Assessing the sustainability of circular companies

An interim report on the results from the survey distribution in Italy and the Netherlands

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CRESTING WP5: Measuring the impacts of circularity

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1 Overview of respondents

This document briefly summarizes some of the first results of the survey sent out by the CRESTING project in mid-2019 to companies associated with a Circular Economy (CE) focussed network, operating in either Italy or the Netherlands.

This interim report is addressed to organizations that indicated they wanted to be updated on the project's progress. A full report, including final results from to-be-conducted interviews, will be provided to participating organizations later.

Firstly, this report describes the primary characteristics of the survey respondents. Thereafter, descriptive trends and analyses are presented according to the themes of CE and sustainability, measurement approaches applied and finally the barriers and drivers for CE implementation identified in Italy and the Netherlands.

Companies associated with CE networks are implied to be front-runners in conceptualising and applying CE practices. Therefore, respondents were selected based on their association with the following national or international level CE networks; Atlante Italiano dell'Economia Circolare (IT), Piattaforma Italiana degli stakeholder sull'economia circolare (ICESP) (IT), Circular Economy Network (IT), Mercato Circolare (IT), Circulair ondernemen (NL), Ontertekenaars van Grondstoffakkoord (NL), Circle Economy (NL), Holland Circulair Hotspot (NL), Circulaire Coalitie (NL), Ellen MacArthur Foundation CE 100 (international) and Circular Economy Club (international). For the international networks, companies were selected if their primary business operations were conducted in either the Netherlands or Italy.
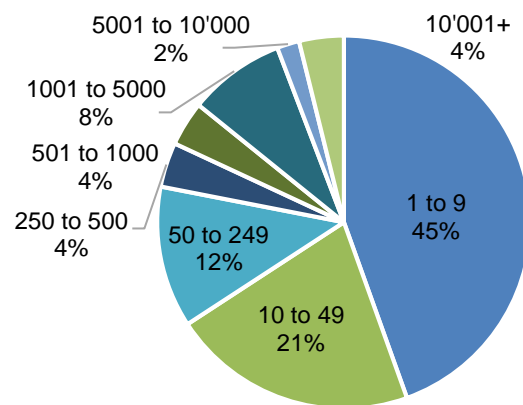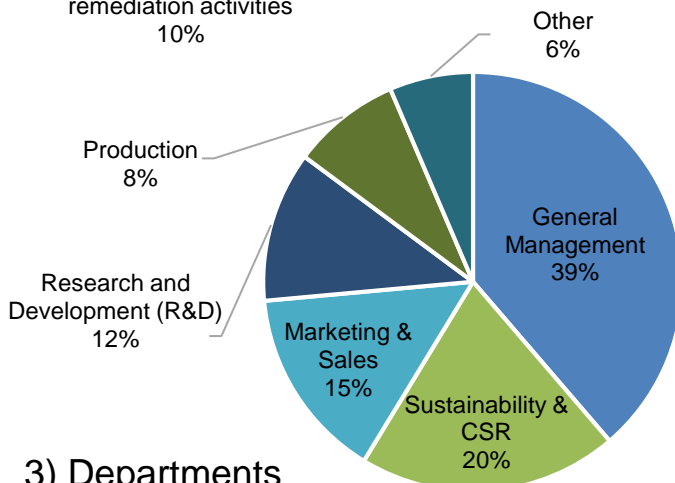
The survey was sent out online to a total of 809 companies and was completed by 171, of which 155 responses were valid. This represents a survey response rate of 19%, where companies operating in Italy and the Netherlands are present to 47% and 53% respectively.

What kind of companies responded?

