CONTRIBUTION TO JOBS AND GROWTH FROM ROCKWOOL'S GLOBAL ACTIVITIES - METHODOLOGY

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In our note "Contributions to jobs and growth from ROCKWOOL's global activities", we showed the estimated impact from ROCKWOOL's activities in relation to UN Sustainable Development Goal 8. In this note, we aim to cover the methodology we have applied to estimate ROCKWOOL's contribution to job and growth. We have used two overall methodologies: 1) Job an GDP contribution and 2) Productivity improvements from energy savings.

1 QUANTIFYING JOB AND GDP CONTRIBUTION

To quantify the employment and GDP contribution of ROCKWOOL's global activities, we use an input-output mode. An input-output model (IO-model) is a quantitative economic technique that accounts for the interdependencies between different industries of a national economy or different regional economies. The model depicts how output from one industry may become an input to another industry. An input-output model is a standard tool that excels in showing economic contributions of e.g. a sector or company.

The IO model is based on the input-output table, which is a snapshot of transactions in an economy within a given time period. Column entries in the table typically represent inputs to an industry (the industry's purchases of goods and services), while row entries represent outputs from a given industry. This format therefore shows how dependent each industry is on every other industry, both as a customer of outputs from other industries and as a supplier of inputs.

We use input-output tables from the World Input-Output Database (WIOD).[1] The database is the best available in terms of detail and quality with coverage of EU and beyond. The database contains data from 2014 split on 43 countries and a Rest of the World. The advantage of using WIOD is that the database is standardised for each country and internally consistent in relation to import and export flows. The database is typically updated every third year, however there are generally few changes to the structural level of interconnectivity between sectors and countries. This means the

[1] WIOD tables: www.wiod.org/database/wiots16

effects calculated based on the current version will likely be close to effects calculated with a newer database published in e.g. 1-5 years. We therefore do not consider it necessary for ROCKWOOL to update the multipliers the first 5-10 years (or until something significant structure of the global economy).

The input-output database shows how each sector in each country is interconnected through import and export. From this table, we can see purchases between 56 sectors for each country (a [44 x 56] X [44 x 56] matrix), and by combining them with the social economic accounts we have information on the GDP contribution and employment for each sector.

We split the effects into three different impacts: Direct, indirect and induced.

Direct impact is associated with ROCKWOOL's direct activities. This means the number of employees directly employed at ROCKWOOL and the wages, financial expenses, profit and taxes payed by directly ROCKWOOL.

Indirect impacts arise through ROCKWOOL's purchases of goods and services from suppliers. Through these purchases, ROCKWOOL creates economic activity that supports jobs and contributes to GDP. The indirect impacts are therefore a measure of how much economic activity in other firms is supported by ROCKWOOL.

Induced impacts arise when wages, paid out to the directly and indirectly employed workers, are spent within the economy. The demand generated via this channel supports jobs in most sectors and reflects the general consumption pattern in the economy. The larger the number of jobs and the higher the wages paid, the larger the induced impacts.

We have calculated the multipliers for the above impacts for each sector in each country. In our approach, we have estimated the global multiplier for each sector. This means if we e.g. spend 100 EUR in the German agriculture sectors, then 75 EUR goes to German products and 25 EUR foreign products – of these 25 EUR abroad we then calculate how much of this is again spent on German goods. This allow us to split the value of each EUR spent to a specific country.

WIOD covers 44 regions (43 countries and the rest of the world) including majority of the major economies. For countries where ROCKWOOL has activities outside the 43 countries, we have used the multipliers for the Rest of the World.

From ROCKWOOL we have received country level data on employment, revenue, purchases, wages, profits etc. These are used directly to estimate the direct impacts. In addition, we have received a detailed split on main cost categories for ROCKWOOL's global operations, which has been assumed to be similar across countries. The split of cost categories has been mapped to the 56 sectors of WIOD. For each sector in each country, the import share by country in the WIOD is used.

2 QUANTIFYING PRODUCTIVITY IMPROVEMENTS FROM ENERGY SAVINGS

ROCKWOOL's products help deliver, among other benefits, energy savings to the end-users. Energy savings is an improvement of productivity, since you can produce the same product or value with fewer resources.

We have calculated the net present benefits of the energy savings which comes from the use of ROCKWOOLs insulation products. This means that not all ROCKWOOLs products portfolio is included, for instance we have not estimated the productivity value of the acoustic ceilings solutions and the precision growing substrates sold under the Rockfon and Grodan brands respectively. The main data source is the annual energy savings delivered by installing ROCKWOOLs' insulation products in a given year.[2] This data is provided by ROCKWOOL based on a methodology developed by Navigant, see Navigant (2018): "Climate and energy benefits of ROCKWOOL building insulation" and Navigant (2018), "Climate and energy benefits of ROCKWOOL technical insulation products". We have taken regions, categories, lifetimes and other assumptions from these methodologies.

The net benefits are calculated based on the monetary energy savings subtracted costs for the ROCKWOOL products and installation costs as described under step 1 below. We have quantified the energy savings in three steps:

Step 1: Gross energy savings by year

Based on the energy savings data from ROCKWOOL, we have split our estimation into five different categories each with a different lifetime: Building insulation, HVAC, low temperature, medium temperature and high temperature. The categories are based on the Navigant methodologies.

For each category the energy savings are split between the input fuel type used (oil, gas, coal, biomass, electricity, ambient heat and district heating). This is furthermore split by region/country.

Based on the detailed energy savings by category, fuel type and region/country, we calculate the reduction in energy costs using existing and future energy prices. Current and future energy prices are primarily based on IEA (2019), World Energy Outlook. These should be updated annually if available. We have used the energy prices in IEA's Sustainable Development Scenario, which is a scenario compliant with the Paris agreement. This means energy prices forecasted to be stable and for some slightly decreasing. The IEA does not state that the Sustainable Development Scenario is more likely than their other scenarios, however we chose the Sustainable Development Scenario as this provided the most conservative estimates to fuel prices (and therefore our estimated impact).

Electricity prices are based on BEIS (2019), Domestic electricity prices in the IEA. Prices on biomass is assumed for Wood Pellets based on EEX Wood Pellet Futures with an assumed transport cost.[3] Regions where specific energy prices have not been available, we have calculated the world average.

Based on the current and forecasted prices, we estimate the gross energy savings by year for each category by country/region.

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[2] Available at www.rockwoolgroup.com/carbon-impact

[3] https://www.eex.com/en/market-data/energiewende-products/wood-pellets-futures

Step 2: Installation costs

The costs associated with installing ROCKWOOL is firstly the cost for the ROCKWOOL and secondly the installation costs. We have received country level sales data split on the different categories to estimate the costs for the ROCKWOOL product split on the five categories. To our knowledge there is no studies who have highlighted the average costs of installation insulation material such as ROCKWOOL. We have therefore estimated the implied installation costs from a previous study for the European Commission, see Copenhagen Economics (2018), Macro-economic impacts of energy efficiency. We assume that ROCKWOOL is installed together with other renovation. The implicit installation cost is 110% of the product costs when installation with other renovations. This means if you use 100 EUR on ROCKWOOL, you spend 110 EUR installing it. This is an estimate and covers cases where it is much cheaper to install and cases where it is much more expensive to install. We have used this assumption across categories.

Step 3: Net present value

The last step is to find the net present value and subtract the costs. The values each year is discounted using a discount rate of 5% based on European Commission (2014), Guide to Cost-Benefit Analysis of Investment Projects. The lifetimes are as previously mentioned based on the Navigant methodologies.