Open-BIO

Opening bio-based markets via standards, labelling and procurement

Work Package 9: Social Acceptance

Deliverable N° 9.1

Annex III: Acceptance of Bio-Based Products in Public Procurement

Part 1: Detailed Discussion of Results

Part 2: Data on Differences Across Countries and Expert-levels

September 2014

Public

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Disclaimer

The research leading to these results has received funding from the European Union Seventh Framework Programme (FP7/2007-2013) under grant agreement n° KBBE/FP7EN/613677.

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Part 1: Detailed Discussion of Results

1 Overview

This report represents an annex to the first deliverable of work package 9 on "Social Acceptance" in the Open-Bio project. It presents empirical findings on the acceptance of bio-based products in public procurement. The report results represent preliminary findings derived from the first round of a two-stage Delphi survey among procurement experts, in particular with regards to green public procurement. The main objective of this two-stage Delphi survey is the identification of key factors influencing the acceptance of bio-based products in public procurement. In particular, it seeks to identify factors, which may facilitate the uptake of bio-based products in green public procurement. In addition, it addresses issues related to standardization, information systems and other support measures and their importance for promoting the public procurement of bio-based products. The results pertaining to information systems and labelling will inform related work in the Open-Bio project in work packages 7 ("Labelling") and 8 ("Product Information List").

1.1.1 Background: Public procurement as a driver of (environmental) innovation

Public procurement in Europe represents an estimated 16 percent of total GDP. As recognized by the European Commission as well as important member state governments, it thus offers a large potential as an instrument for creating demand for innovative and environmentally-friendly products (European Commission, 2008). In this vein, approaches to innovation-oriented and green public procurement have increased in importance in recent years.

Innovation-oriented public procurement an be defined as any public procurement activity that aims at stimulating the creation, improvement, adaption and diffusion of innovative solutions (technological or organisational). The underlying rationale is that the increased demand for innovative products will stimulate their commercialization and/or bring down prices by supporting the development of economies of scale. By doing so, it is expected to create spill-over effects by stimulating private demand and crowding in private finance. (Aschhoff & Sofka, 2009; Edler & Georghiou, 2007; Hollanders & Arundel, 2007; Mazzucato, 2011)

Green (or sustainable) public procurement can be defined as a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services and works with the same primary function that would otherwise be procured. Green public procurement may thereby directly improve the environmental sustainability of public sector activities. In addition, it may also have the catalytic functions already mentioned above (Brammer & Walker, 2011). Therefore, in the field of environmental innovation, green and innovation-oriented public procurement may represent overlapping concepts. Specifically, in the field of bio-based products, both innovation-oriented and green public procurement may play a potential role in driving public sector demand.

1.1.2 Promoting the public procurement of bio-based products: the contribution of the Open-Bio project

Against this background, the European Union's Bioeconomy Strategy calls for concrete measures to facilitate green public procurement of bio-based products. This includes among other things the development of an initial European product information list of bio-based products, which provides potential buyers of bio-based products from the private and public sector with required information. Responding to this call, such a list is being developed by the Open-Bio project and will be published in the form of an online informational tool targeting procurement officers. To ensure that this informational tool corresponds to the needs and is accepted by the corresponding target groups, preliminary research is being conducted to identify the respective informational needs and priorities.

In the context of public procurement – the focus of this report – this is closely related to practices in the realm of green and innovation-oriented public procurement. In addition to general information needs, a key question pertains to how the procurement of bio-based products may be integrated in green or innovation-oriented public procurement schemes, a question explored in detail in the following report.

2 Methodological approach

2.1 The Delphi method

This study aims to provide a comprehensive perspective on the acceptance of bio-based products in public procurement with a particular focus on green public procurement practices. It seeks to identify the most decisive factors influencing the purchase of bio-based products in public procurement. The aim is not to identify organization-specific acceptance factors, but to generate an assessment based on the opinions of a panel of experts in public procurement and green public procurement. To meet this objective, this study adopts the Delphi method. The Delphi method represents an approach for aggregating and consolidating opinions from experts on a particular subject. Rather than collecting data on the behaviour of individual survey respondents or the organizations they represent, it solicits their informed opinion on a selected topic. The method involves two or more survey rounds, so that results from the initial survey can be validated and refined. In this way, the method aims to synthesize the collective expertise of the respondents, thus increasing the accuracy of the resulting assessment (for more information on the Delphi method Häder (2009); Linstone & Turoff (2002)).

2.2 Survey development

The related questionnaire was developed in an iterative process, involving a review of the literature on policy and market developments in the field of bio-based products and on current practices in the field of green public procurement and innovation-oriented public procurement.

In addition the survey was reviewed by project partners in multiple feedback rounds. The questions on standardization and information systems were designed in close cooperation with partners in the Open-Bio project to ensure that the results would provide relevant inputs to the related work program of the Open-Bio project. Finally, a preliminary version of the survey was tested by a group of procurement officials.

The majority of survey questions was formulated as general questions to be answered based on the respondents‘ knowledge of public procurement as well as the practice of green and innovation-oriented public procurement. The aim was to ensure that all responses refer to procurement practices beyond the particular context of the respondents' organizations thus minimizing variations based on the particular organizational context.

In addition, the responses were analyzed *ex post* to identify any variations in the response patterns of different respondent sub-groups based on characteristics, such as the respondents' country of residence work, administrative level of the respondents' organizations and expertise in the fields of bio-based products, green public procurement and innovation-oriented public procurement. No statistically significant differences were identified for the administrative level of the respondents' organizations or the level of expertise related to the field of bio-based products. A number of statistically significant differences were identified in relation to the respondents' country of residence (i.e. location of the respondents' work place) and their declared level of expertise regarding green public procurement and innovation-oriented public procurement. This is also consistent with the survey objectives, as these factors are, in fact, expected to influence response patterns. Relevant differences in these areas are highlighted where appropriate in the following discussion of the results. For a comprehensive overview of the corresponding data disaggregated by country and expert-level, please see annex 3B.

2.3 Survey administration

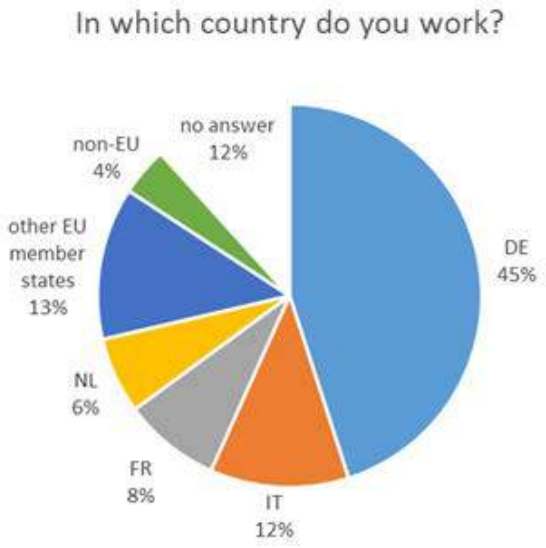
The first round of the survey was administered as an online survey, available in English as well as Czech, Danish, French, German and Slovenian. The distribution of the survey took place via a diverse set of European and national multiplier organizations in the field of public procurement and green public procurement. In total, the online survey was completed and submitted by 171 respondents. A total of 107 (63%) respondents left their contact details, thus indicating their willingness to participate in the second survey round.

3 Respondent and organizational profiles

3.1 Geographic distribution of respondents

The survey was completed by respondents from more than 12 different EU member states and a number of non-EU member states, defined according to their place of work. The largest number of respondents indicated Germany (45%) as their place of work followed by Italy (12%), France (8%) and the Netherlands (6%).

Figure 1: Geographic distribution of respondents's place of work



3.2 Organizational affiliation of respondents

Over two thirds of respondents work either directly for the government or a government agency[1] (39%) or for a municipal or other state-owned service provider (32%). About two thirds of respondents work for organizations, which operate at the municipal / local level (30%) or the regional / provincial level (33%), each representing approximately one third of the total. Approximately a quarter operate at the national level (23%), and less than 5 percent work at the European-level (4%). More than half of respondents' organizations have over 250 employees. Approximately 20 percent have less than 50 employees.

[1] This includes 11 responses in the category "Other", which were clearly identifiable as government entities (such as "Regional administration").

Figure 2: Type and administrative level of respondents‘ organizations

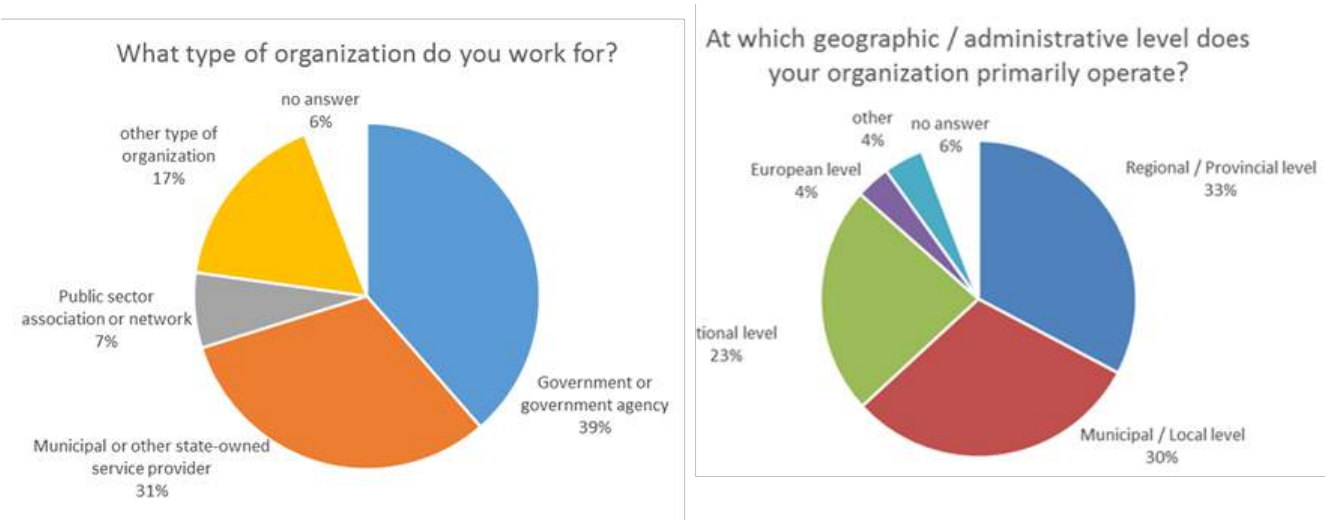
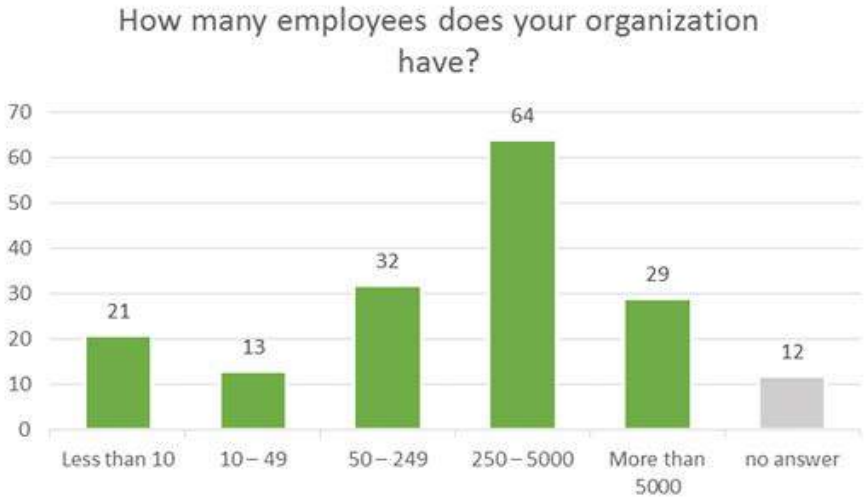
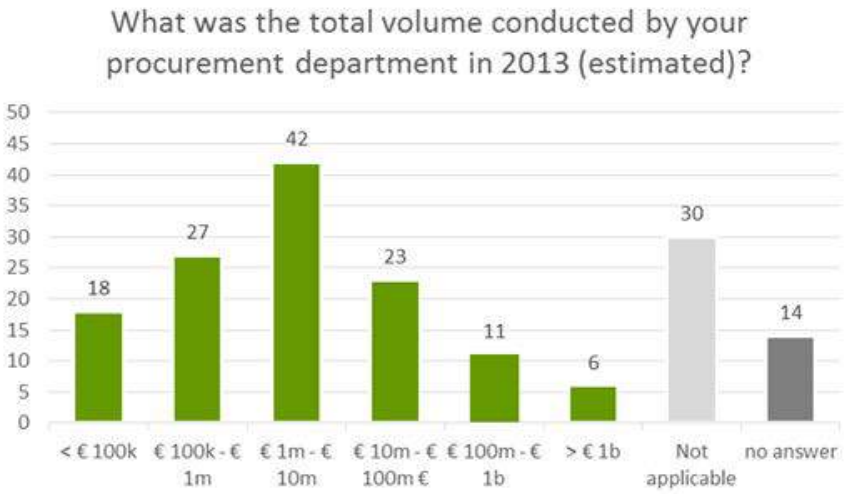


Figure 3: Size of respondents’ organizations



Three quarters of the respondents answered the question on the annual volume of procurement, indicating that their organization engages in procurement activities. Among these close to two thirds estimated that the volume of purchases conducted by the organization’s procurement department was more than €1 million. Thirteen percent estimated this to be more than €100 million and close to 5 percent more than €1 billion. The largest single group is situated in the range of €1 million to €10 million and represents a third of those who answered the question.

Figure 4: Estimated annual volume of procurement



3.3 Procurement practices

Close to two thirds of respondents claim that their organization practices green public procurement, while 42 percent indicate that their organization engages in innovation-oriented public procurement. Furthermore, close to 40 percent of respondent organizations have an administrative guideline or directive related to green public procurement, while less than 20 percent of organizations have such a guideline or directive for innovation-oriented public procurement. Finally, 55 percent of those who have a green public procurement guideline also claim to monitor its implementation with performance indicators. This is the case for only 46 percent of those organizations with a guideline or directive on innovation-oriented public procurement.

Among organizations that do not have guidelines or directives for green or innovation-oriented public procurement, less than 10 percent of respondents expects such an instrument to be adopted in the near future (within the next year). About a third of these respondents expect a green public procurement guideline or directive to be adopted within 1 to 5 years, while close to a quarter of respondents expect this for innovation-oriented public procurement.

Figure 5: Green public procurement practices

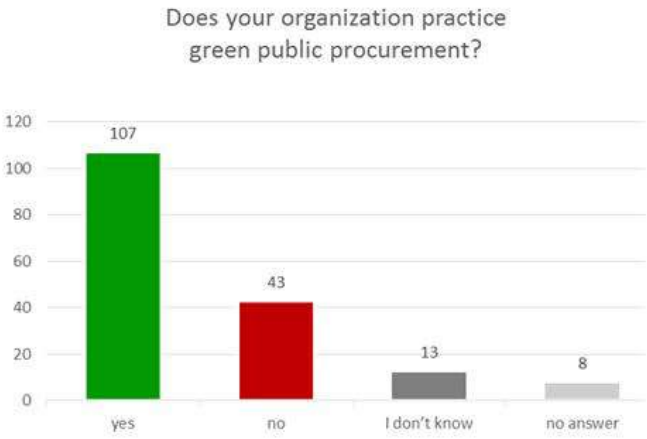
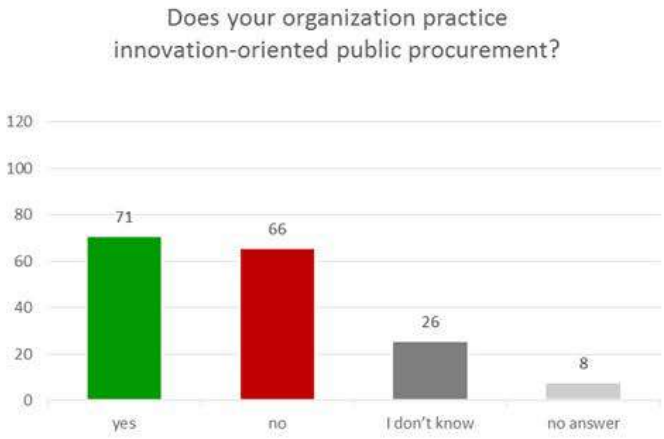
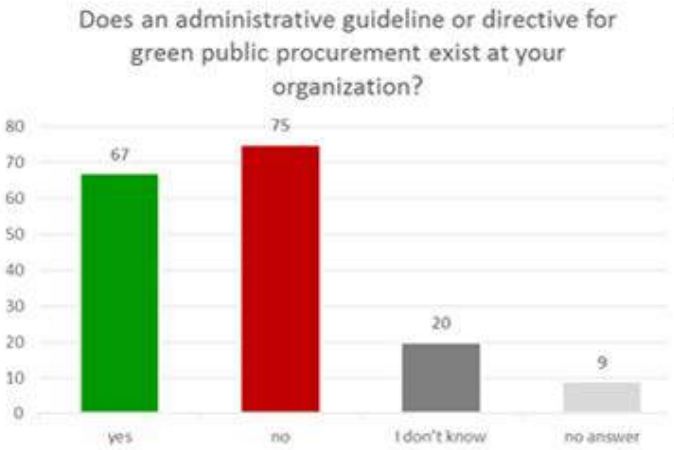
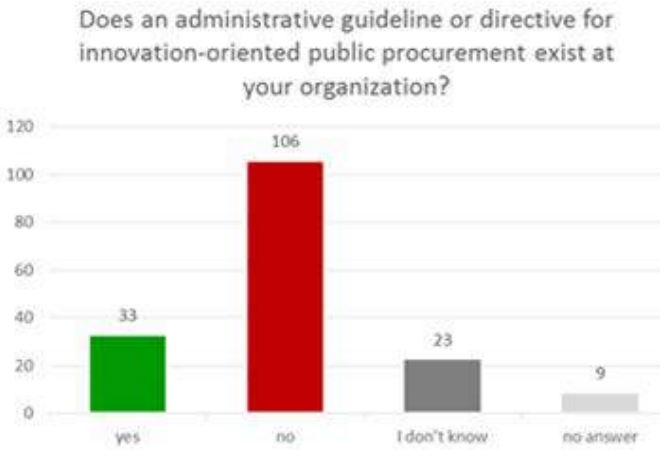
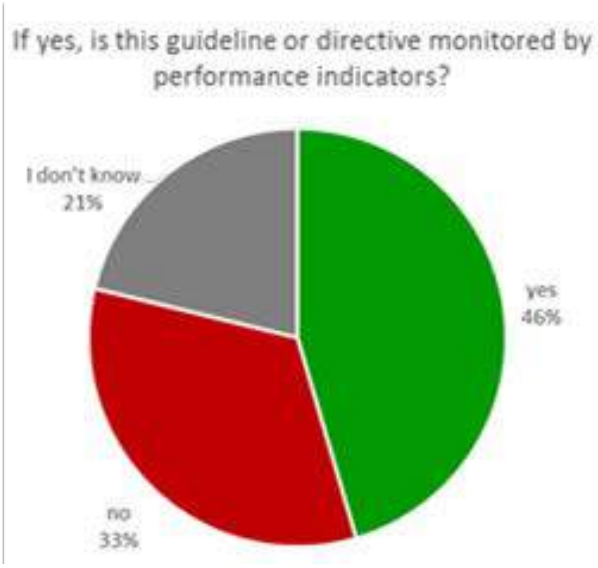