1) Sector
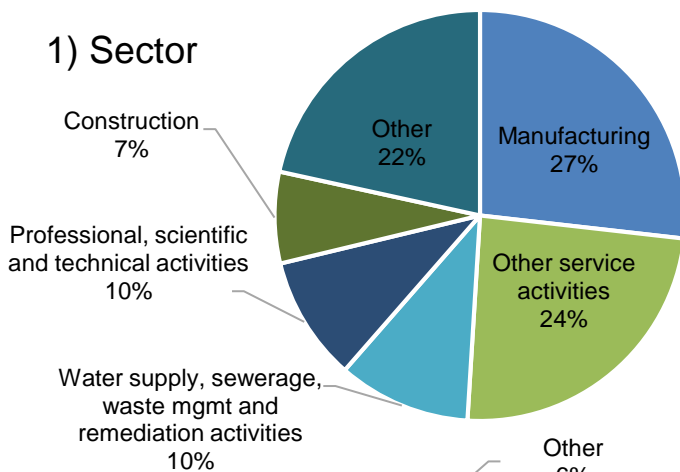
2) Number of employees

3) Departments

Figure 1. Company sectors of respondents, category "Other" includes: Arts, entertainment and recreation; Human health and social work activities; Real estate activities; Transportation and storage; Accommodation and food service activities; Electricity, gas, steam and air conditioning supply; Information and communication; Agriculture, forestry and fishing; Wholesale and retail trade; repair of motor vehicles and motorcycles.

Figure 2. Number of employees helps to categorise firms by size

Figure 3. Department of respondents indicates their decision-making and strategy level involvement. "Other" includes: Accounting & Finance; Purchasing; Customer Service; Quality Assurance.
n=155 for all.

2 CE practices across the value chain

What CE practices do companies (plan to) implement?

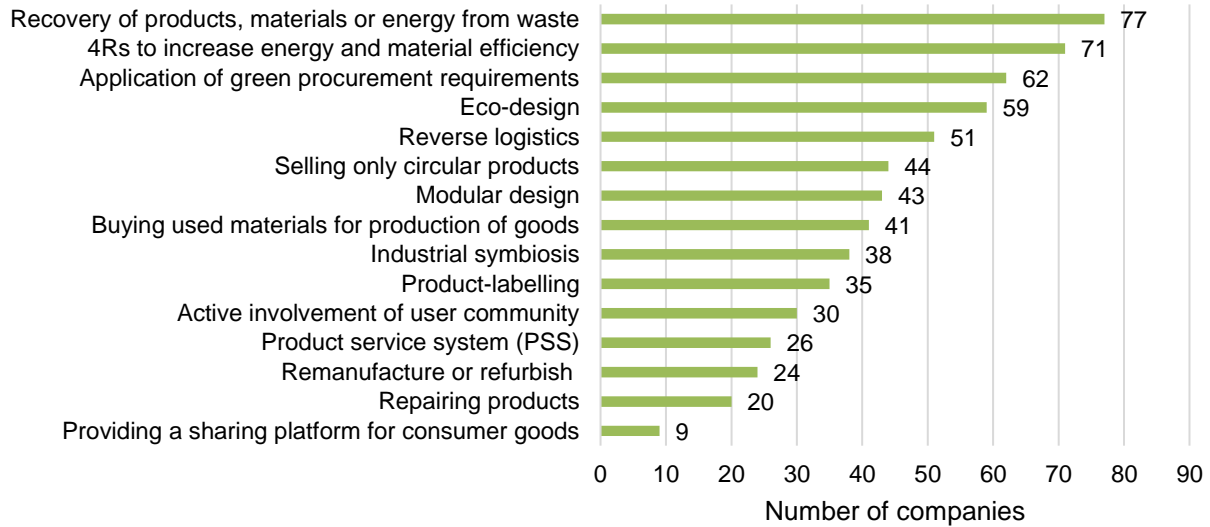| CE Practice	Number of companies
Recovery of products, materials or energy from waste	77
4Rs to increase energy and material efficiency	71
Application of green procurement requirements	62
Eco-design	59
Reverse logistics	51
Selling only circular products	44
Modular design	43
Buying used materials for production of goods	41
Industrial symbiosis	38
Product-labelling	35
Active involvement of user community	30
Product service system (PSS)	26
Remanufacture or refurbish	24
Repairing products	20
Providing a sharing platform for consumer goods	9

Figure 4. Respondents' planned or implemented CE practices, it was possible to indicate several CE practices per respondent, n=141.

Companies were presented with a list of 15 CE practices and asked to indicate which have been or are planned to be implemented within their company. As seen in Figure 4, the surveyed companies are implementing a range of CE practices. It was established that 72% of respondents indicated they implement more than one CE practice. In fact, the most frequent number of CE practices implemented within each company was four; with 19% of responding companies indicating this.

What position of the value chain are companies operating in?

