-by-sector basis. **The national policy statement needs to identify a relevant stakeholder who will have overall responsibility to advise how the bioeconomy can be developed and to monitor progress in the bioeconomy. This should be in the form independent statutory body, such as a bioeconomy advisory council.** The German Bioeconomy Council is an example of an advisory body to the German Government⁷. The advisory council should include regional representatives as well as stakeholders with the relevant expertise to coordinate the development of the bioeconomy in an interdisciplinary manner.

⁷ <http://biooekonomierat.de/home-en.html>

Monitoring progress:

The discussion document acknowledges that the national policy statement should be established on a sound evidence base. The interlinked nature of the bioeconomy will require a holistic approach to monitor progress and potential impacts. To achieve this, data will be required relating to the environmental, social and economic impacts of the Irish bioeconomy both nationally and internationally, as national strategies to promote the bioeconomy may have pronounced impacts on land use, environment and income in other countries. **The national policy statement should explicitly state the metrics that will be used to monitor progress in the Irish bioeconomy.** For example, to determine environmental impacts, data relating the use of biomass to environmental footprints (agricultural land, water, forestry and greenhouse gas emissions) and biodiversity impacts will be required. The SYMOBIO research project is using an inter- and transdisciplinary approach in monitoring and modelling of the bioeconomy in Germany whilst considering sustainability aspects on a national and international level⁸.

10. Are there any other issues to be addressed through a national policy statement?

The national policy statement should acknowledge relevant international commitments, including the Sustainable Development Goals, which are highly relevant to the development of the Irish bioeconomy.

⁸ <https://www.ufz.de/index.php?en=37150>

Summary of Questions

1. Does the broad definition outlined adequately encompass the opportunities presented by the bioeconomy?

For a definition of the bioeconomy which is appropriate in an Irish context, the environmental and social aspects of the bioeconomy and the long-term sustainability of resources used and products/ services provided need to be included.

2. How can a high-level policy statement on the bioeconomy assist in progressing the development of the priority value chains identified?

The national policy statement can progress the development of such value chains by acknowledging that the bioeconomy cannot be assumed to be sustainable simply because it is based on natural resources. The national policy statement must recognise the need to include local stakeholders in such value chains in the bioeconomy.

3. What lessons can Ireland take from the European approach, including to the Circular Economy?

The bioeconomy must also be circular in its approach. Using natural resources in the bioeconomy requires attention to their lifestyle, environmental impacts and sustainable sourcing. This is a key concept that must be recognised in the national policy statement.

4. Given the cross-sector nature of the bioeconomy, how can a national policy statement best support development?

The distinction between self-sufficiency versus an import-dependent bioeconomy in Ireland needs to be addressed in the national policy statement. For consensus on the future direction of the bioeconomy in Ireland, the national policy statement must emphasise that priority is given to the use of Ireland's natural resources in a local context.

5. Can we identify a common set of principles, including in particular the application of the cascading principle, which will assist in the development of both the bioeconomy and circular economy?

A cascading approach will be fundamental for the development of the Irish bioeconomy and will be integral to the framework in the national policy statement. The value pyramid provides a suitable model to illustrate the potential value and impact of natural resource use in a cascading approach.

6. How can a national policy statement support local and regional cooperation around the use of renewable biological resources?

Engaging with local authorities will be fundamental in developing the Irish bioeconomy, and their participation must be acknowledged in the national policy statement.

7. How can waste policy, including an examination of the definition of waste, best support developments in the bio and wider circular economy?

The national policy statement can support developments in the bioeconomy by recognising that the recovery and reuse of carbon from end of life or waste products has significant potential as a feedstock.

8. How can we stimulate market demand for bioeconomy products? What is in it for the consumer?

The State should be a leader to promote bioeconomy products and the national policy statement should include public procurement as means for transitioning to the bioeconomy.

9. What is the most appropriate mechanism to coordinate development and monitor progress?

The national policy statement needs to identify a relevant stakeholder who will have overall responsibility to advise how the bioeconomy can be developed and to monitor progress in the bioeconomy. This should be in the form independent statutory body, such as a bioeconomy advisory council.

The national policy statement should explicitly state the metrics that will be used to monitor progress in the Irish bioeconomy, including environmental, social and economic impacts.

10. Are there any other issues to be addressed through a national policy statement?

The national policy statement should acknowledge relevant international commitments, including the Sustainable Development Goals, which are highly relevant to the development of the Irish bioeconomy.