Figure 6: Innovation-oriented public procurement practices





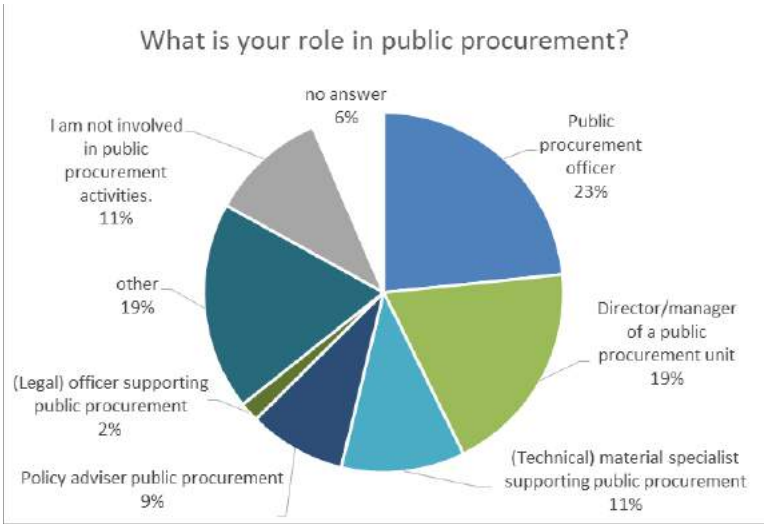




3.4 Respondents' background in public procurement

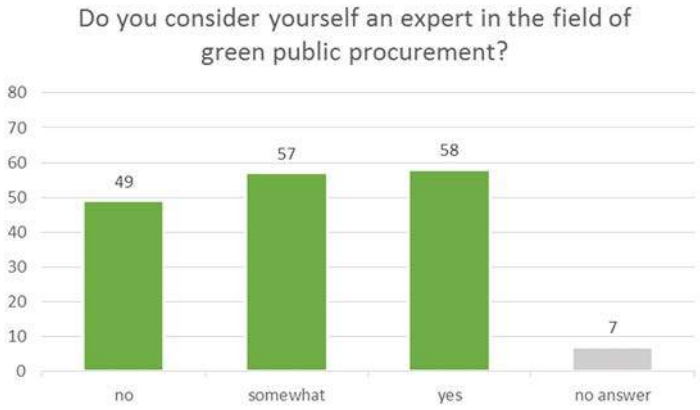
Among the survey respondents, more than half (55%) are directly involved in the practice of public procurement as procurement officers, directors or managers of a public procurement units or as a (technical) material specialist or (legal) officer supporting public procurement. A further 28 percent of respondents are either policy advisers in the field of public procurement or pursue another related occupation. Eleven percent indicated that they are no involved in public procurement activities.

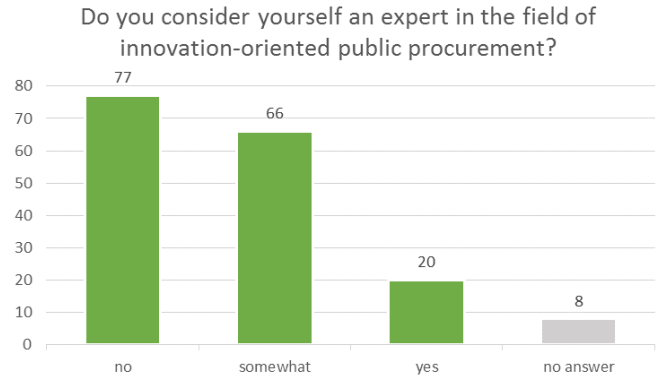
Figure 7: Respondents' roles in public procurement



Respondents were also asked to indicate their level of expertise in the field of green and innovation-oriented public procurement. More than two thirds claimed to have at least some expertise in the field of green public procurement, and of this approximately half (i.e. 34 percent of all respondents) consider themselves experts. Only about half of respondents indicated that they have at least some expertise in the field of innovation-oriented public procurement, and only 12 percent consider themselves experts.

Figure 8: Individual expertise in the field of green and innovation-oriented public procurement

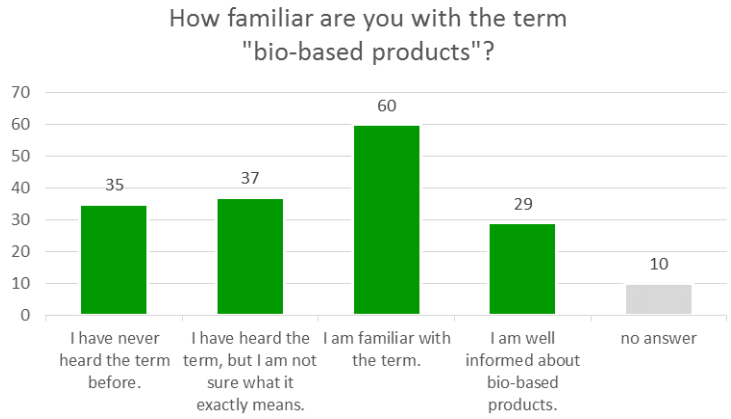




3.5 Respondents' expertise in the field of bio-based products

Slightly over half of respondents indicated to be familiar with the term "bio-based products", of which about one fifth (i.e. 17 percent of all respondents) claim to be well informed about bio-based products. A further 20 percent were not aware of the term, while 22 percent had heard of the term, but were unsure of its exact meaning.

Figure 9: Individual expertise in the field of bio-based products



4 Decision-making criteria in green public procurement

4.1 Questionnaire design

In a first set of questions, respondents were asked to provide their assessment of common current and future green public procurement practices and the importance of various environmental and cost- and performance-related criteria in this context. Based on a scale ranging from -2 (I strongly disagree) to +2 (I strongly agree), respondents were asked to indicate their agreement or disagreement with four statements, taking into consideration their knowledge of common green public procurement practices. The first two statements relate to environmental aspects and were followed by a list of environment-related items followed by two statements and a corresponding list on cost- and performance-related aspects (see Figure 10).

The aim of these questions was to identify key aspects and their relative importance within the current and future practice of green public procurement. It intends to help identify possible entry-points for promoting the uptake of bio-based products based on existing procurement practices as well as future trends. By requesting respondents to take into consideration their knowledge of common green procurement practices, the questions were designed to ensure that respondents would provide a general assessment of green public procurement practices based on their expert knowledge rather than merely report on practices within their current organization.

Figure 10: Survey questions - Environmental and cost- and performance-related aspects in green public procurement

a.) Environmental aspects

For each item, please answer to what extent you agree or disagree with the following statements, taking into consideration your knowledge of common green public procurement practices.

Please indicate your level of agreement on a scale from -2 ("I strongly disagree") to +2 ("I strongly agree")!

A.) The following item represents an important issue for consideration in the current practice of green public procurement.	**B.) The importance of the following item for the practice of green public procurement is likely to increase in the future.**

b.) Cost- and performance related-aspects

For each item, please answer to what extent you agree or disagree with the following statements, taking into consideration your knowledge of common green public procurement practices.

Please indicate your level of agreement on a scale from -2 ("I strongly disagree") to +2 ("I strongly agree")!

A.) When making procurement decisions today, the following cost- and performance-related aspects represent very important criteria for assessing and comparing products.	**B.) The following cost- and performance-related aspects are likely to increase in importance in the future as criteria for assessing and comparing products within the context of green public procurement.**

4.2 Survey results

4.2.1 Environmental aspects – General findings

Figure 11 presents the responses for the perceived importance of the listed environmental aspects for the current practice of green public procurement. Figure 12 presents the responses for the expected increase in importance of the same list of items. The items are ranked in descending order according to the average of all responses (i.e. the sum of all responses ranging from -2 to 2 divided by the total number of respondents who answered the particular item).

The most important environmental aspect today in green public procurement is *Energy efficiency*, which 90 percent of respondents consider important today. Despite its relatively high importance today, an even larger percentage (i.e. 95 percent of respondents) expect its importance to further increase in the future. The same pattern is visible for all the remaining items.

The item with the least importance today is the *Use of GMO-free raw materials*, which less than half of respondents consider important. Slightly more than 60 percent expect its importance to increase in the future.

The item *Bio-based content / Use of renewable raw materials* figures among the least important environmental aspects in the current practice of green public procurement. Nonetheless slightly more than 56 percent of respondents agree or strongly agree that it represents an important issue today. Moreover, 75 percent of respondents expect its importance to increase in the future. While the item ranks second to last in terms of its importance today, it ranks slightly higher (7th of 10) in terms of the expected increase in future importance. Finally, in the comment section following the question, two respondents suggested the replacement / avoidance of fossil resources as additional environmental aspects. This may suggest that explicitly linking the use of bio-based materials with the avoidance of fossil resources might help in boosting the relevance of the item for green public procurement.

In general, items related to the raw materials used for production, i.e. *Use of recycled or material or waste products*, *Sustainability of raw material production / extraction, Bio-based content / Use of renewable raw materials, Use of GMO-free raw materials*, are considered relatively unimportant relative to the remaining items, ranking 6th, 7th, 9th and 10th respectively. Despite slight changes in the specific rankings, this does not change with regards to the expected future importance.

Among the two end-of-life related options, *Recyclability* was considered among the most important aspects both today and in the future, ranking third in both areas. Seventy-nine percent of respondents consider it an important aspect today and over 90 percent expect its importance to increase in the future. Only 59 percent of respondents consider *Biodegradability / Compostability* as an important aspect today, and it ranks 8th among the 10 items. Regarding its future importance, the item ranks second to last.

Finally, in the comment section following the question, a number of respondents suggested additional environmental aspects of importance in green public procurement. Several respondents referred to environmental life-cycle considerations and the avoidance of unnecessary transportation (i.e. preference for locally available products). In addition, two respondents listed biodiversity as an additional environmental concern and a further two respondents highlighted the importance of social aspects in addition to environmental aspects.

Figure 11: Importance of environmental aspects for consideration in the current practice of green public procurement, ranked according to average of all responses

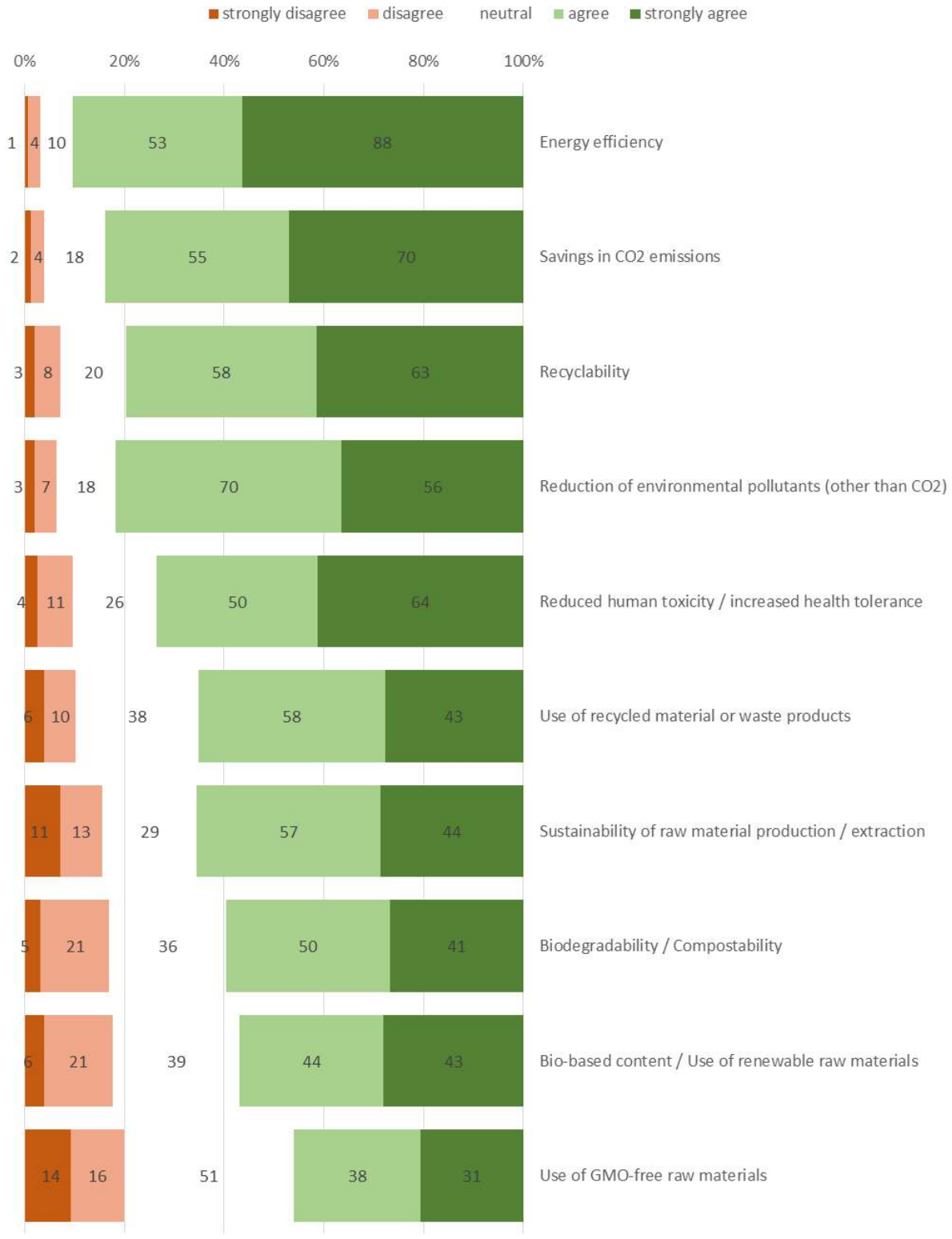
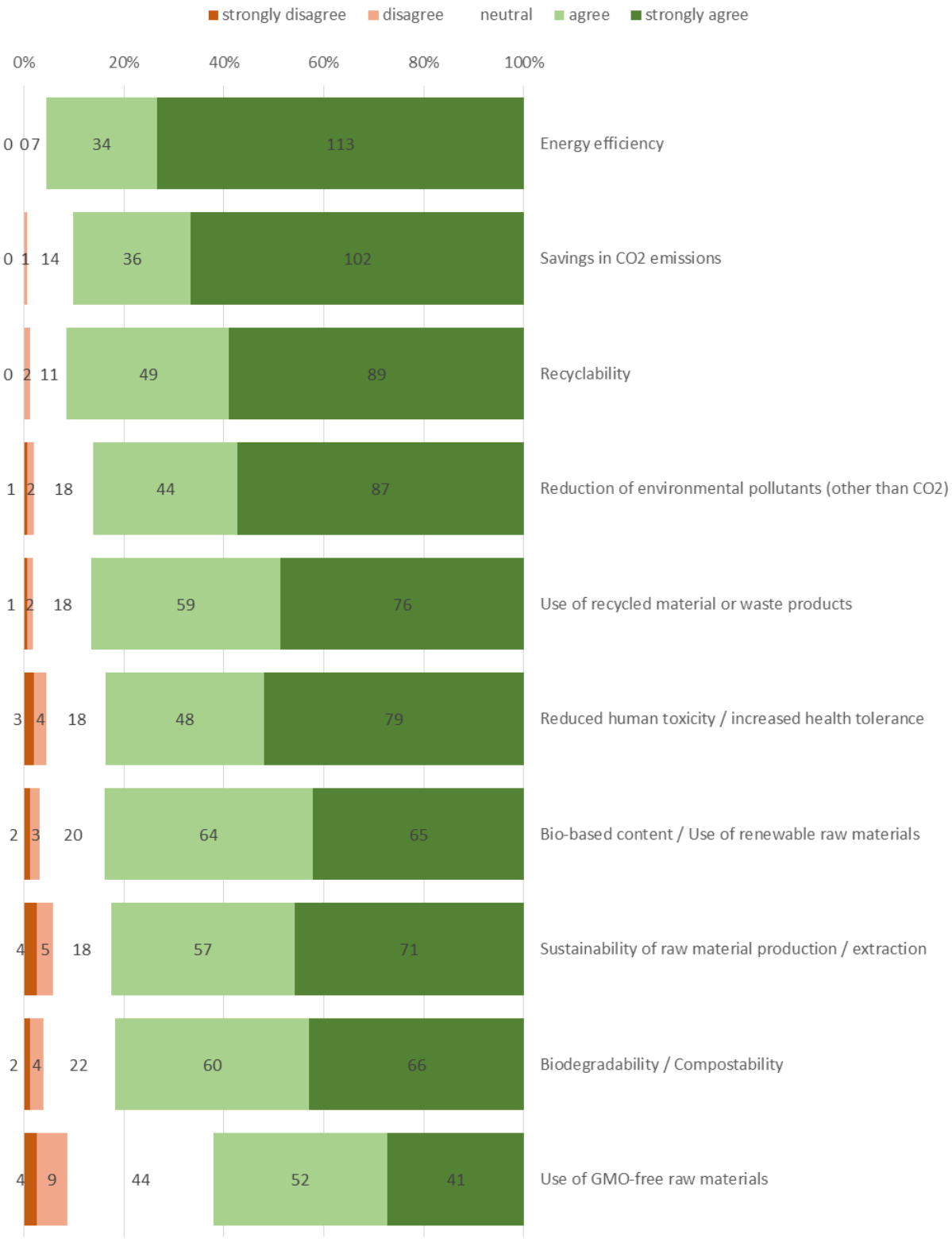


Figure 12: Future importance of environmental aspects for the practice of green public procurement, ranked according to the average of all responses



4.2.2 Cost- and performance related aspects

Figure 13 presents the responses regarding the perceived importance of the listed cost- and performance-related aspects for assessing and comparing products within the current practice of green public procurement. Figure 14 presents the responses for the perceived future importance of the same list of items. The items are ranked in descending order according to the average of all responses (i.e. the sum of all responses ranging from -2 to 2 divided by the total number of respondents who answered the particular item).

The results indicate that the *Price of product* still represents the single most important cost- and performance related item with 96 percent of respondents considering it important. This is followed by *Impact on operating costs* and *Impact on maintenance costs* with 83 and 79 percent of respondents, respectively, indicating its importance today. *Disposal costs* and *Clean-up costs in case of accidents involving the product* are considered the least important aspects with 49 and 31 percent of respondents, respectively, agreeing that it represents an important aspect for assessing and comparing products.

For all items, more than 50 percent of respondents expect their importance to increase within the context of green public procurement. *Impact on maintenance costs* and *Expected lifetime of product* rank the highest with more than 90 percent of respondents agreeing that the importance of the item is likely to increase. *Price of product* only ranks 7th of 11 items for this question. This may be explained by its high importance in current practice, making it less likely to further increase in importance.