Companies were asked to indicate which stage (or stages) of the value chain the main business operations of their company are situated in. As seen in Figure 5, companies represent all positions of the value chain.
Furthermore, respondents are more likely to operate in more than one value chain position; with only 31% respondents considering their company's operations to involve one part of the value chain.

Pie chart:
- 1 Materials Sourcing 12%
- 2 Design 16%
- 3 Manufacturing & Remanufacturing 18%
- 4 Distribution & Sales 17%
- 5 Consumption & Use 9%
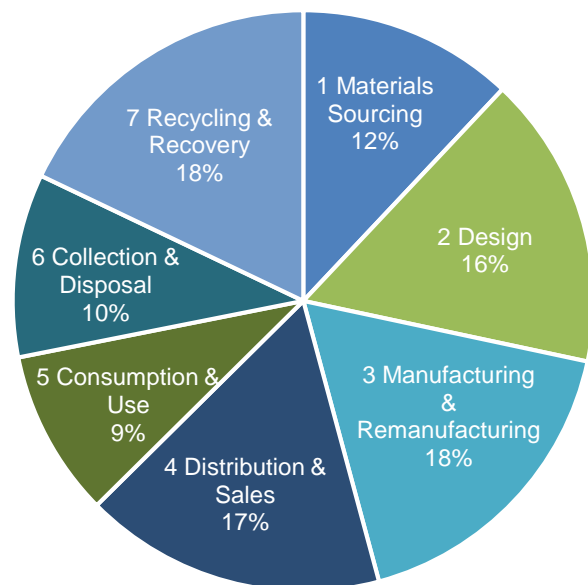- 6 Collection & Disposal 10%
- 7 Recycling & Recovery 18%

Figure 5. Share of companies' perceived position in the value chain, n=155.

3 Defining Circular Economy and sustainability

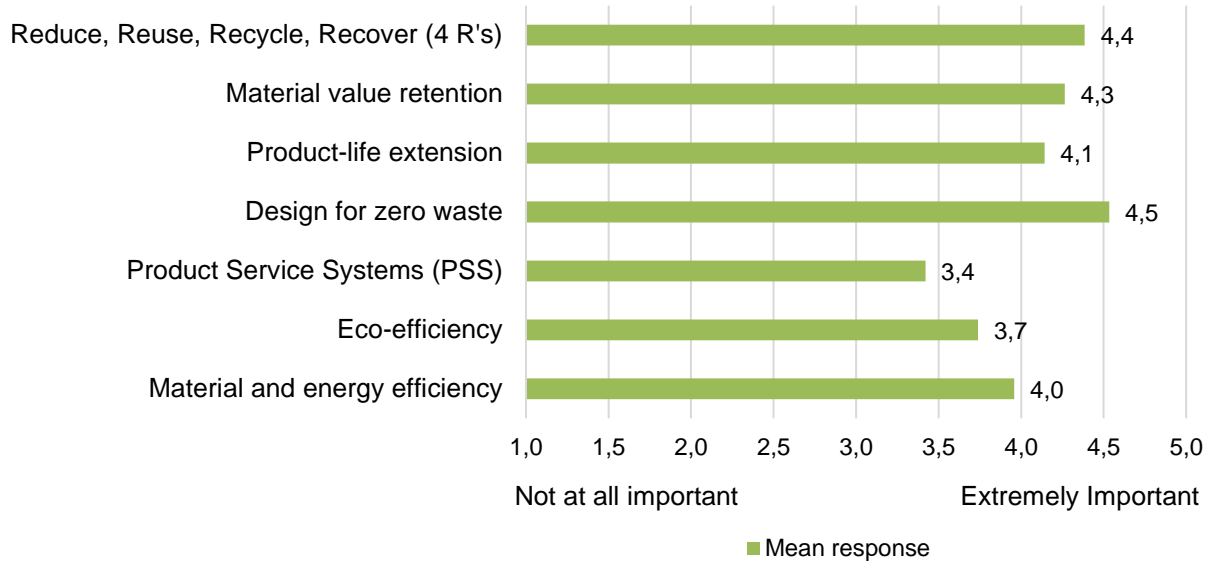## What is most important when defining a Circular Economy?

