



REGIONAL ECONOMIC IMPACT AND POTENTIAL OF THE NORDIC BIOECONOMY

Input-Output method tested in the Regional Context

Nordregio and Innovation Center Iceland conducted a study on the regional economic impact and potential of the Nordic bioeconomy as part of the NordBio programme in 2014-2015. For analysing regional direct and indirect economic impacts, a methodology of Input-Output analysis was implemented in a regional case study context. Input-Output accounting is a method for analysing the economic interactions between sectors in an economy and for calculating “multipliers” which indicate the potential of a sector or product to stimulate a wider economic impact. Such sectors/activities can be studied from a “scenario” based perspective, too, based on knowledge about their production processes and interactions with already existing sectors.

The national input-output tables were used to construct of a set of regional tables for the regions studied. This informed a deeper understanding of the regional impacts of developments within the bioeconomy and associated sectors. The regional tables have been used to calculate production multipliers and employment multipliers. Obviously, the regional production and employment multipliers are much lower than the national multipliers. The reason for this is that in a region not all commodities used as inputs to various forms of production are produced within the region. Regional firms will need to import more of their input use from other regions in the country, and from abroad. Therefore the “leakage” effect of economic stimuli will be greater – an important fact when analysing regional economic growth based on developments in the bioeconomy.

Seven Nordic case study regions were chosen for the regional bioeconomic potential study: Värmland in Sweden, Central Finland region in Finland, Buskerud in Norway, Zealand in Denmark, and Northwest Iceland and Reykjavik regions in Iceland. Moreover, the study includes a discussion on evaluation of regional economy potential of bioeconomy in Åland, although this island is not part of the input-output analysis.

The case study analyses include a qualitative analysis based on the review of the existing reports and interviews with the representatives of the key actors and interest groups in the regions. The regional case study reports provide an important “double-check” on the Input-Output figures and are essential for understanding the nature and potential of bioeconomy in the regions.

Due to the fact that the EUROSTAT data is not available in Iceland, the quantitative analysis on national and regional bioeconomy was more difficult to implement here compared to Finland, Sweden, Norway, and Denmark.

THE MAJOR FINDINGS OF THE STUDY

The regional multipliers were calculated in seven Nordic case study regions. In the examined regions, the highest regional multipliers generally accrue to agricultural, food industry and wood products. Agriculture has high multipliers, and this gives the food industry high multipliers, because expansions in the food industry will imply more agricultural products being produced. The specialised sector of forestry has high multipliers in Zealand. The “new” (or associated) bioeconomy sectors have lower multipliers – largely due to the fact that they are not really interacting with the primary sectors as of today. These associated sectors include e.g. building and constructions, chemicals and pharmaceutical products, rubber and plastics products, and textile industry. Developing these “new” bioeconomy sectors isolated would not boost the regional economies in which they are embedded. Instead, in order to contribute to the regional multiplier impacts, the associated sectors need to grow in an integrated fashion with the use of the regional bioresources.

National bioeconomy sectors, and associated sectors, have multipliers between 1.5 and 3. Processing sectors, as well as agriculture, have higher values than e.g. forestry and logging. It is interesting to observe that Norway and Finland have higher multipliers for the bioeconomy sectors than Sweden and Denmark. Finland, which is boosting a strong bioeconomy strategy, has the highest employment multipliers and should expect the strongest (positive) labour market impact from such a development.

At the regional level, impact is usually in the magnitude of 1.1 to 1.5. Even though the multipliers at the regional level are rather small, there is still a great difference between sectors within regions. If the regional multiplier effect is perceived to be 1.1 or 1.3, it still makes a big difference; in the first instance an expansion of a sector implies a 10% additional impact on the regional GDP, while in the latter a 30% additional impact. But, it is difficult to compare regional economies straight-off since regions differ in size; however, it is interesting to observe that the studied regions do not display as clear patterns as do the countries (e.g. for Finland and Norway).

Among the most important conclusions is that there needs to be an integrated bioeconomy development in the Nordic regions, since in order to capture regional multiplier impacts there needs to be an utilisation of regional resources which stimulates other regional sectors and creates regional employment.

In order to estimate the future potential of the bioeconomy in the Nordic regions when it comes to “euros and jobs”, the exploratory attempt to use scenario analysis appeared to be a highly interesting and promising method. Although definite answers or guidance on the Nordic bioeconomy future potential are difficult to derive from the scenario analysis, the introduction of the method as such reveals what kind of scenarios need to be pursued and analysed further, and what can be framed in the context of the regional economic analysis.

It can be concluded that the regional Input-Output analysis, with its limitations, is a useful tool in analysing the national and regional bioeconomy and the interactions and connections between the economic sectors in the Nordic countries. The qualitative analysis as well as the scenario analysis helps us to understand more deeply the status and potential of bioeconomy in the Nordic regions.

For the Nordic policy makers and practitioners in the field of bioeconomy, the study provides additional analysing tools, interesting findings, and suggestions to develop the Nordic bioeconomy in the regions. There needs to be a more practical “Summary Version” to be developed out of the study, however, preferably in co-operation with 1-2 Nordic pilot regions, with e.g. illustrative real life examples of putting the Input-Output analysis method and scenarios into empirical scrutiny.