Figure 13: Importance of cost- and performance-related aspects for the practice of green public procurement, ranked according to average of all responses

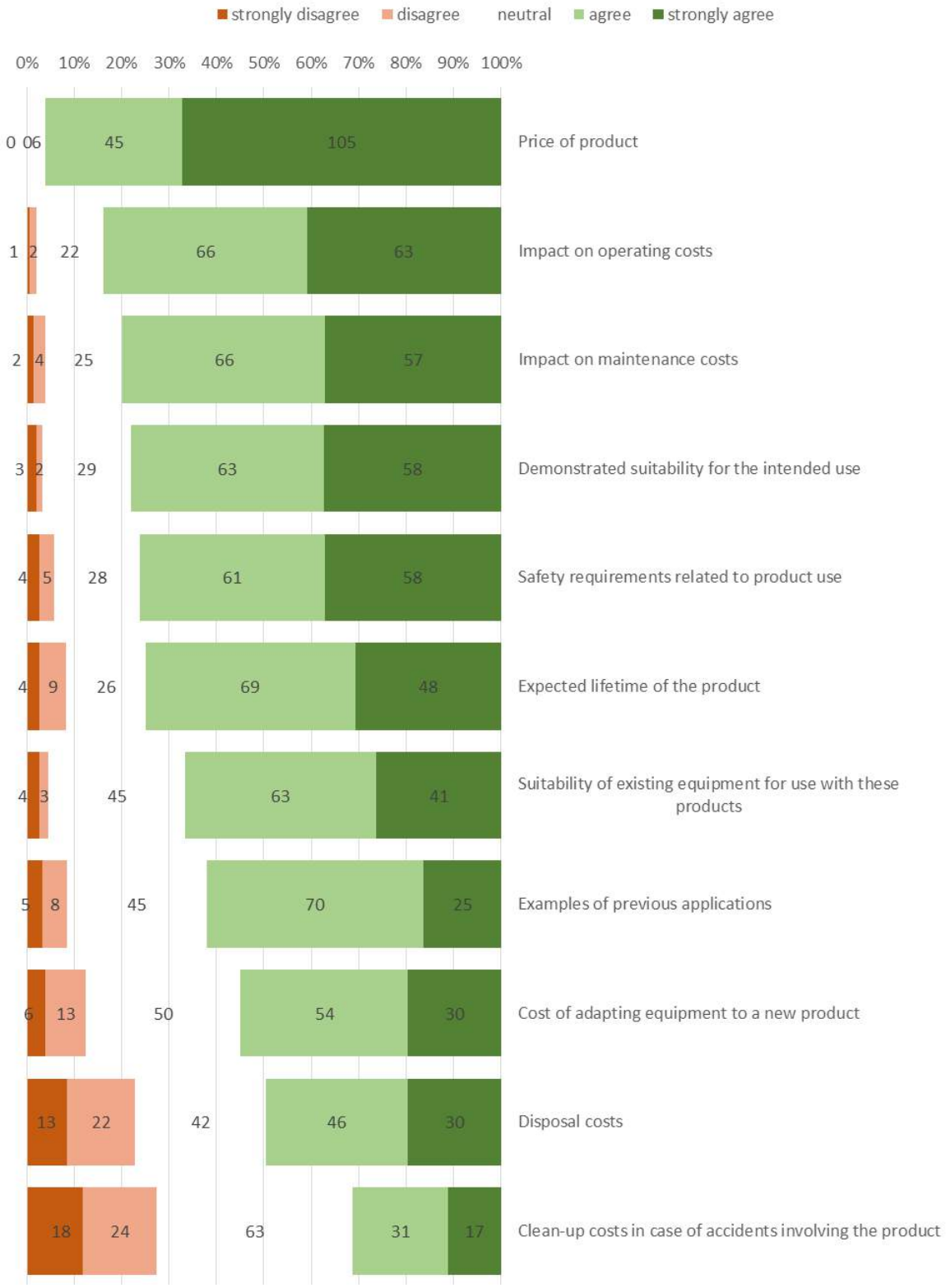
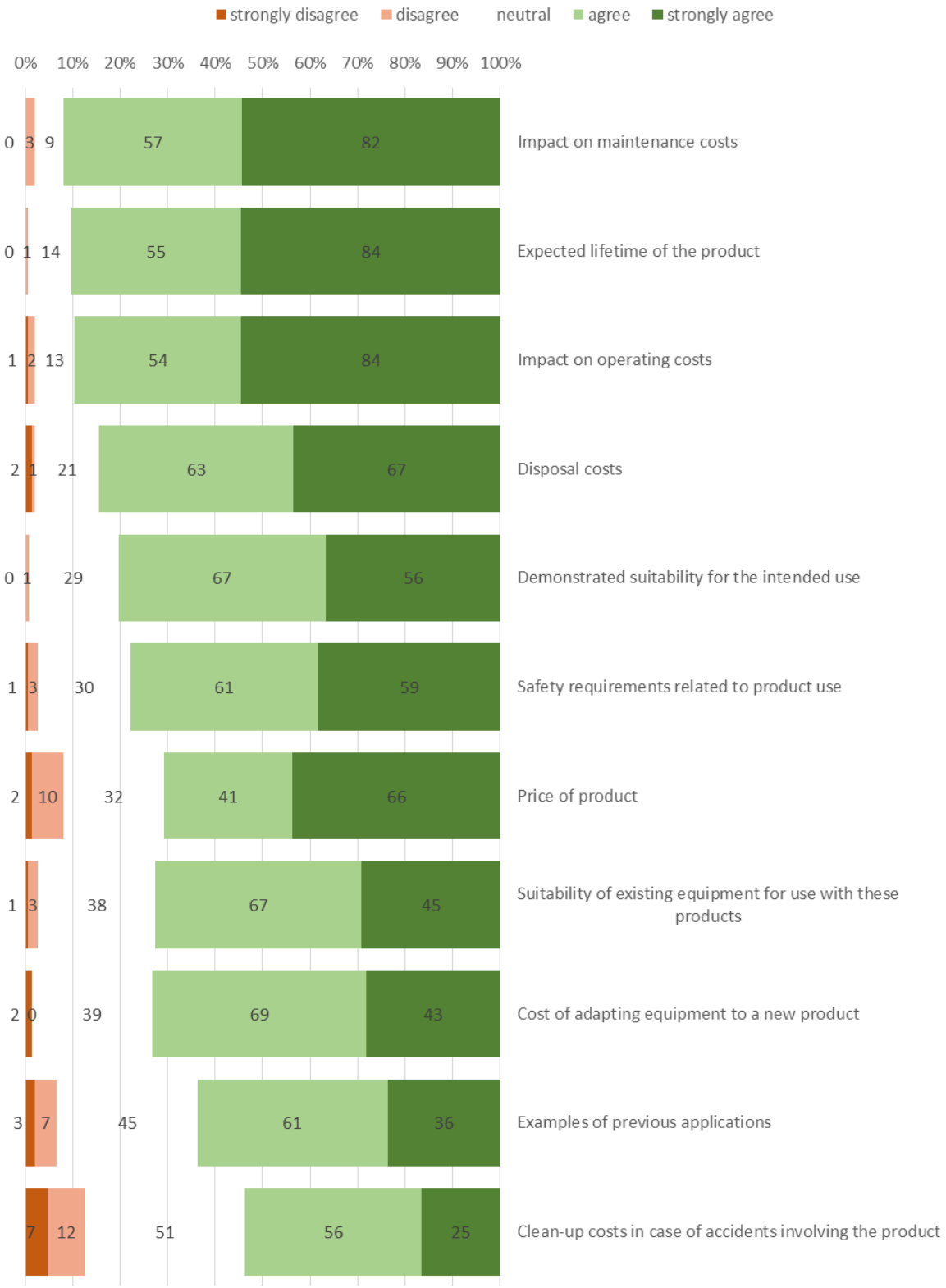


Figure 14: Future importance of cost- and performance-related aspects for the practice of green public procurement, ranked according to average of all responses

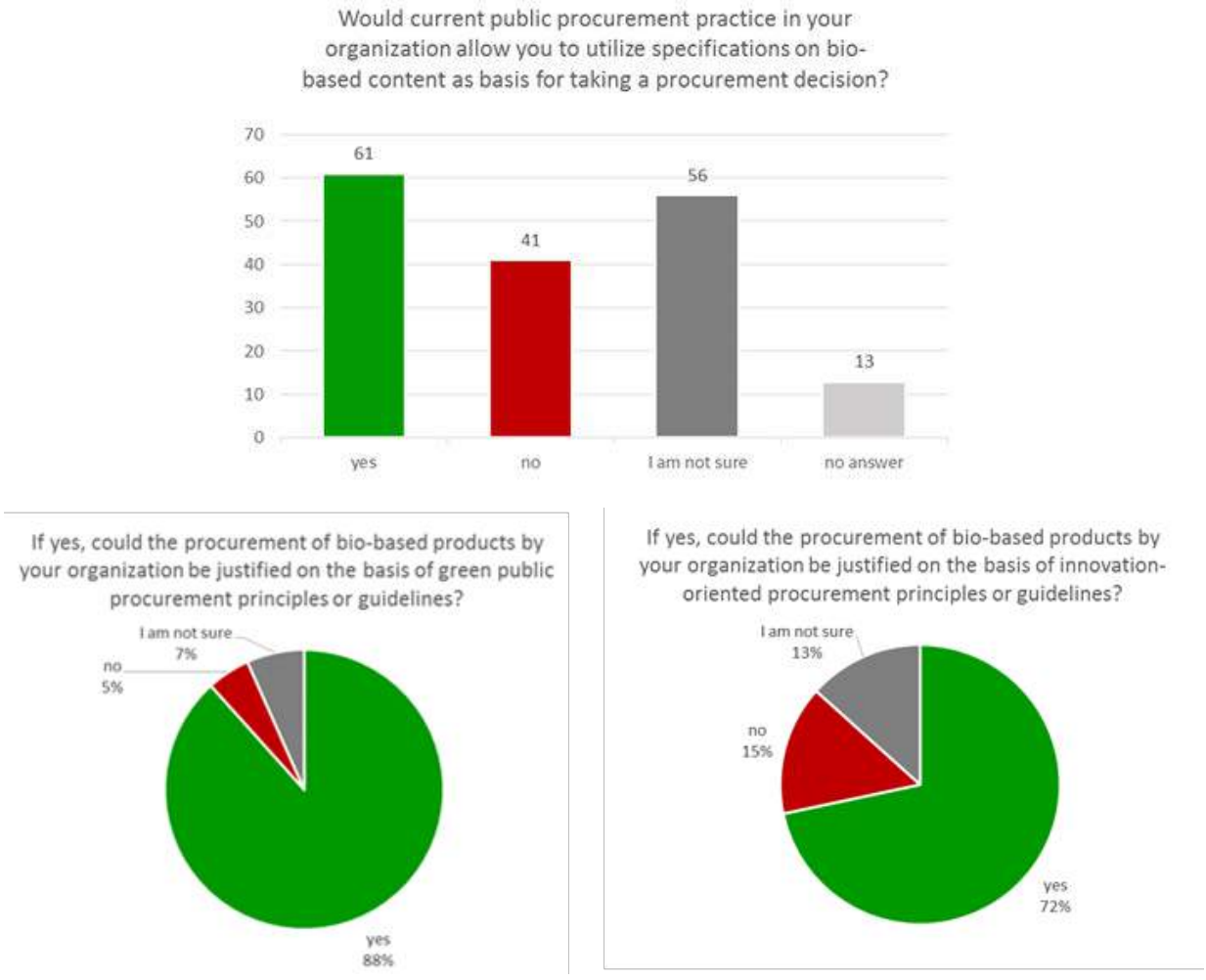


4.2.3 Bio-based content as a criteria in current public procurement practices

In a further set of questions, respondents were asked whether specifications on bio-based content could be utilized as a basis for taking public procurement decisions in their own organization. Although inconsistent with the chosen Delphi method, this was conducted to generate a first impression of the status quo in this area. Due to the unrepresentative nature of the survey, it does not provide the basis for any generalizations in this regard.

Over one third indicated that specifications on bio-based content could be used as a basis for taking a procurement decision in their organization (36%), while slightly less than one quarter indicated that procurement practices would not allow this (24%). Slightly over 40 percent were either unsure or failed to answer the question, indicating a high degree of uncertainty regarding the question. Of those who gave an affirmative response, almost 90 percent indicated that this could be justified on the basis of green public procurement principles and over 70 percent indicated that this could be done in the context of innovation-oriented public procurement.

Figure 15: Bio-based content as a criteria in public procurement – current practice



4.2.4 Differences across respondent groups

Across all three areas – environmental aspects, cost- and performance-related aspects and the role of bio-based content as criteria in green public procurement – only few significant differences could be found across respondents with different levels of expertise. Nevertheless, a small number of individual items are worth noting. Firstly, regarding the future importance of environmental aspects, respondents with at least some declared expertise in innovation-oriented public procurement expect the importance of the *Use of recycled material and waste products* to increase more strongly than respondents with no such expertise (see Figure 16). Similarly, respondents with some degree of expertise in green public procurement anticipate the importance of the *Sustainability of raw material production / extraction* to grow more significantly than respondents with no expertise in green public procurement (see Figure 17).

Figure 16: Differences across expert levels with regard to the expected increase in importance of the use of recycled material or waste material for green public procurement.

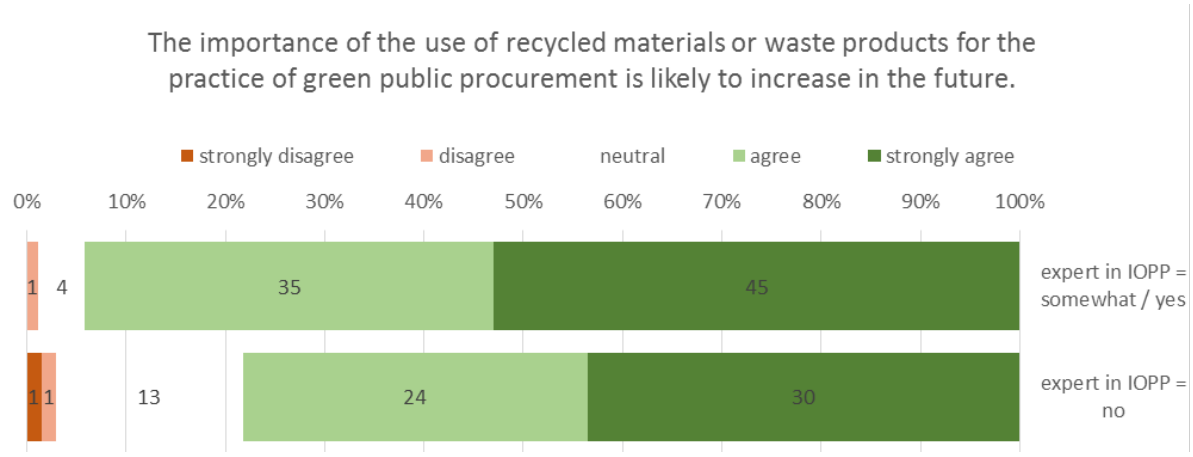
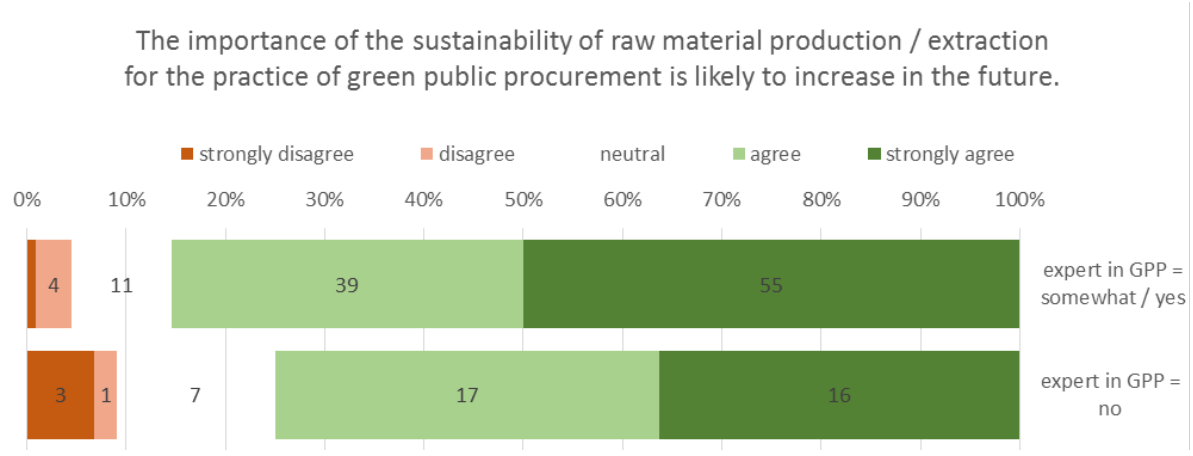
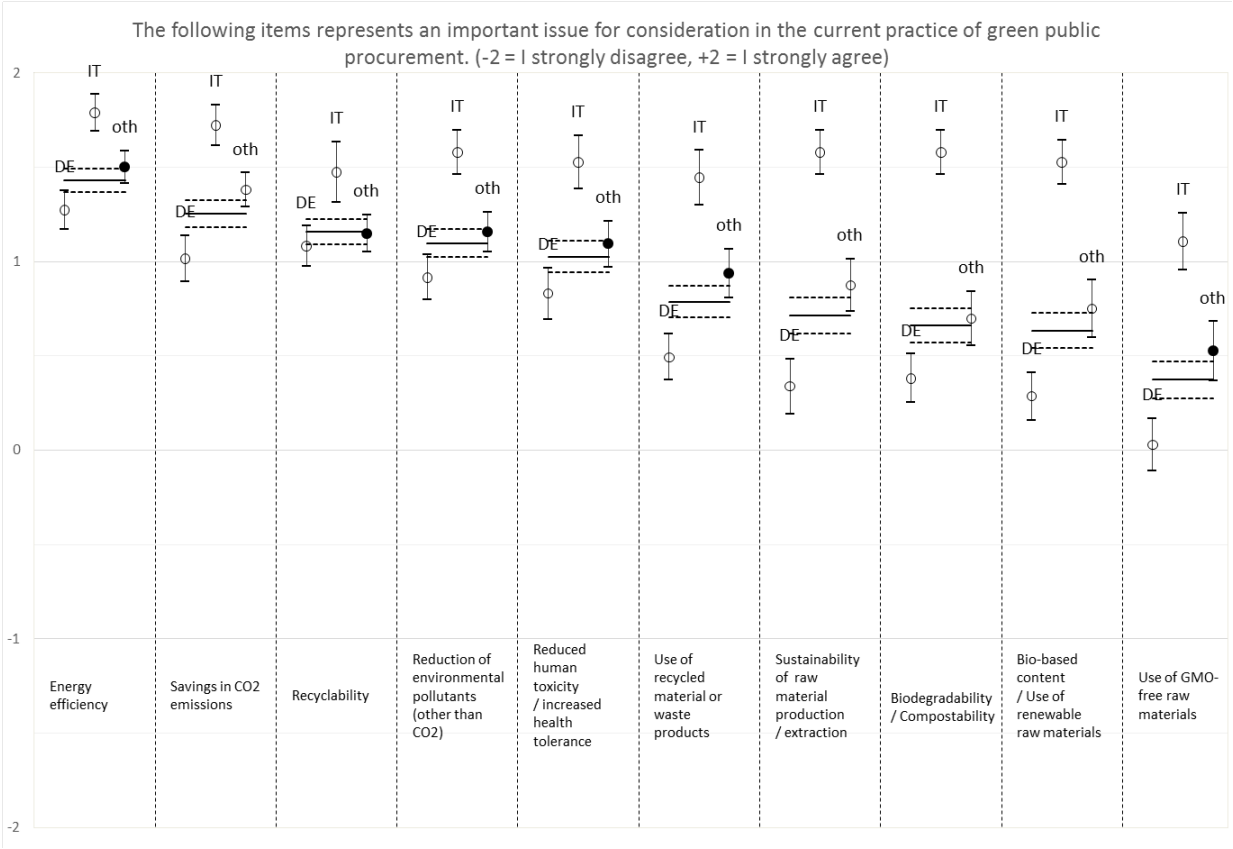


Figure 17: Differences across expert levels with regard to the expected increase in importance of the sustainability of raw material production / extraction for green public procurement.