Surveyed companies generally rated all seven characteristics of CE as more than moderately important. Overall, respondents most strongly agree that the statement *Products are designed in a way that eliminates waste* has the highest level of importance when characterising CE. Interestingly, companies were least likely to characterise the concept of CE with PSS, where services are offered to users rather than selling products. Besides the seven characteristics mentioned in the survey, several respondents acknowledged the importance of the bioeconomy and the concept of sufficiency to the characterisation of CE through the use of the additional comments section.

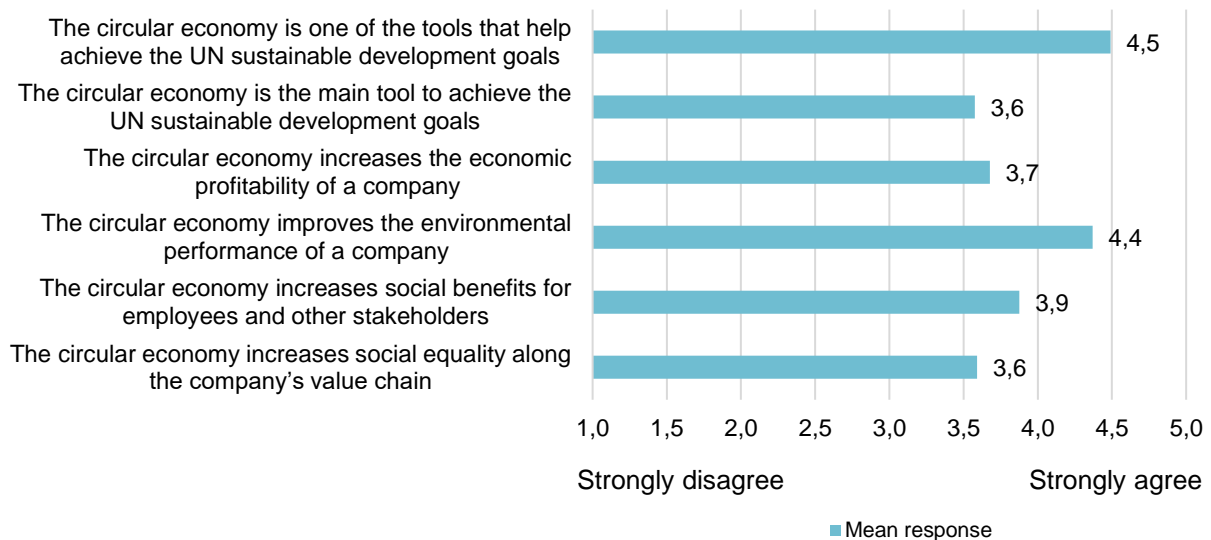## How are CE and sustainability connected?

Figure 7. Respondents' level of agreement on statements discussing the link between CE and sustainability, scale from 1 (strongly disagree) to 5 (strongly agree), 'I don't know' responses were excluded from weighted average, n=155

Respondents were asked to indicate their level of agreement with six statements describing the effect of CE on the three pillars of sustainability (environment, economic and social). The results (as seen in Figure 7) indicate that the respondents agree the concept of CE has a positive relationship with all three pillars of the concept of sustainability. Answers further indicate that the association of CE with the environmental pillar of sustainability is the strongest, followed by social benefits and economic profitability. While not visible from the mean, but from looking at the standard deviation (not shown here) the second and last statements were also the most contested, with several answers indicating that respondents both strongly disagree and strongly agree.

4 Assessment approaches

The research focusses on how companies assess both circularity and sustainability, and how the assessment of these two dimensions is connected. Table 1 shows the top 10 assessment approaches companies are applying either to assess their company level or product level sustainability and/or circularity impacts.

Table 1. Top 10 assessment approaches with share of surveyed companies that do or do not apply them, n= 90.

Rank	Name of assessment approach	Do apply	Do not apply
1	Self-developed sustainability indicators (direct impact)	61%	39%
2	Environmental Life Cycle Assessment (LCA)	60%	40%
3	Volume of waste diverted from landfill	58%	42%
4	Recycling rate	58%	42%
5	Recycled content	55%	45%
6	Carbon Footprint	56%	44%
7	Self-developed sustainability indicators (life cycle based)	53%	47%
8	Volume of virgin material production prevented	51%	49%
9	Material durability	46%	54%
10	Self-developed circularity indicators (life cycle based)	45%	55%

5 Drivers and barriers for CE implementation

The final part of the questionnaire was dedicated to uncovering the drivers and barriers for implementing CE practices for front-running companies engaged with CE. As they differ considerably by country, the numbers are displayed comparatively in Figure 8 and 9. The most dominant CE drivers are the potential to reducing the environmental impact, the use of critical raw materials and the coherence with company sustainability image. In contrast, the main barrier to CE implementation is external, namely legislative constraints. The next highest ranked barriers however are internal, connected to the uncertain and long-term economic gains of implementing CE practices as well as the high investment costs (limited access to finance is ranked at place five). It needs to be stressed, that the respondents gave less importance to the barriers than to the drivers overall, indicating that the proposed barriers are not seen as highly interfering with the implementation of CE practices within surveyed companies.

How important do you rate these drivers?

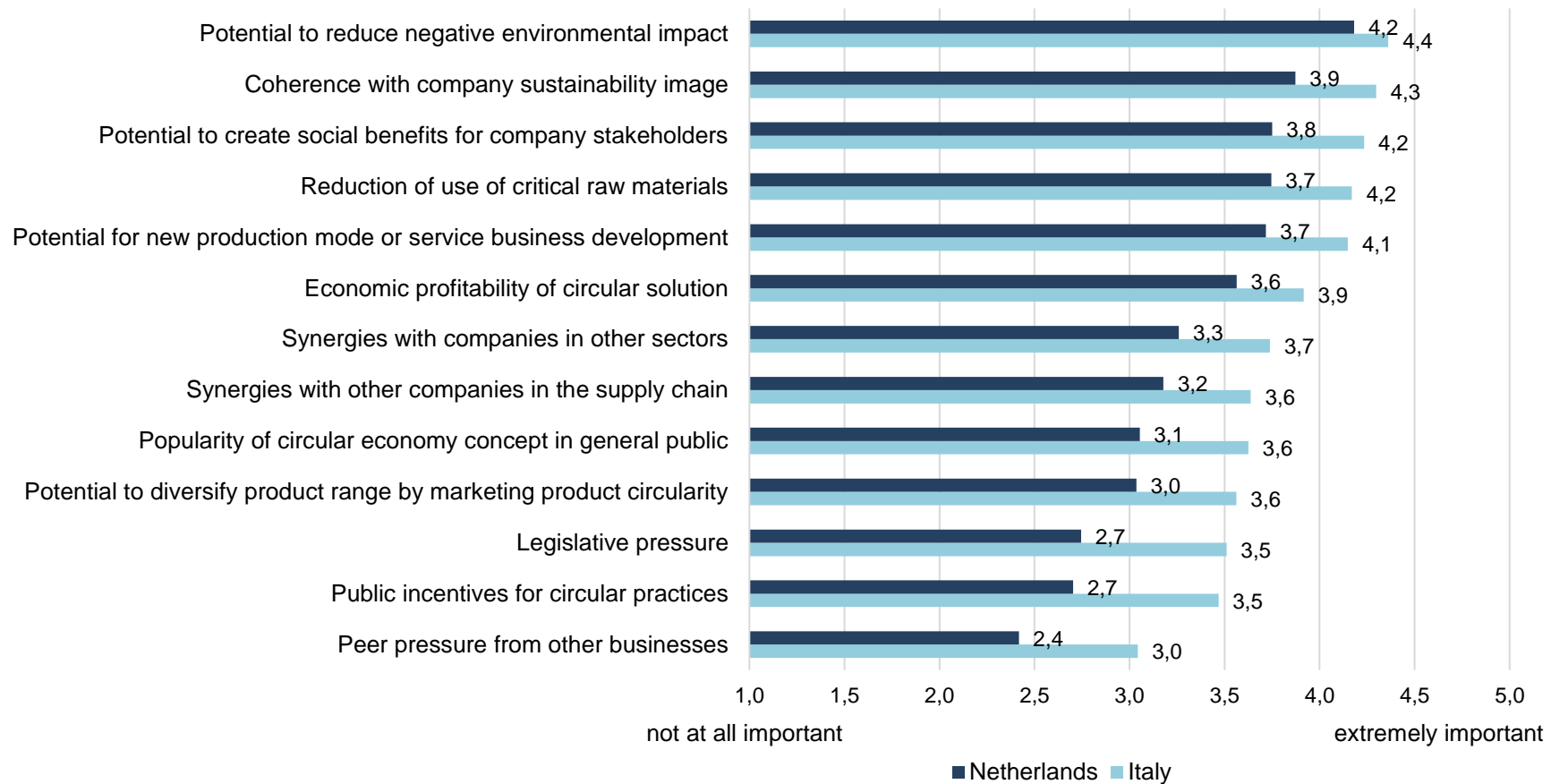| Driver	Netherlands	Italy
Potential to reduce negative environmental impact	4,2	4,4
Coherence with company sustainability image	3,9	4,3
Potential to create social benefits for company stakeholders	3,8	4,2
Reduction of use of critical raw materials	3,7	4,2
Potential for new production mode or service business development	3,7	4,1
Economic profitability of circular solution	3,6	3,9
Synergies with companies in other sectors	3,3	3,7
Synergies with other companies in the supply chain	3,2	3,6
Popularity of circular economy concept in general public	3,1	3,6
Potential to diversify product range by marketing product circularity	3,0	3,6
Legislative pressure	2,7	3,5
Public incentives for circular practices	2,7	3,5
Peer pressure from other businesses	2,4	3,0