More significant differences could be observed across countries, i.e. between Germany, Italy and other countries, in particular for environmental aspects in the current practice of green public procurement. Firstly, German respondents consistently provide significantly lower ratings than Italian respondents. The remaining respondents are consistently situated between the two countries. For *Sustainability of raw material production / extraction*, *Biodegradability / Compostability* and *Bio-based content / Use of renewable raw materials*, differences across all three groups are statistically significant, while German respondents place a significantly lower importance on *Savings in CO_2 emissions* than both Italian and other respondents.

Figure 18: Importance of environmental aspects for consideration in the current practice of green public procurement – Differences across countries



This figure depicts estimated means and standard errors for the entire sample of respondents (horizontal lines) and for each group separately (circles with vertical bars). Hollow circles indicate group means that significantly differ based on two-sided tests at the 0.05 level in at least one pairwise comparison. Bonferroni correction is used to adjust p values for multiple comparisons.

In addition, an important discrepancy can be observed in the relative importance attributed by German and Italian respondents to different end-of-life options in the current practice of green public procurement. While *Recyclability* is ranked second among German respondents, it ranks 8th among Italian respondents. At the same time, *Biodegradability* is ranked 4th among Italian respondents and 7th among German respondents.

Only few significant differences could be identified across countries regarding cost- and performance related aspects and regarding the expected future importance of environmental aspects. Nevertheless, two items stand out, as they confirm the findings regarding end-of-life options. Firstly, Italian respondents consider an increase in the importance of Biodegradability / Compostability to be significantly more likely than German respondents (see Figure 18). Moreover, Italian respondents consider Disposal costs to be of significantly greater importance for the assessment and comparison of products in green public procurement than both German and other respondents (see Figure 19). While the item is ranked 4th among Italian respondents, it is ranked 10th among German and other respondents.

Figure 19: Differences across countries with regard to the expected increase in importance of biodegradability / compostability in green public procurement.

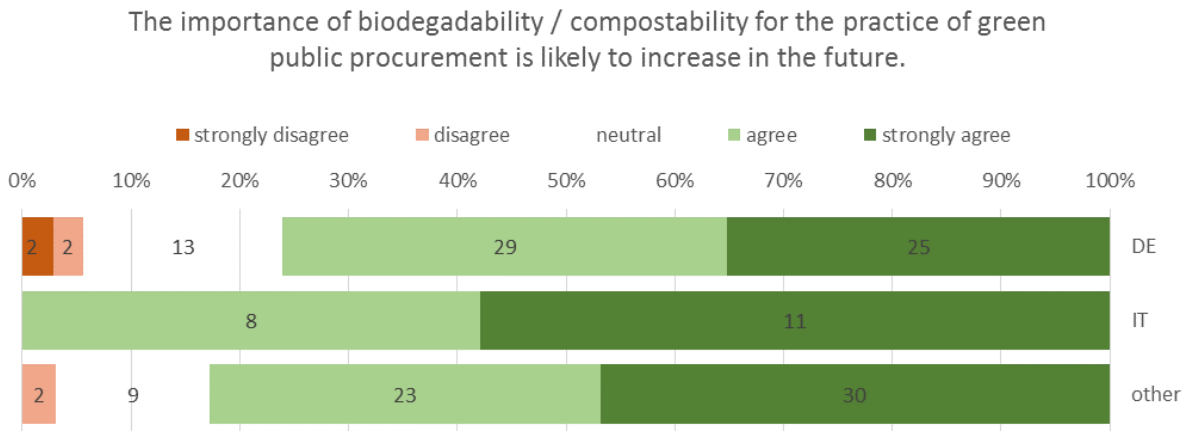
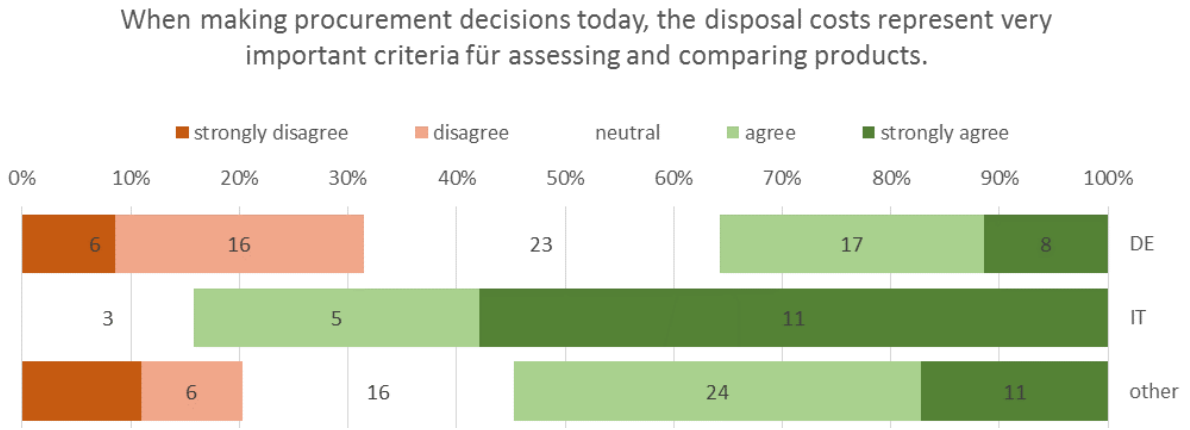


Figure 20: Differences across countries with regard to the importance of disposal costs in green public procurement.



5 Information on Bio-Based Products for Public Procurement

5.1 Questionnaire design

In a next set of questions, respondents were asked questions on informational needs when considering the purchase of bio-based products. On a scale of Respondents were asked to rate the importance of different items in this regard. In addition, respondents were asked to assess whether they consider it important that this information is standardized to facilitate comparison of similar products (see Figure 21 for the specific questions).

These questions were developed with the aim to ensure that the informational tool being developed within the context of the Open-Bio project offers relevant product information to public procurement officers. The same set of questions was posed to business experts, enabling a comparison of results on this issues. Moreover, results from the question on standardization will not only inform the design of the online tool for procurement officers, but it will also feed into discussions within the CEN working groups on bio-based products.

Corresponding to these two objectives, the questions and corresponding answer options were developed in cooperation with the FNR (Fachagentur für Nachwachsende Rohstoffe), the project partner leading the development of the online tool, as well as members of the CEN working groups. Among other things, the survey incorporates items from a draft product information sheet proposed by CEN.

Figure 21: Survey questions – product information and standardization

For each item, please answer to what extent you agree or disagree with the following statements. *Please indicate your level of agreement on a scale from -2 ("I strongly disagree") to +2 ("I strongly agree")!*	
A.) Information on this item is very important for taking the decision to purchase a bio-based product.	**B.) Information on this item should be standardized to facilitate the comparison of similar products.**

To ensure that the informational tool being developed within the context of the Open-Bio offers relevant product information to public procurement officers, the survey incorporated a question on the need for information on selected issues. Results from the latter question will not only inform the design of the online tool for procurement officers, but it will also feed into discussions within the CEN working groups on bio-based products.

Corresponding to these two objectives, the questions and corresponding answer options were developed in cooperation with the FNR (Fachagentur für Nachwachsende Rohstoffe), the project partner leading the development of the online tool, as well as members of the CEN working groups. Among other things, the survey incorporates items from a draft product information sheet proposed by CEN.

5.2 Survey results

5.2.1 General findings

Figure 22 and Figure 23 present the responses regarding the perceived importance of information (Figure 22) and the perceived need for standardized information to facilitate comparison of similar products (Figure 23) for the various items included in the questionnaire. The items are ranked in descending order according to the average of all responses (i.e. the sum of all responses ranging from 1 to 5 divided by the total number of respondents who answered the particular item). The results show that most of the items included in the list were considered important for taking the decision to purchase a bio-based product. Moreover, the perceived importance of the items shows a positive correlation with the perceived need for standardization to facilitate comparison with similar products. For most items, respondents more strongly agree with the need for the standardization of information than with their importance for purchasing bio-based products. Figure 24 provides a graphical illustration of the positive correlation between the importance of information and the need for standardization.

Information on *Toxicity* is considered the most important for taking a decision to purchase a bio-based product, closely followed by *Environmental life-cycle impacts*. The item *Percentage of bio-based content* is ranked third. The items *Life-cycle costs*, *CO_2 emissions*, *Biodegradability* and *Recyclability* follow by a small margin. The items *Location of manufacturer* and *Calorific value* are considered to be the least important items. Less than half of respondents indicate that they consider them important for taking a decision to purchase a bio-based product.

As indicated above, the perceived need for standardization is higher for all but one item (*Product availability and terms of delivery*) than the perceived importance of the item. The need for standardization is considered to be highest for *Bio-based content*, closely followed by *Environmental life-cycle impacts*. *CO_2 emissions* and *Toxicity* are ranked third and fourth, respectively, with only a marginal difference between the two items. The need for standardization is considered the lowest for the items *Calorific value* and *Location of Manufacturer*, mirroring the result regarding their importance.

Regarding the relationship between the perceived importance of information and the perceived need for standardization, the graph in Figure 24 reveals two groups of items with a similar level of importance and similar perceived need for standardization, respectively. The former has the form of a vertical line, composed of (from top to bottom) the *Percentage of bio-based content*, *CO_2 emissions*, *Biodegradability*, *Life-cycle costs* and *Recyclability*. While close together in terms of the perceived importance of information on the items, they reveal descending need for standardization. The second cluster, composed of *Recyclability, Origin of feedstock*, *Type of feedstock*, *Recycled content* and *Compostability*, takes the form of a horizontal line, thus revealing the opposite pattern. In other words, while the items differ only marginally in terms of the perceived need for standardization, they reveal a decreasing level of importance for the decision to purchase a bio-based product.

Figure 22: Perceived importance of information for purchasing bio-based products, ranked according to the average of all responses

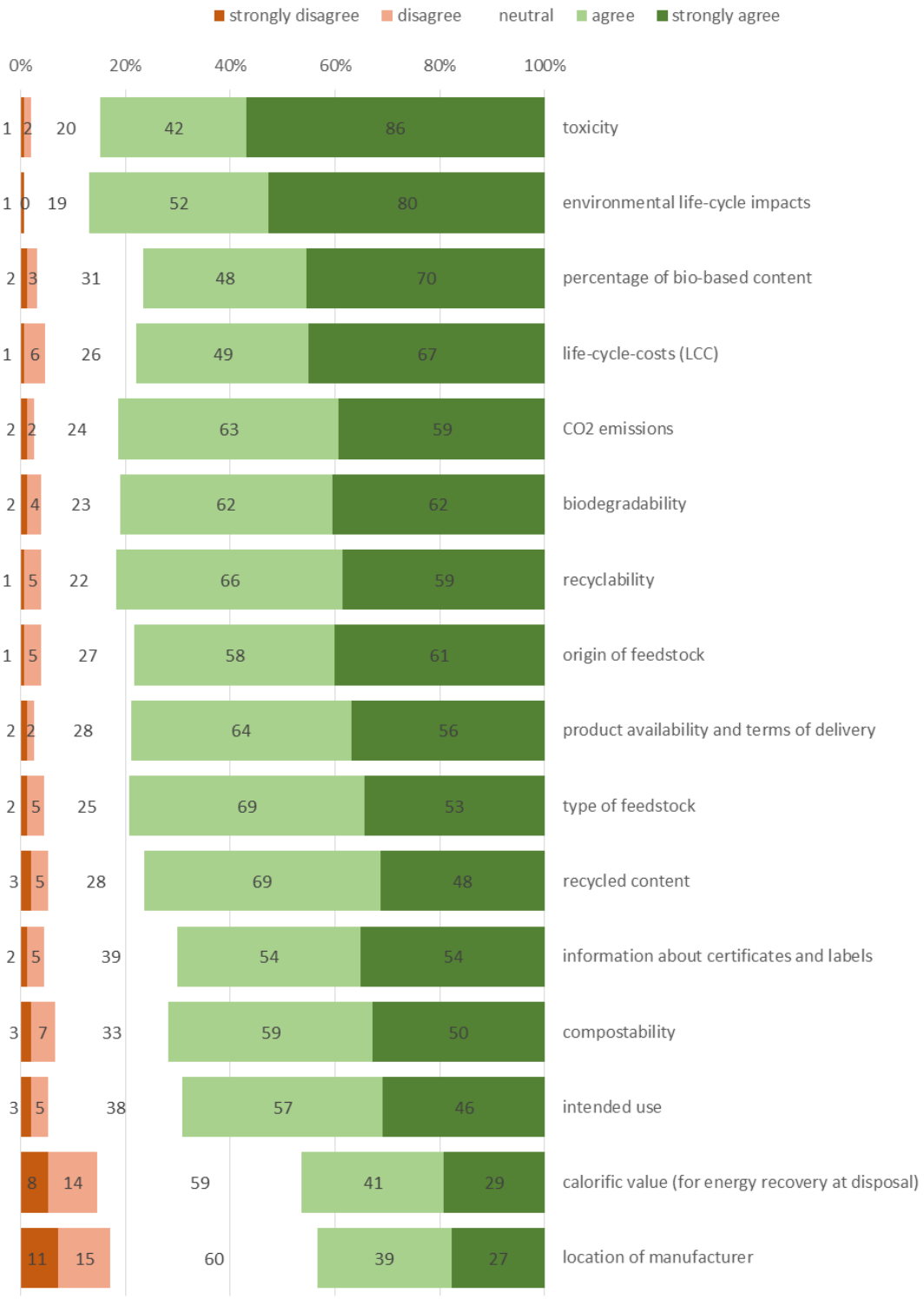


Figure 23: Perceived need for standardization, ranked according to the average of all responses

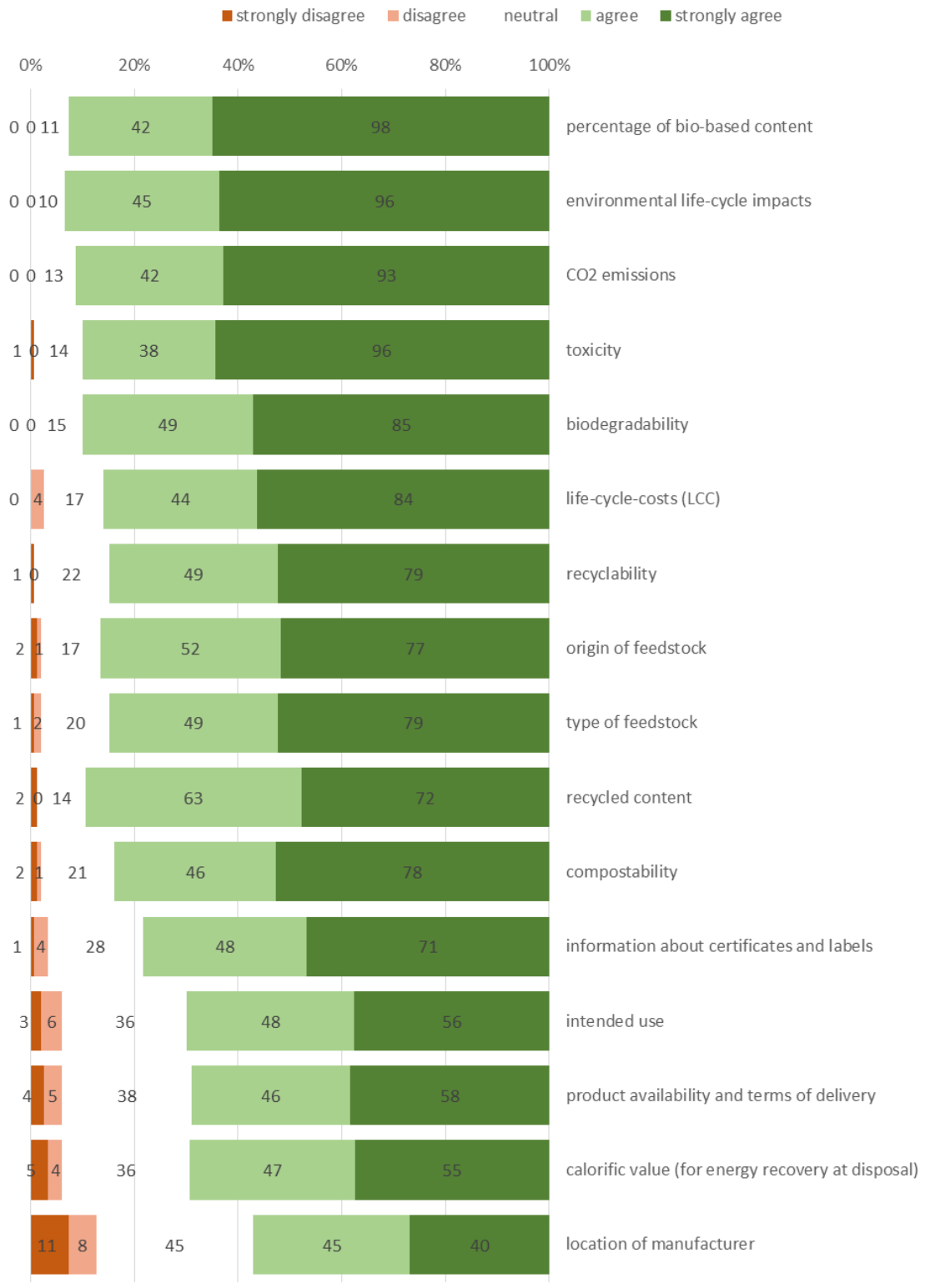
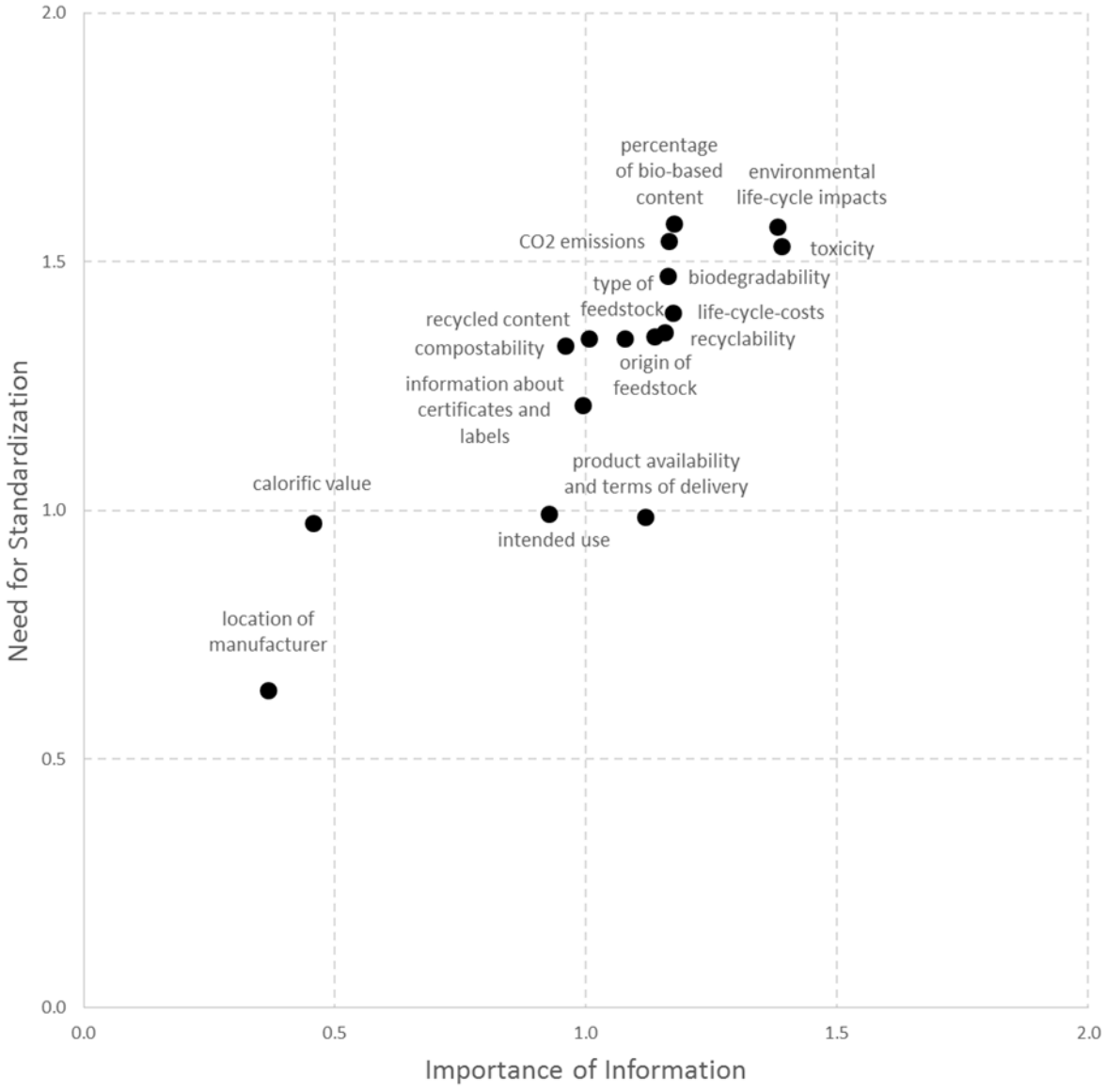


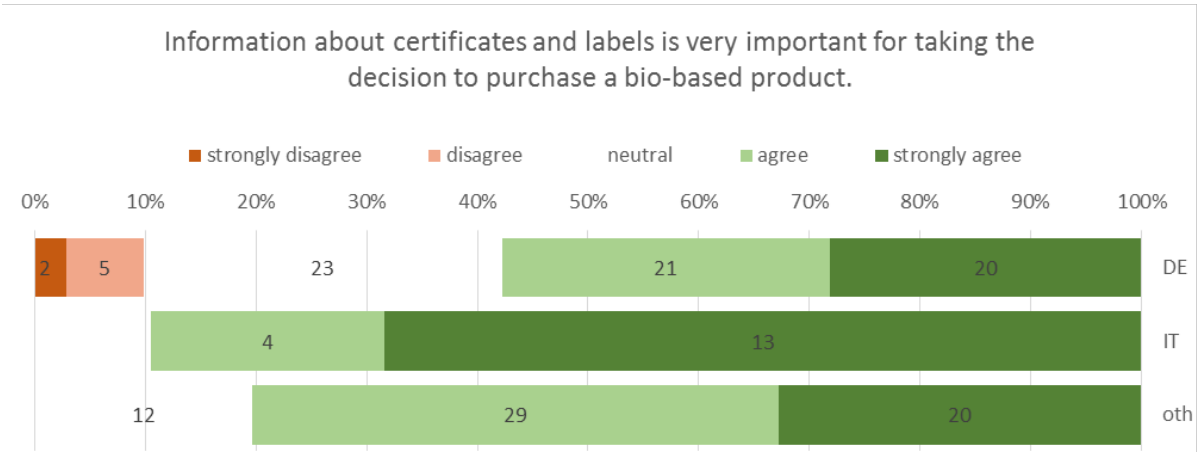
Figure 24: The relationship between the perceived importance of information and the perceived need for standardization



5.2.2 Differences across respondent groups

Significant differences across respondent groups are mainly related to the level of expertise in innovation-oriented and green public procurement. The only notable difference across countries could be observed regarding the perceived importance of *Information on labels and certificates*, which German respondents rated significantly lower than Italian and other respondents (see Figure 25). Moreover, while the item ranks first (together with *Toxicity*) among Italian respondents, it ranks 11th among other and 15th among German respondents.

Figure 25: Differnces across countries with regard to the importance of information about certificates and labels for the decision to purchase bio-based products



Differences based on the level of expertise in green and innovation-oriented procurement followed a consistent pattern with respondents who claimed to have at least some expertise in these fields rating the importance of information higher than non-experts. Statistically significant differences between respondents with different levels of expertise in green public procurement could be observed for the items *Life-cycle costs*, *Biodegradability*, *Origin of feedstock*, *Recycled content*, *Information about certificates and labels* and *Product availability and terms of delivery*. For the field of innovation-oriented public procurement, statistically significant differences were identified for *Life-cycle costs*, *Recyclability*, *Recycled content*, *Information about certificates and labels* and *Product availability and terms of delivery*. No significant differences were observable for the perceived need for standardization.

6 Measures to promote the uptake of bio-based products in public procurement

6.1 Questionnaire design

The following section reports results on a question focused on potential measures for promoting the uptake of bio-based products in public procurement. From a list of possible to promote the uptake of bio-based products in public procurement, respondents were asked to select those measures they would consider the most effective in achieving this goal, limiting their choice to a maximum of four. (See Figure 26 for the specific question.)

Figure 26: Survey questions – Measures to promote the uptake of bio-based products in public procurement

The following list contains a number of specific measures that might be considered to support the uptake of bio-based products in the context of green public procurement or innovation-oriented public procurement.

In your view, which of the following measures would be the most effective in promoting the uptake of bio-based products? Please select up to 4 items from the following list.

6.2 Survey results

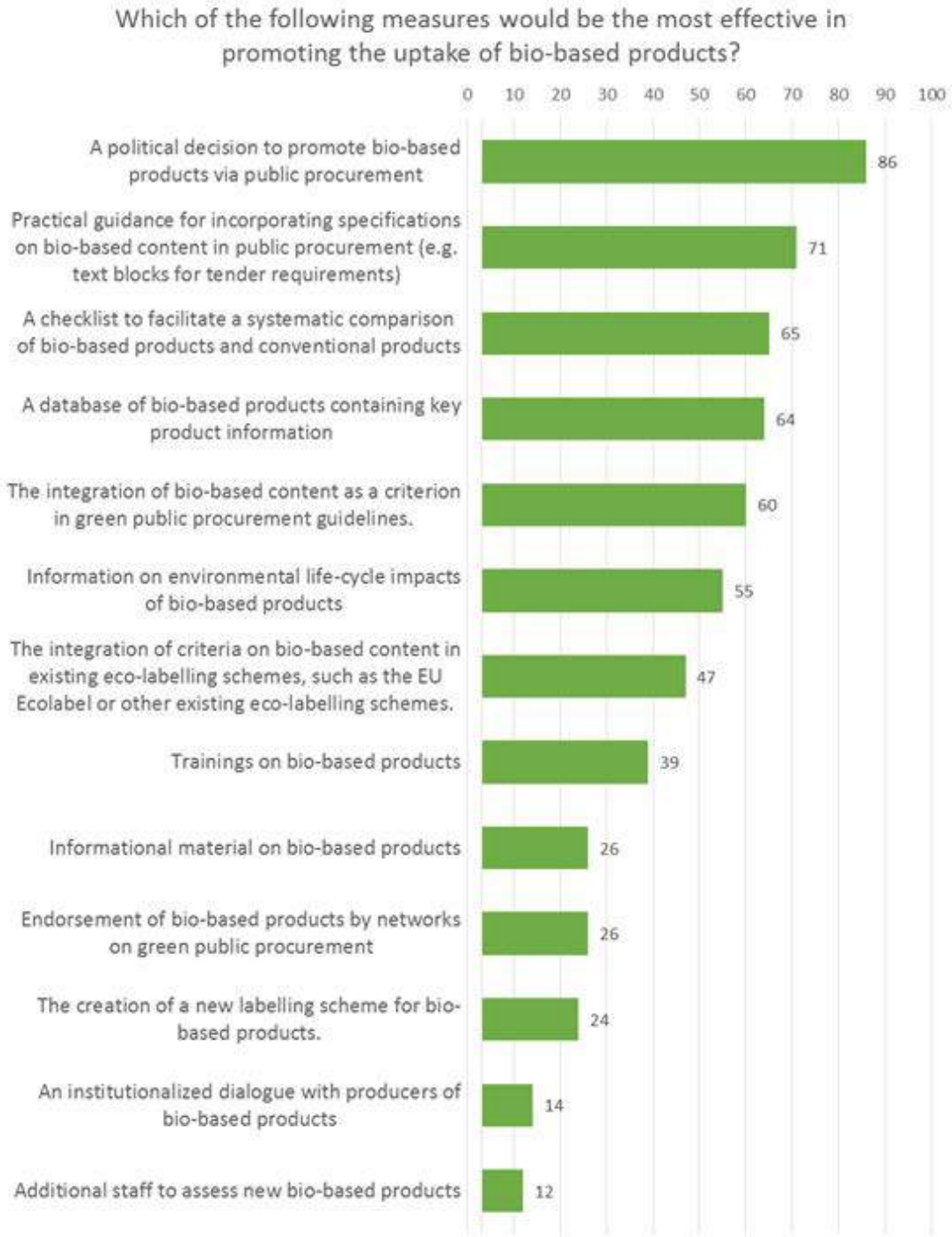
Figure 27 presents a list of possible measures for promoting the uptake of bio-based products in public procurement. The items are ranked based on the number of times the item was chosen by respondents as one of the four most effective measures for this purpose.

The item with the most votes was "*A political decision to promote bio-based products via public procurement."* and was chosen by 50 percent of all respondents. This indicates that such a political endorsement is not only considered crucial for facilitating the uptake of bio-based products in public procurement, but that it is also not yet in place in at least half the cases. In addition, over one third of respondents see the inclusion of bio-based content as a criterion in green public procurement as an effective measure. Only slightly more than a quarter of the respondents consider the integration of criteria on bio-based content in the EU Ecolabel as a key vehicle for promoting bio-based products in public procurement. Less than 15 percent view the creation of a new label for bio-based products as particular effective.

A more significant number of respondents (42%) see a number of practical measures as key to promoting bio-based products in public procurement, including the need for practical guidance for incorporating specifications on bio-based content in public procurement (42%), a checklist to facilitate a systematic comparison between bio-based and conventional products (38%) and the development of a database with bio-based products (37%). Given the importance attributed to the comparison between conventional products and bio-based products, a database with information on bio-based products might benefit from the inclusion of a feature to facilitate comparison of listed products with conventional reference products.

Finally, in the comment section following the question, six respondents indicated that an important requirement for considering bio-based products in green public procurement would be credible information on their overall environmental impacts and/or benefits. Furthermore, several of these respondents note that the criteria "bio-based" alone is not considered a sufficient motivation for inclusion in green public procurement.

Figure 27: Measures for promoting the uptake of bio-based products in public procurement, ranked by number of selections by survey respondents



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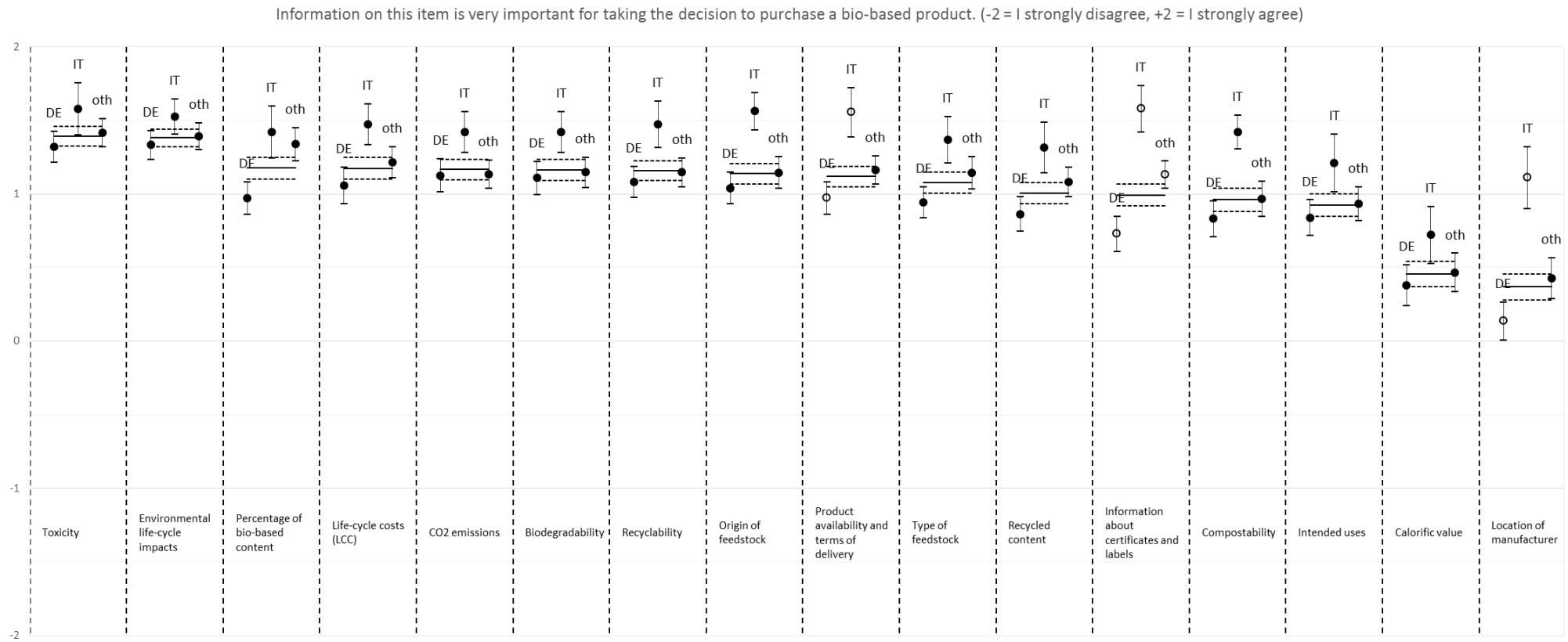
Part 2: Data on Differences Across Countries and According to Expert-level

Part 2 of this Annex represents a detailed presentation of the data on the differences in response patterns across countries and across respondents with different levels of expertise in green public procurement and innovation-oriented public procurement. These represent the only categories where significant differences could be identified. In the following, the differences in these two areas are depicted graphically for each survey question. In each graph, estimated means and standard errors for the entire sample of respondents are depicted as horizontal lines. For each sub-group (i.e. country-based respondent groups and respondent groups based on level of expertise), the estimated means are depicted as circles and standard errors as vertical bars. Hollow circles indicate that the respective group means differ significantly based on two-sided tests at the 0.05 level in at least one pairwise comparison. Bonferroni correction is used to adjust p-values for multiple comparisons.

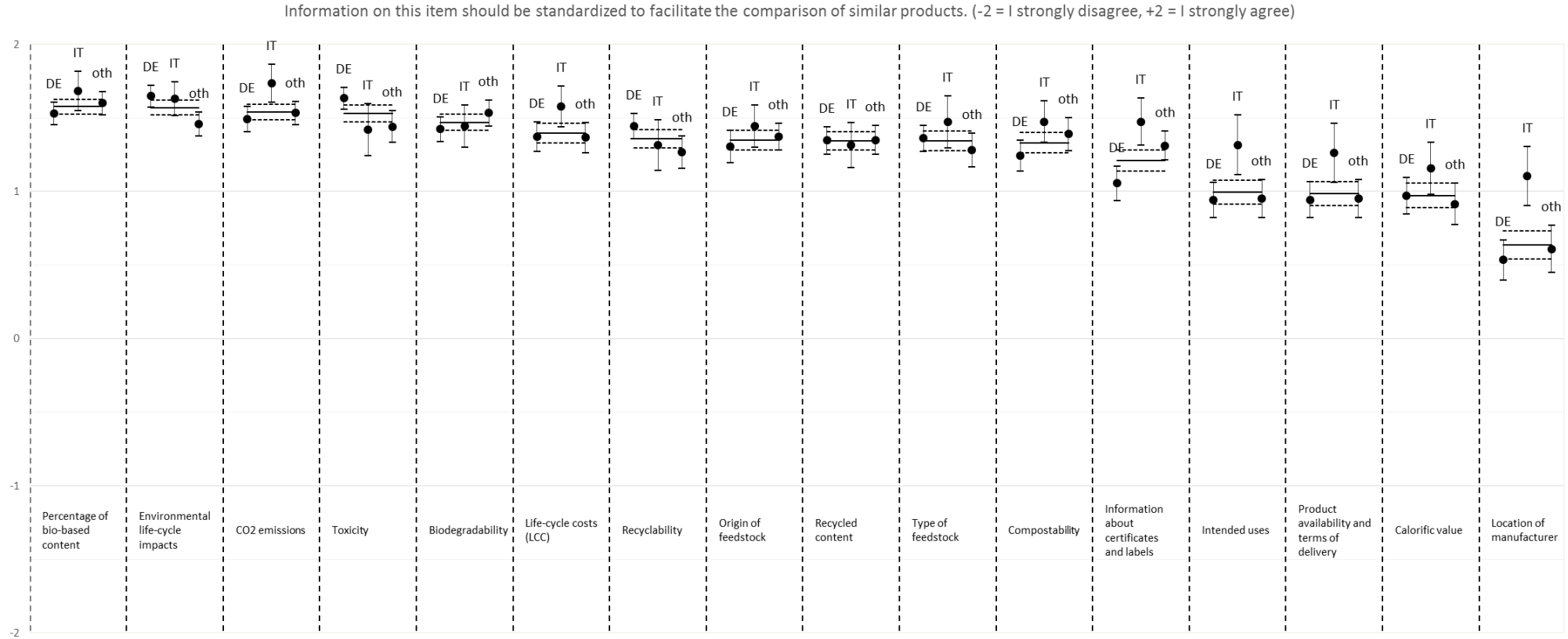
Figure 28: Importance of information - Differences across countries



This figure depicts estimated means and standard errors for the entire sample of respondents (horizontal lines) and for each group separately (circles with vertical bars). Hollow circles indicate group means that significantly differ based on two-sided tests at the 0.05 level in at least one pairwise comparison. Bonferroni correction is used to adjust p values for multiple comparisons.