not at all important — extremely important

Figure 8. Respondents' perceived importance of CE drivers, scale from 1 (not at all important) to 5 (extremely important), 'I don't know' responses were excluded from weighted average, n=105.

How important do you rate these barriers?

Legislative constraints — Netherlands 3,2; Italy 3,8
Limited access to additional financing — Netherlands 3,1; Italy 3,3
Limited indicator standardisation to assess CE performance — Netherlands 3,1; Italy 3,3
Potential economic gains are long-term and uncertain — Netherlands 3,0; Italy 3,3
High initial investment costs to change production mode — Netherlands 3,0; Italy 3,3
Limited material composition traceability in secondary market — Netherlands 2,9; Italy 3,2
Limited quality standardisation of secondary materials — Netherlands 2,8; Italy 3,2
Technology still not mature — Netherlands 2,7; Italy 3,1
Consumer don't accept products' circular characteristics — Netherlands 2,6; Italy 3,1
Lack of consumer demand for circular products — Netherlands 2,6; Italy 2,9
No business partner available for collaboration — Netherlands 2,6; Italy 2,9
Limited relationship with consumer regarding product disposal — Netherlands 2,5; Italy 2,9
Price volatility and unstable supply of secondary materials — Netherlands 2,4; Italy 2,9
Workforce lacks specialised skills — Netherlands 2,2; Italy 2,8