Subgroups: In which country do you work? DE = Germany, IT = Italy, oth = other countries.

Figure 29: Standardization requirement - Differences across countries



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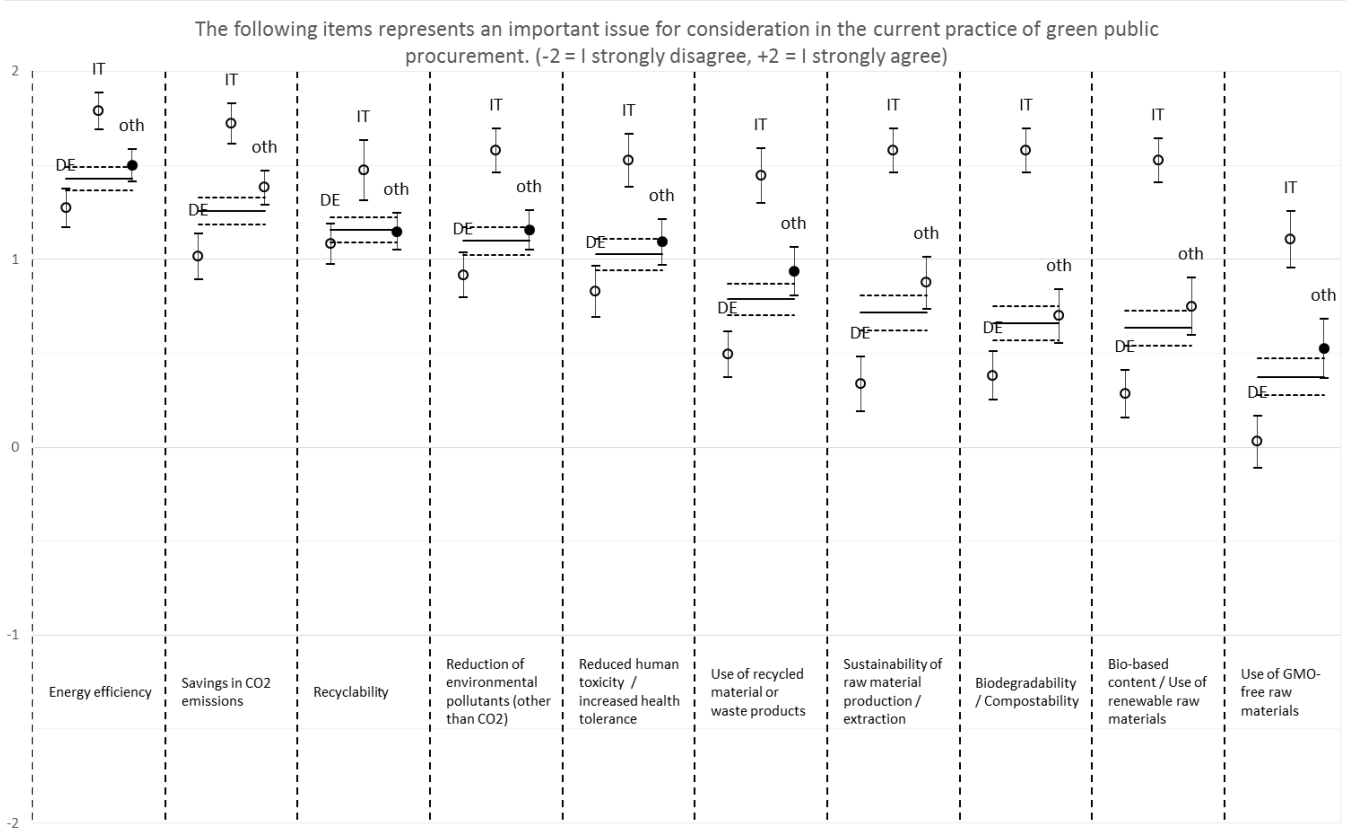
Subgroups: In which country do you work? DE = Germany, IT = Italy, oth = other countries.

Figure 30: Importance of environmental aspects in green public procurement - Differences across countries



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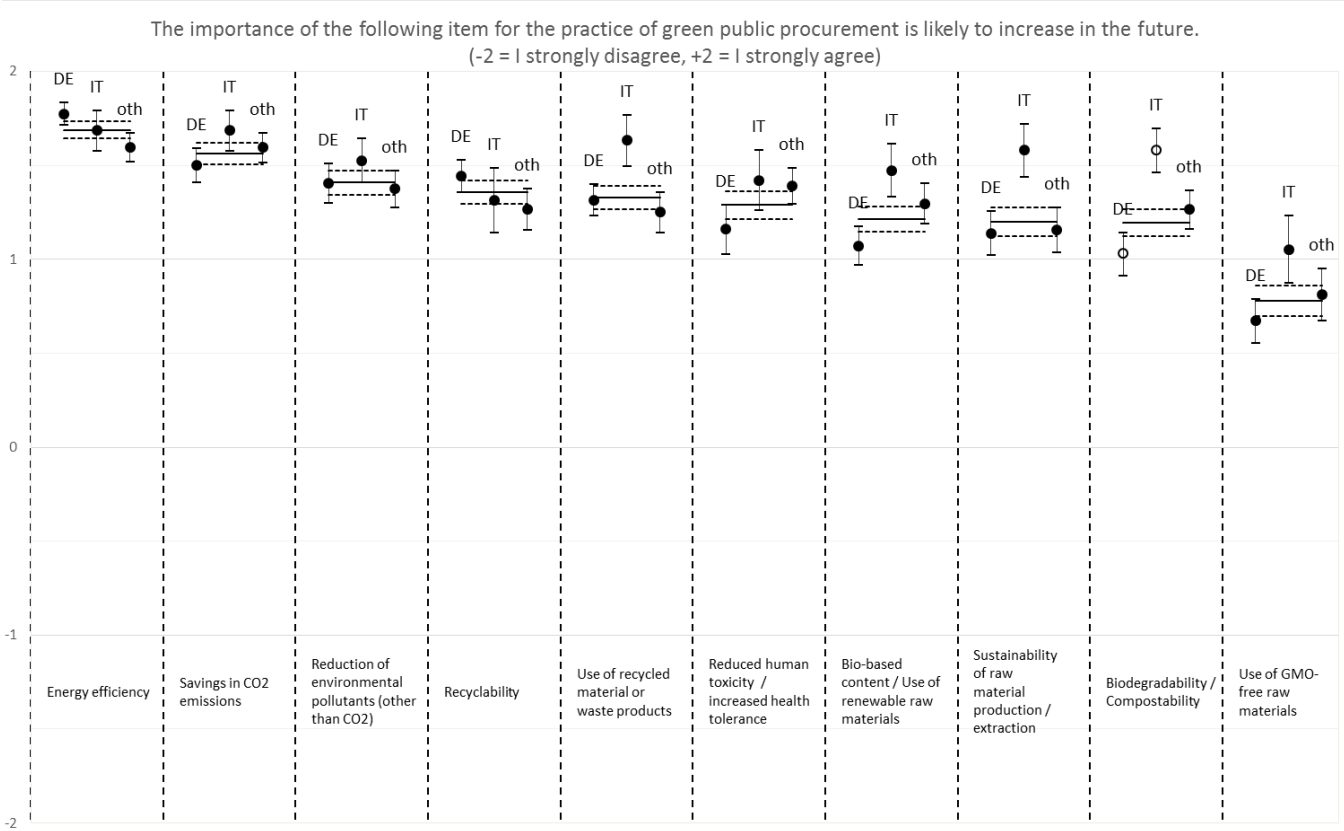
Subgroups: In which country do you work? DE = Germany, IT = Italy, oth = other countries.

Figure 31: Increase in importance of environmental aspects green public procurement - Differences across countries



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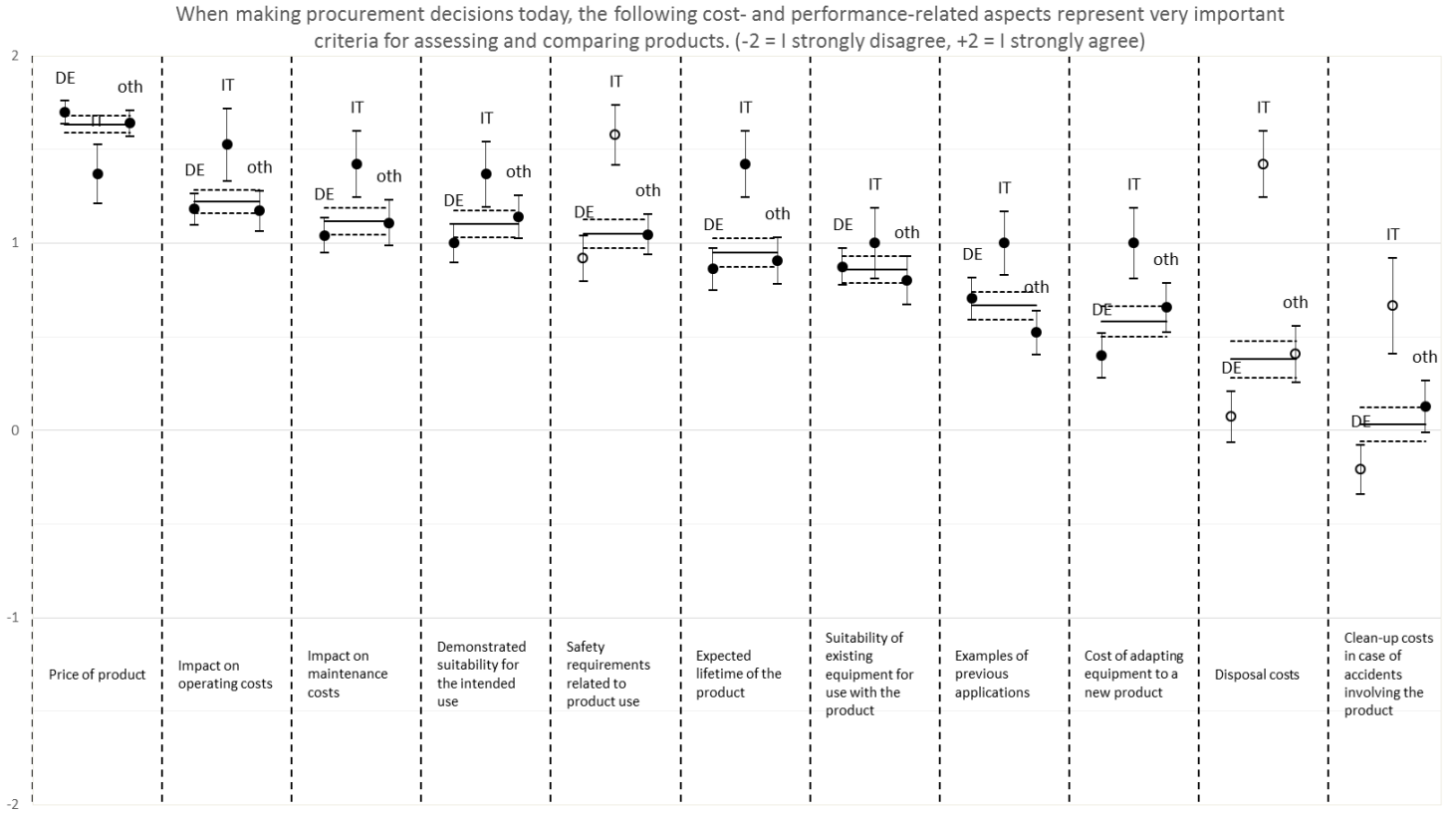
Subgroups: In which country do you work? DE = Germany, IT = Italy, oth = other countries.

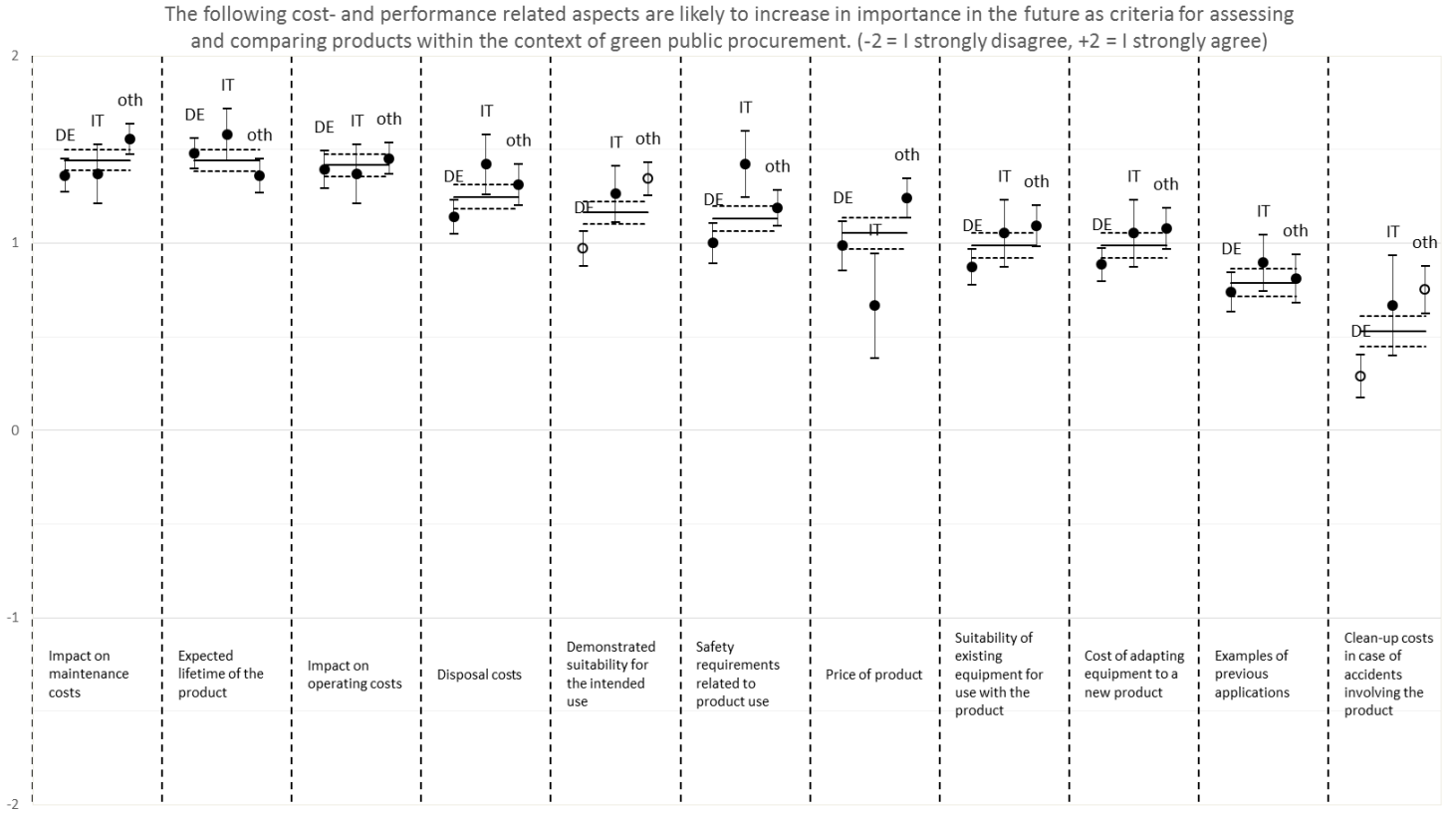
Figure 32: Importance of cost- and performance-related aspects in green public procurement - Differences across countries



This figure depicts estimated means and standard errors for the entire sample of respondents (horizontal lines) and for each group separately (circles with vertical bars). Hollow circles indicate group means that significantly differ based on two-sided tests at the 0.05 level in at least one pairwise comparison. Bonferroni correction is used to adjust p values for multiple comparisons.

Subgroups: In which country do you work? DE = Germany, IT = Italy, oth = other countries.

Figure 33: Increase in importance of cost- and performance-related aspects in green public procurement - Differences across countries



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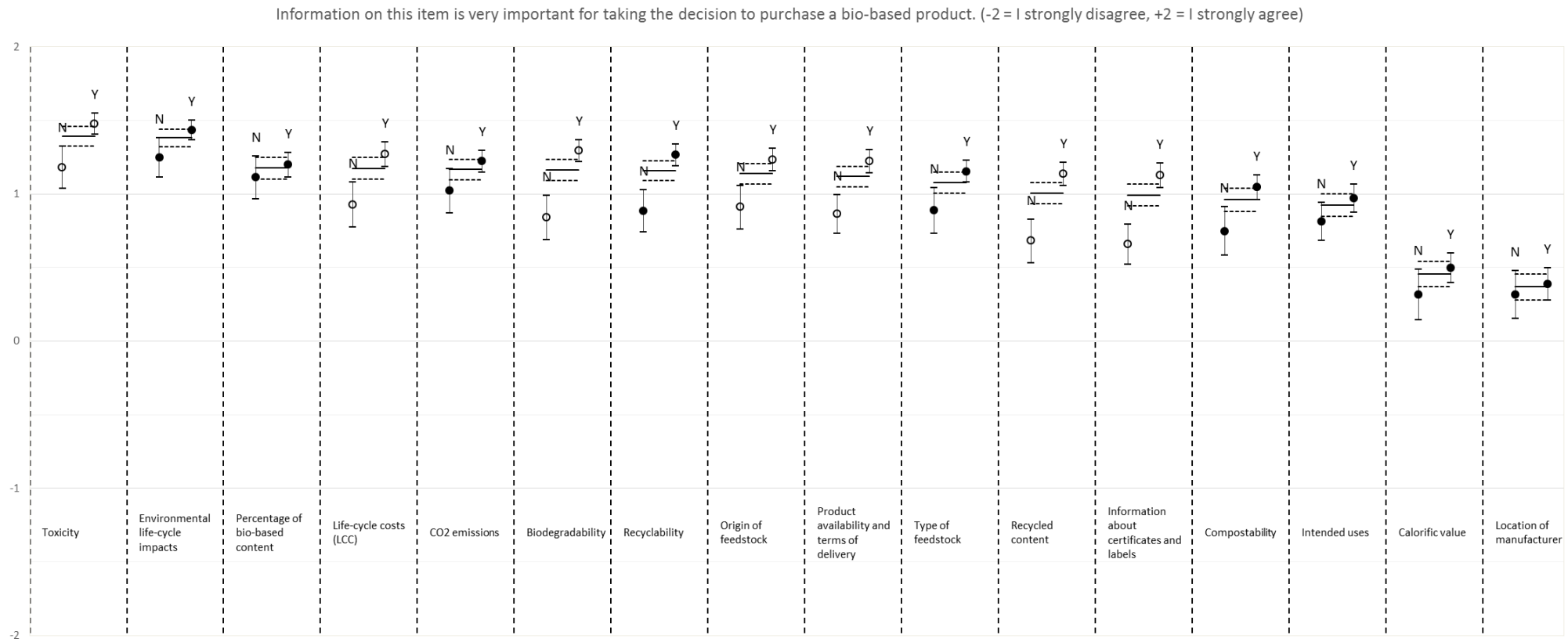
Subgroups: In which country do you work? DE = Germany, IT = Italy, oth = other countries.

Figure 34: Importance of information - Differences across levels of GPP expertise



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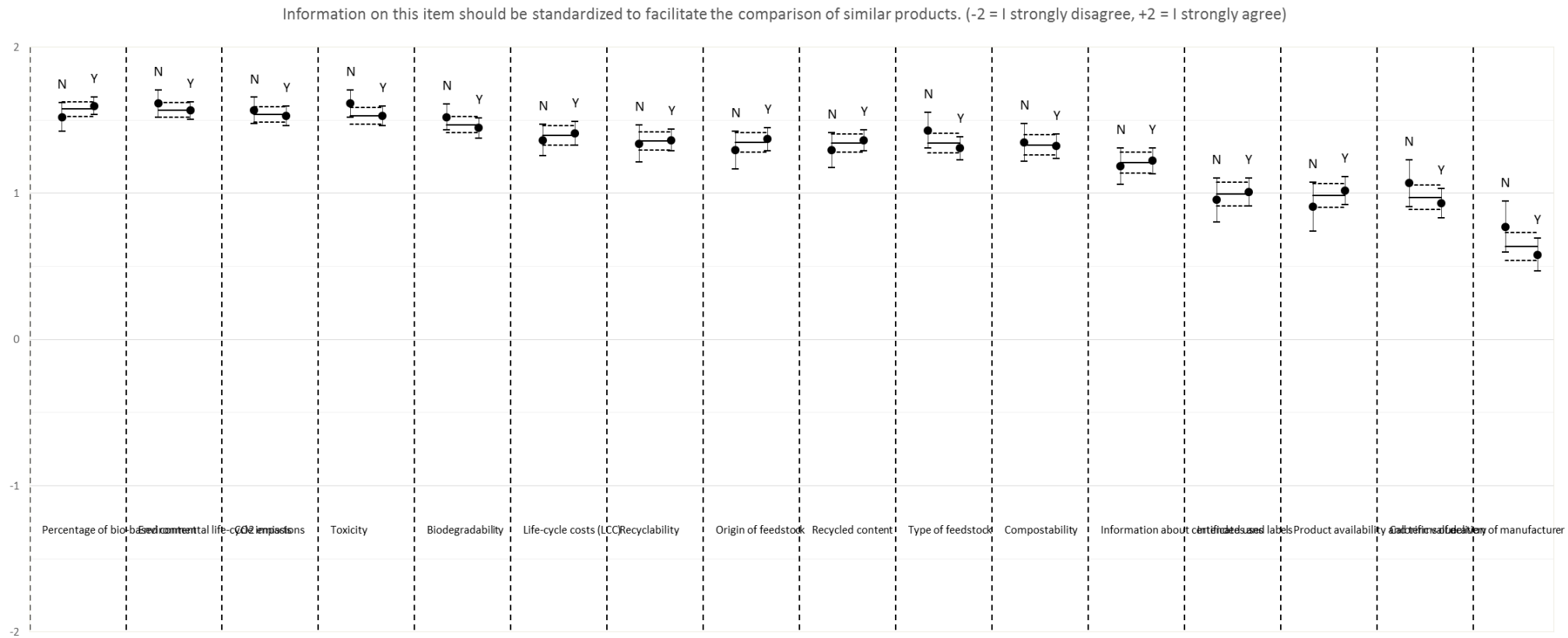
Subgroups: Do you consider yourself an expert in the field of green public procurement? Y = yes / somewhat, N = no.

Figure 35: Standardization requirement - Differences across levels of GPP expertise



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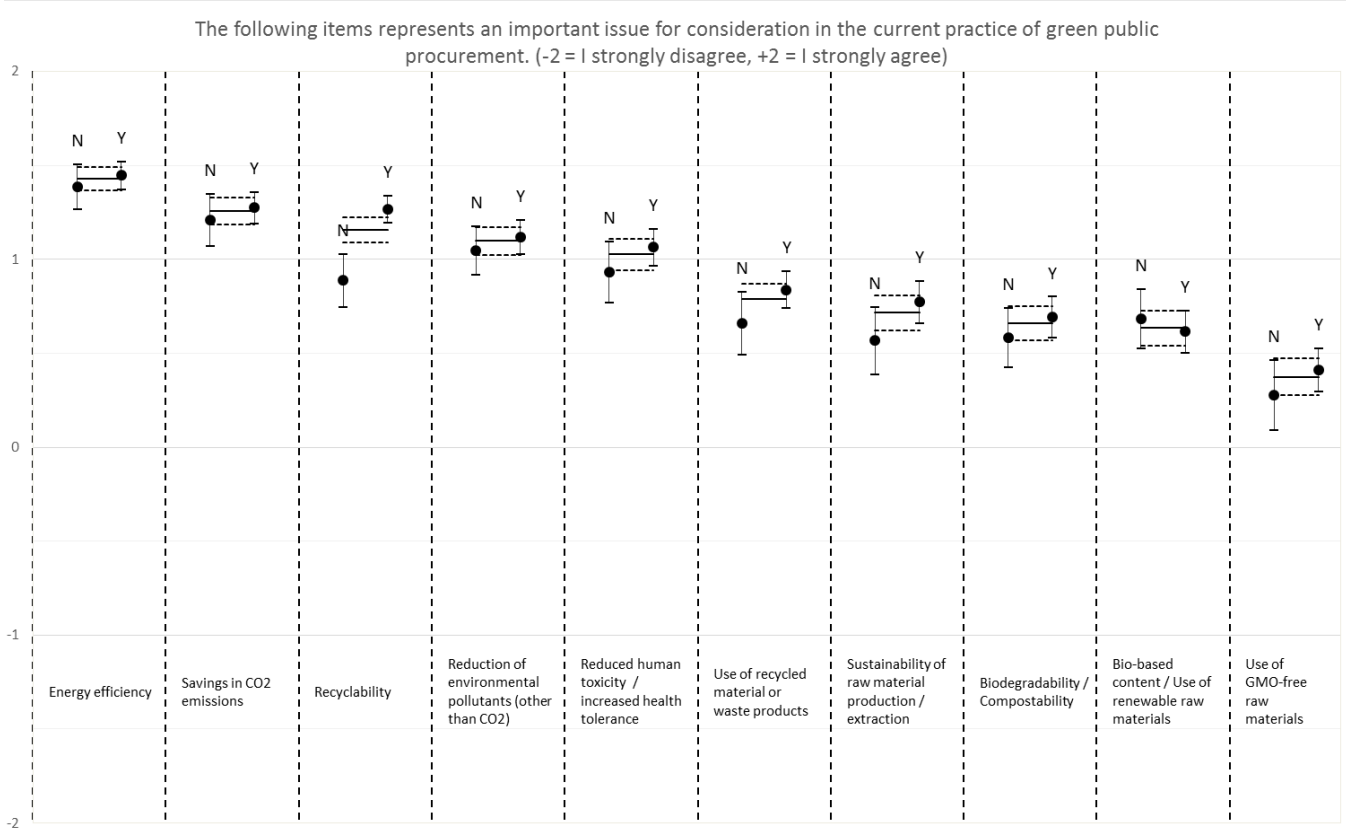
Subgroups: Do you consider yourself an expert in the field of green public procurement? Y = yes / somewhat, N = no.

Figure 36: Importance of environmental aspects in green public procurement - Differences across levels of GPP expertise



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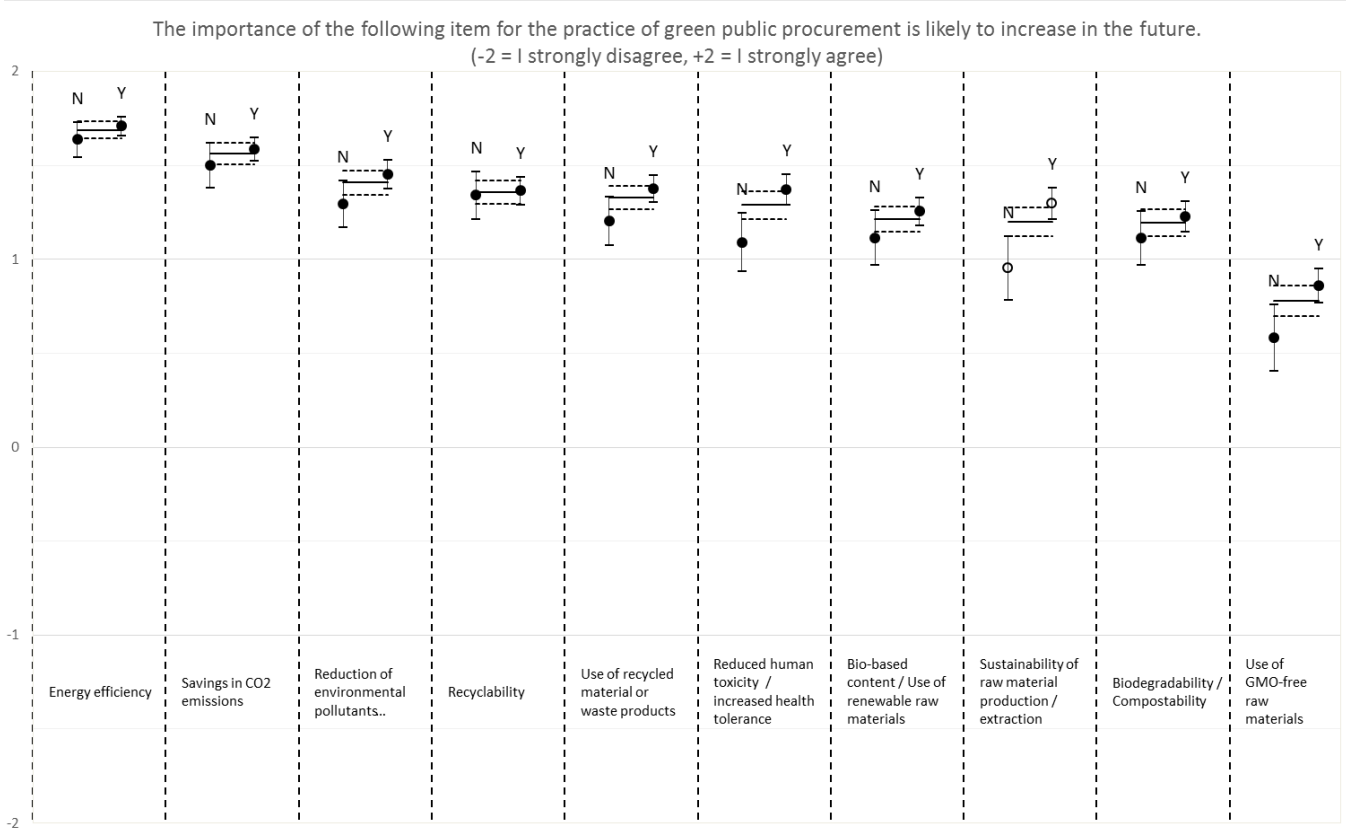
Subgroups: Do you consider yourself an expert in the field of green public procurement? Y = yes / somewhat, N = no.

Figure 37: Increase in importance of environmental aspects green public procurement - Differences across levels of GPP expertise



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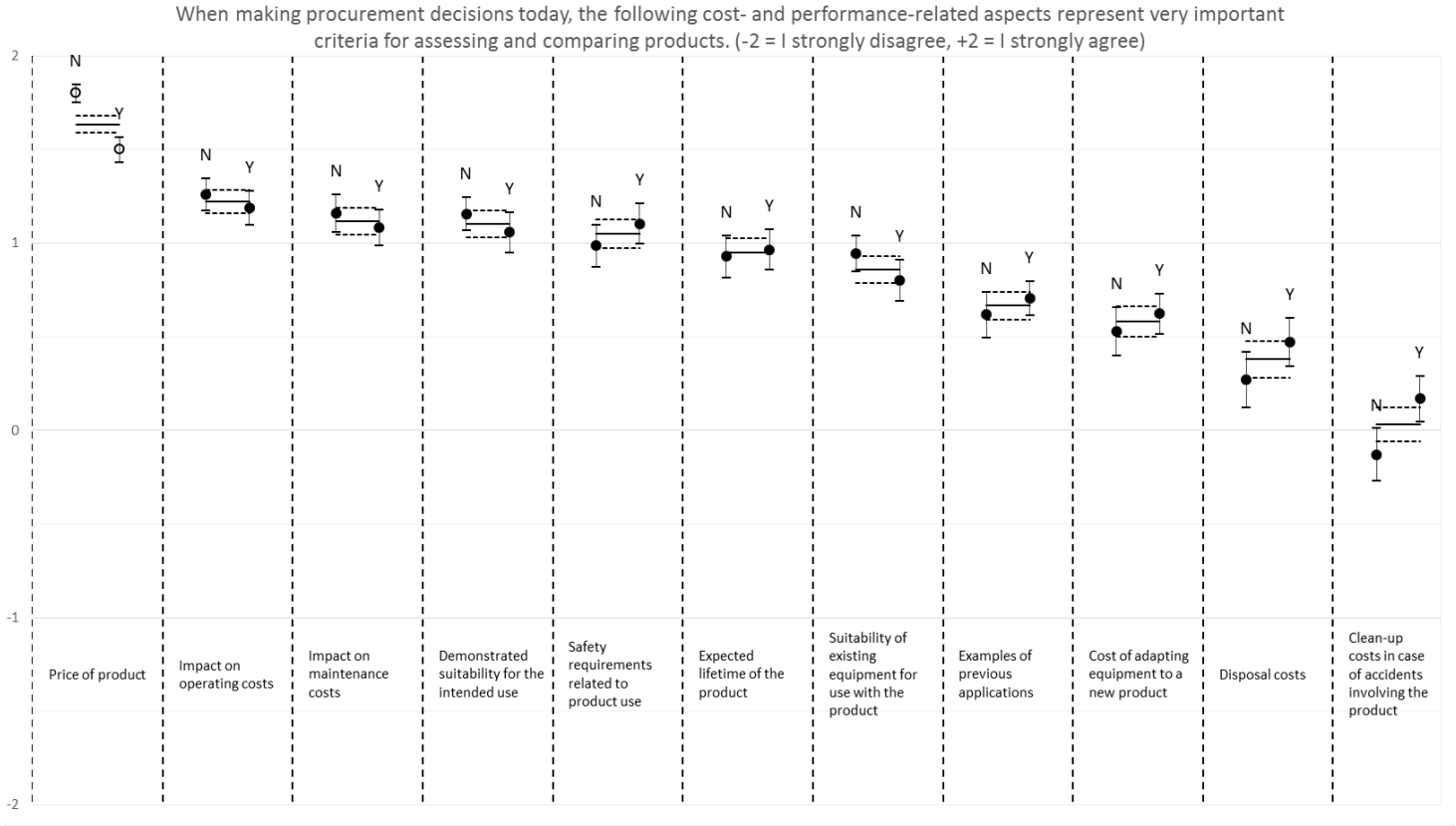
Subgroups: Do you consider yourself an expert in the field of green public procurement? Y = yes / somewhat, N = no.

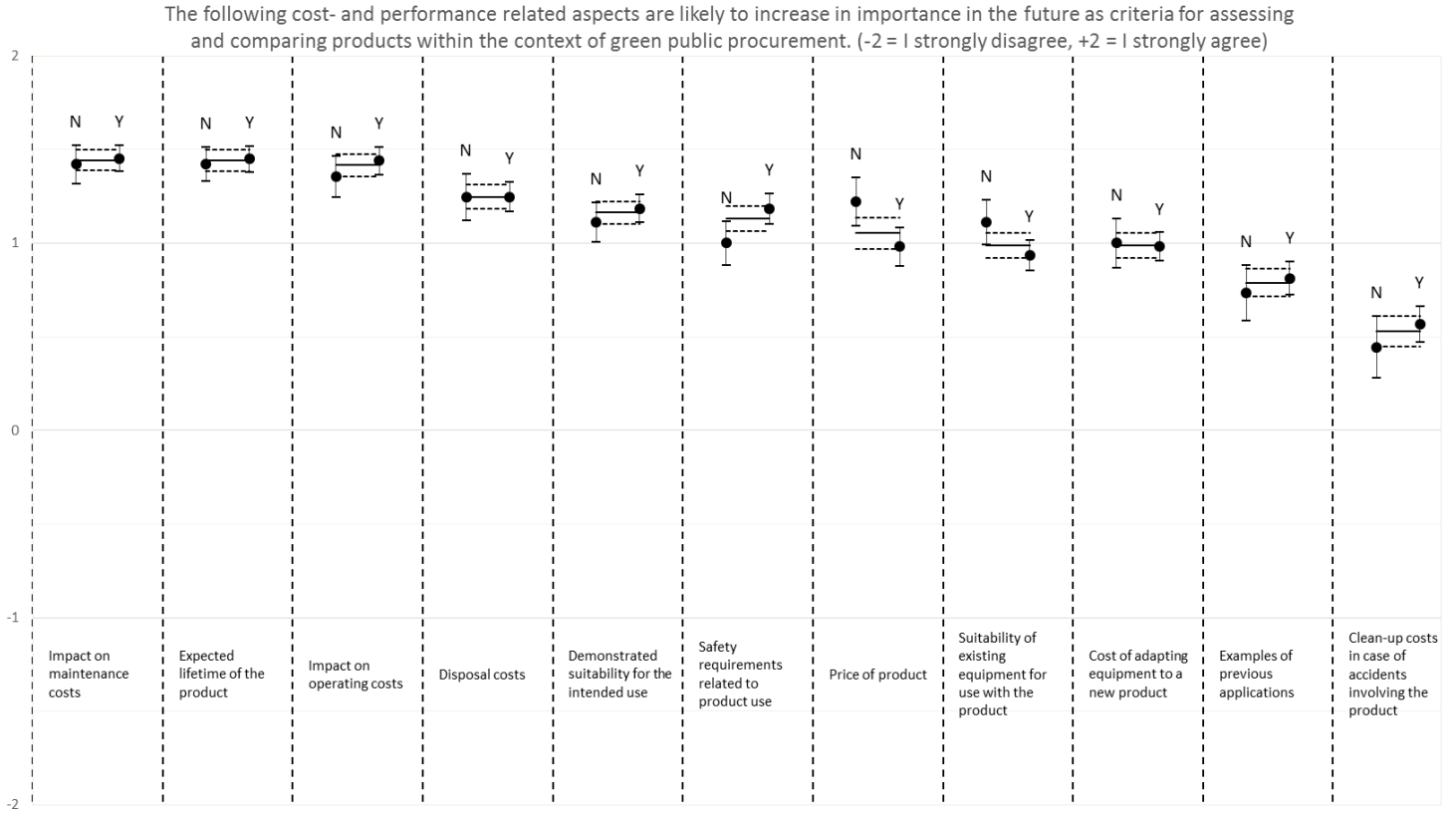
Figure 38: Importance of cost- and performance-related aspects in green public procurement - Differences across levels of GPP expertise



This figure depicts estimated means and standard errors for the entire sample of respondents (horizontal lines) and for each group separately (circles with vertical bars). Hollow circles indicate group means that significantly differ based on two-sided tests at the 0.05 level in at least one pairwise comparison.