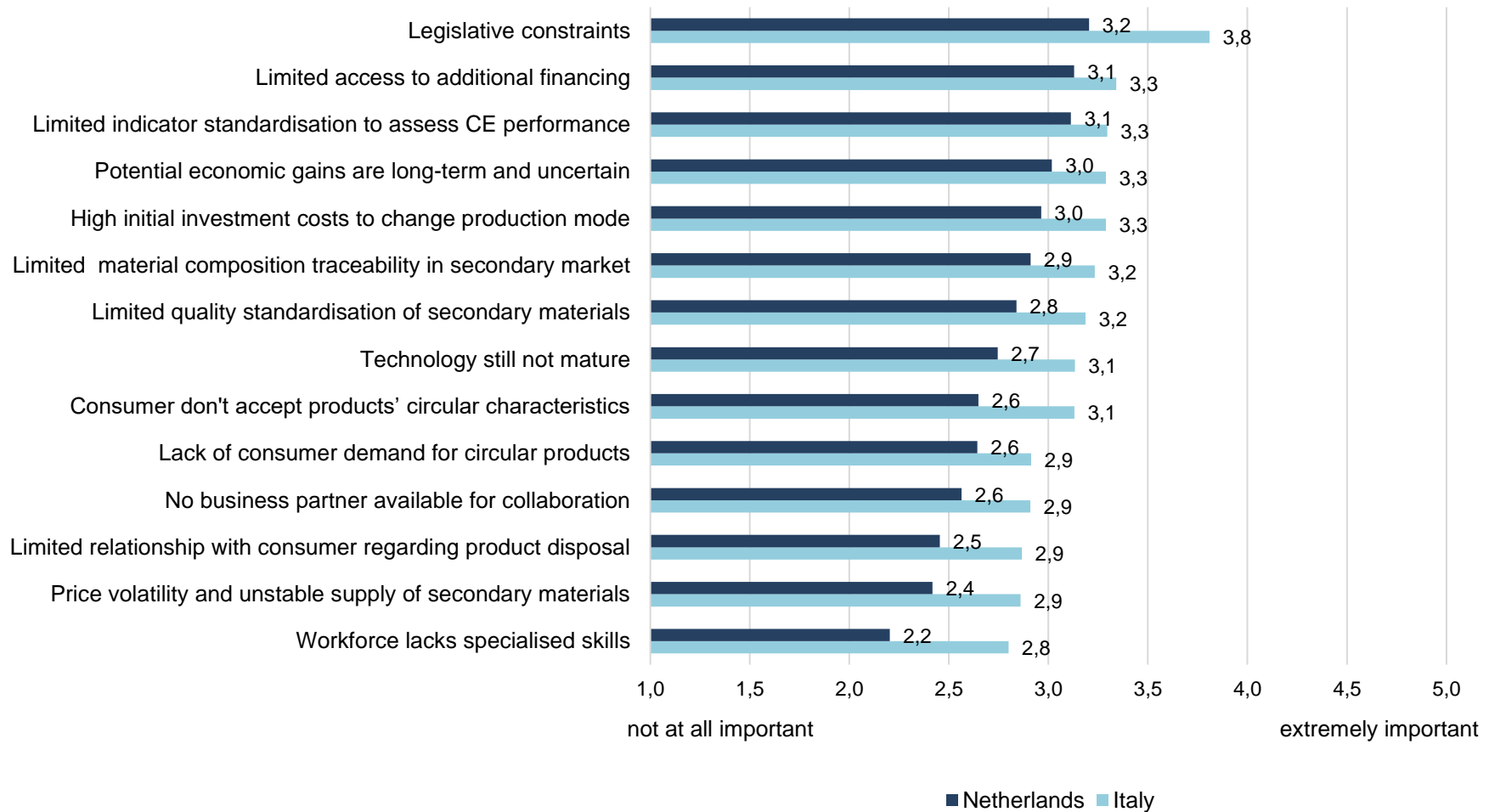not at all important (1,0) ... extremely important (5,0)

■ Netherlands ■ Italy

Figure 9. Respondents' perceived importance of CE barriers, scale from 1 (not at all important) to 5 (extremely important), 'I don't know' responses were excluded from weighted average, n=105.

6 Conclusion

This brief interim report presents preliminary descriptive statistics of the results from the online survey "Assessing the sustainability of Circular companies" distributed in mid-2019. These results describe the composition of respondents, findings on the perceived link between CE and sustainability, CE practices planned or implemented, drivers and barriers of CE implementation, as well as the assessment approaches utilised within companies engaged in CE activities.

Although the analysis is still ongoing, the preliminary results suggest that surveyed companies are predominantly active in the Recycling and Recovery stage and/or the Manufacturing and Remanufacturing stage of the value chain. This partially explains why activities associated with Recycling and Recovery, as well as 'increasing energy and material efficiency' were the most prevalent CE practices implemented by companies in this sample. Concerning the CE concept itself, the idea of designing for zero waste was most strongly associated with a CE, while interestingly the PSS business model seemed to be the least important characteristic. A pertinent observation is that front-running CE companies think that CE and sustainability are closely linked, expecting predominantly positive environmental impacts from advancing their CE practices. Given that most companies in the sample indicated they pursue sustainability goals, it was not surprising that the the most used assessment approach on a company level were sustainability indicators based on direct impact, whilst on the product level the most prevalent assessment approach was the Environmental LCA. Finally, the drivers and barriers to implementing CE practices varied considerably per country, though the overall ranking of the drivers and barriers remained the same. The main driver for companies to implement CE practices is the potential to reduce negative environmental impacts while the main barrier determined are legislative constraints.

In the following weeks, the researchers will analyse the data more in depth to identify further trends and will conduct interviews to shed light on emerging questions from this analysis. Simultaneously, the survey will be distributed in Portugal and France. The consolidated information will then be presented in a final report and published in several academic articles.