Subgroups: Do you consider yourself an expert in the field of green public procurement? Y = yes / somewhat, N = no.

Figure 39: Increase in importance of cost- and performance-related aspects in GPP - Differences across levels of GPP expertise



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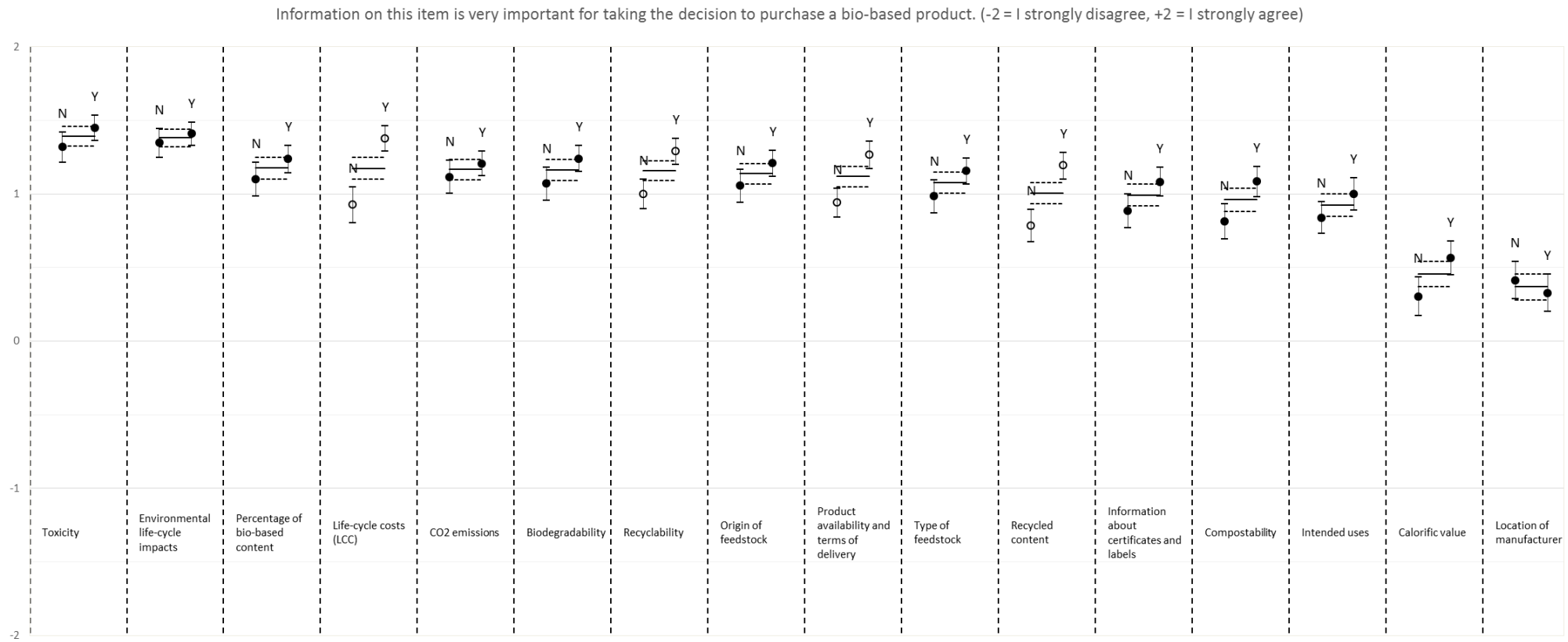
Subgroups: Do you consider yourself an expert in the field of green public procurement? Y = yes / somewhat, N = no.

Figure 40: Importance of information - Differences across levels of IPP expertise



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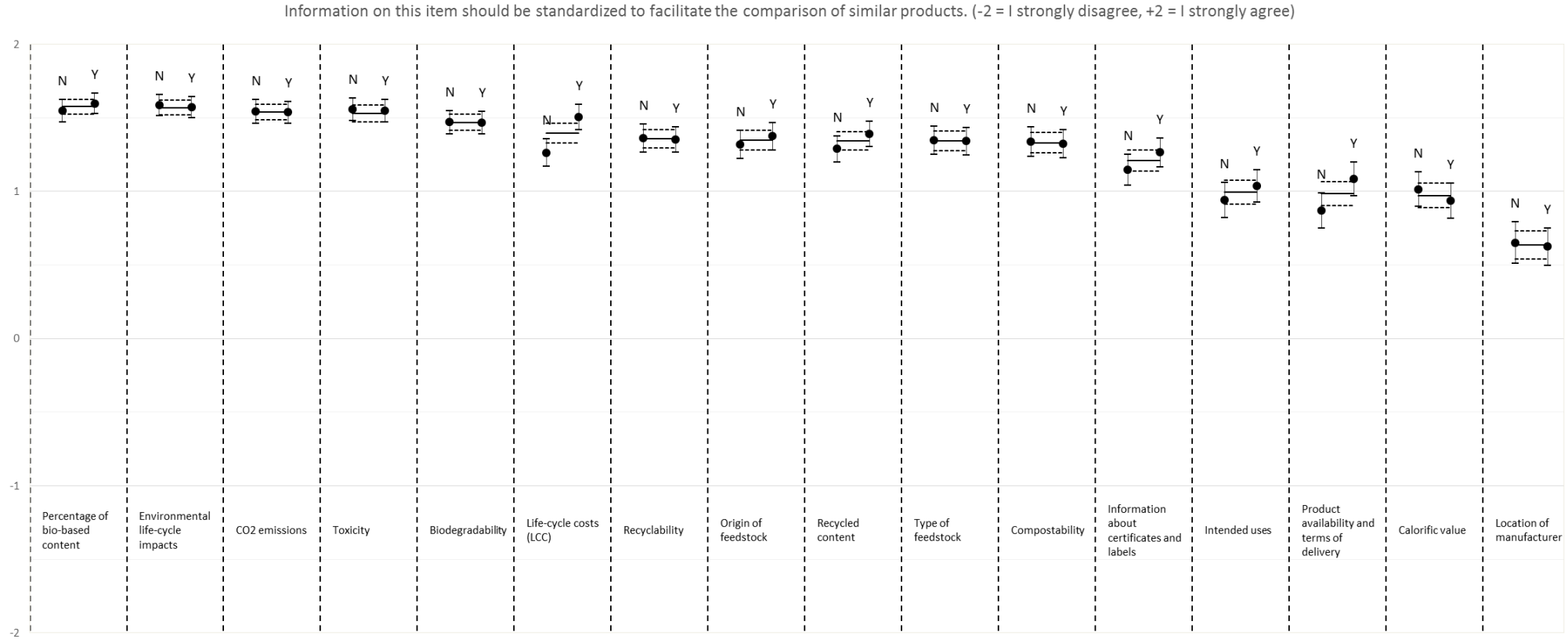
Subgroups: Do you consider yourself an expert in the field of innovation-oriented public procurement? Y = yes / somewhat, N = no.

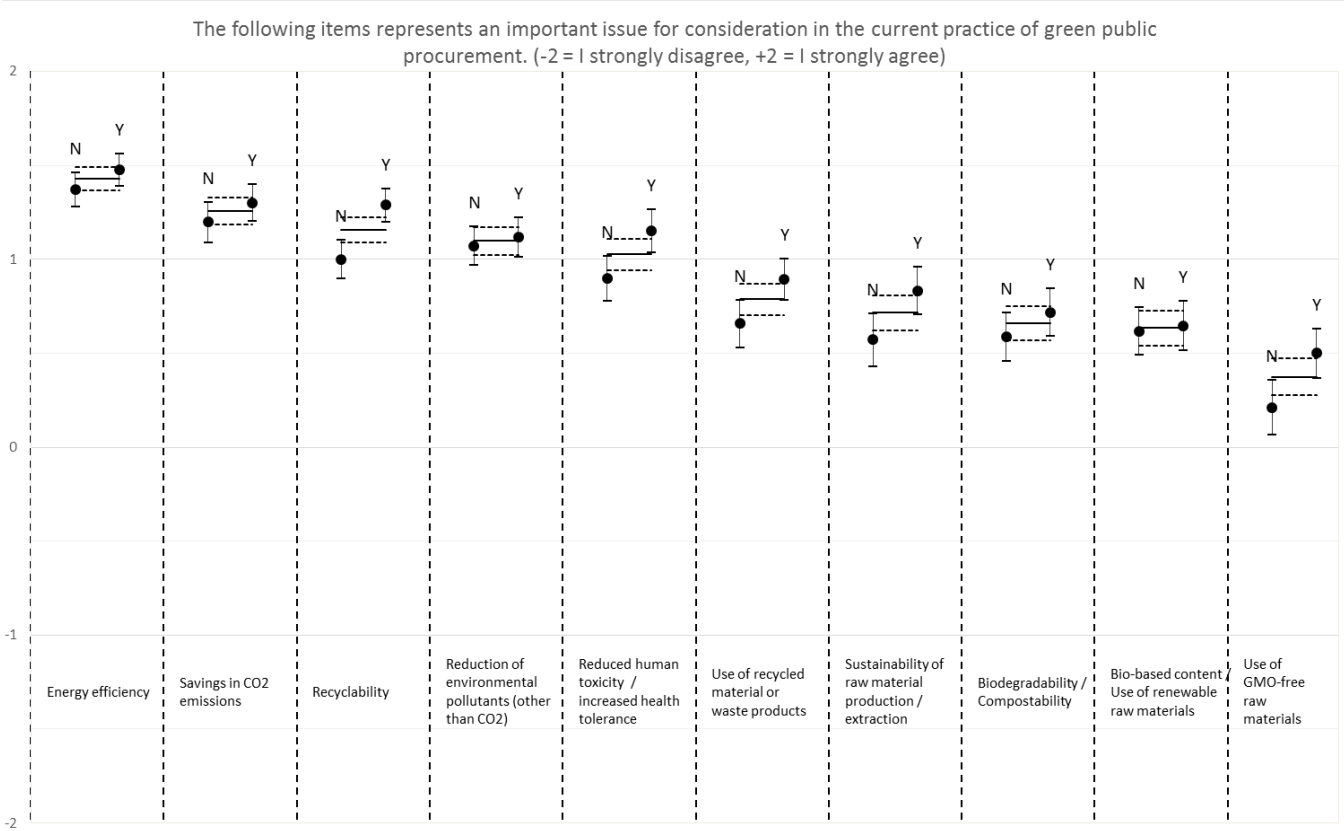
Figure 41: Standardization requirement - Differences across levels of IPP expertise



This figure depicts estimated means and standard errors for the entire sample of respondents (horizontal lines) and for each group separately (circles with vertical bars). Hollow circles indicate group means that significantly differ based on two-sided tests at the 0.05 level in at least one pairwise comparison.

Subgroups: Do you consider yourself an expert in the field of innovation-oriented public procurement? Y = yes / somewhat, N = no.

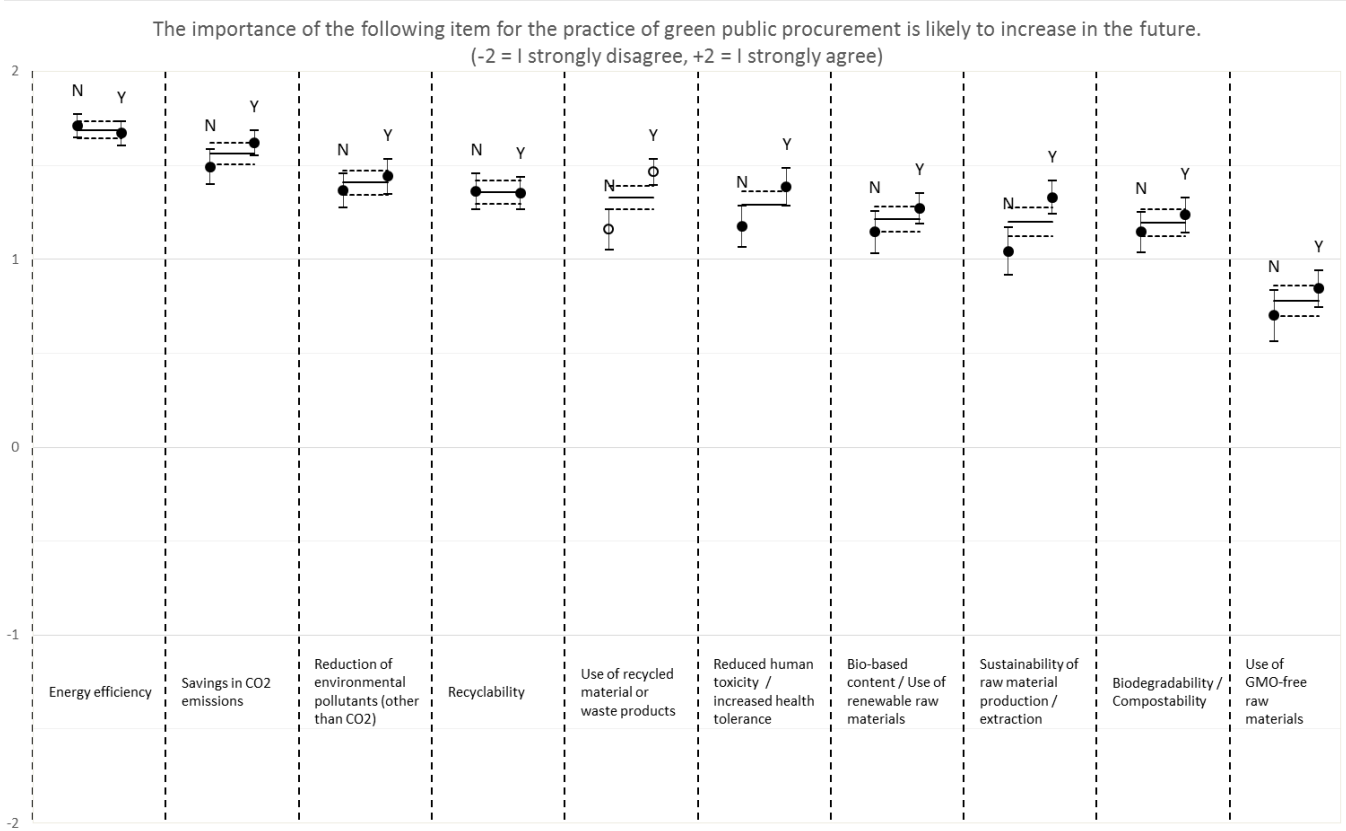
Figure 42: Importance of environmental aspects in green public procurement - Differences across levels of IPP expertise



This figure depicts estimated means and standard errors for the entire sample of respondents (horizontal lines) and for each group separately (circles with vertical bars). Hollow circles indicate group means that significantly differ based on two-sided tests at the 0.05 level in at least one pairwise comparison.

Subgroups: Do you consider yourself an expert in the field of innovation-oriented public procurement? Y = yes / somewhat, N = no.

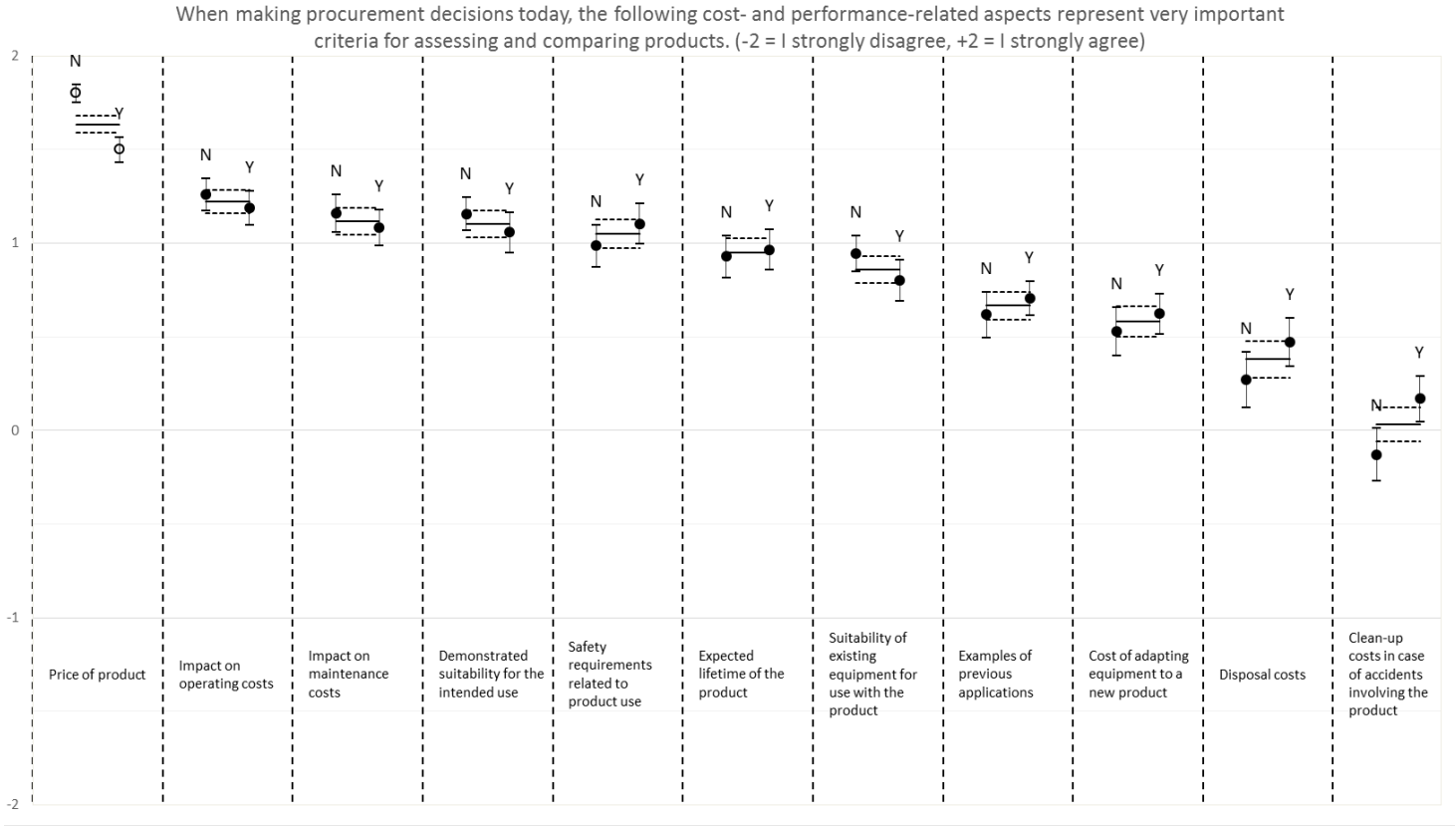
Figure 43: Increase in importance of environmental aspects green public procurement - Differences across levels of IPP expertise



This figure depicts estimated means and standard errors for the entire sample of respondents (horizontal lines) and for each group separately (circles with vertical bars). Hollow circles indicate group means that significantly differ based on two-sided tests at the 0.05 level in at least one pairwise comparison.

Subgroups: Do you consider yourself an expert in the field of innovation-oriented public procurement? Y = yes / somewhat, N = no.

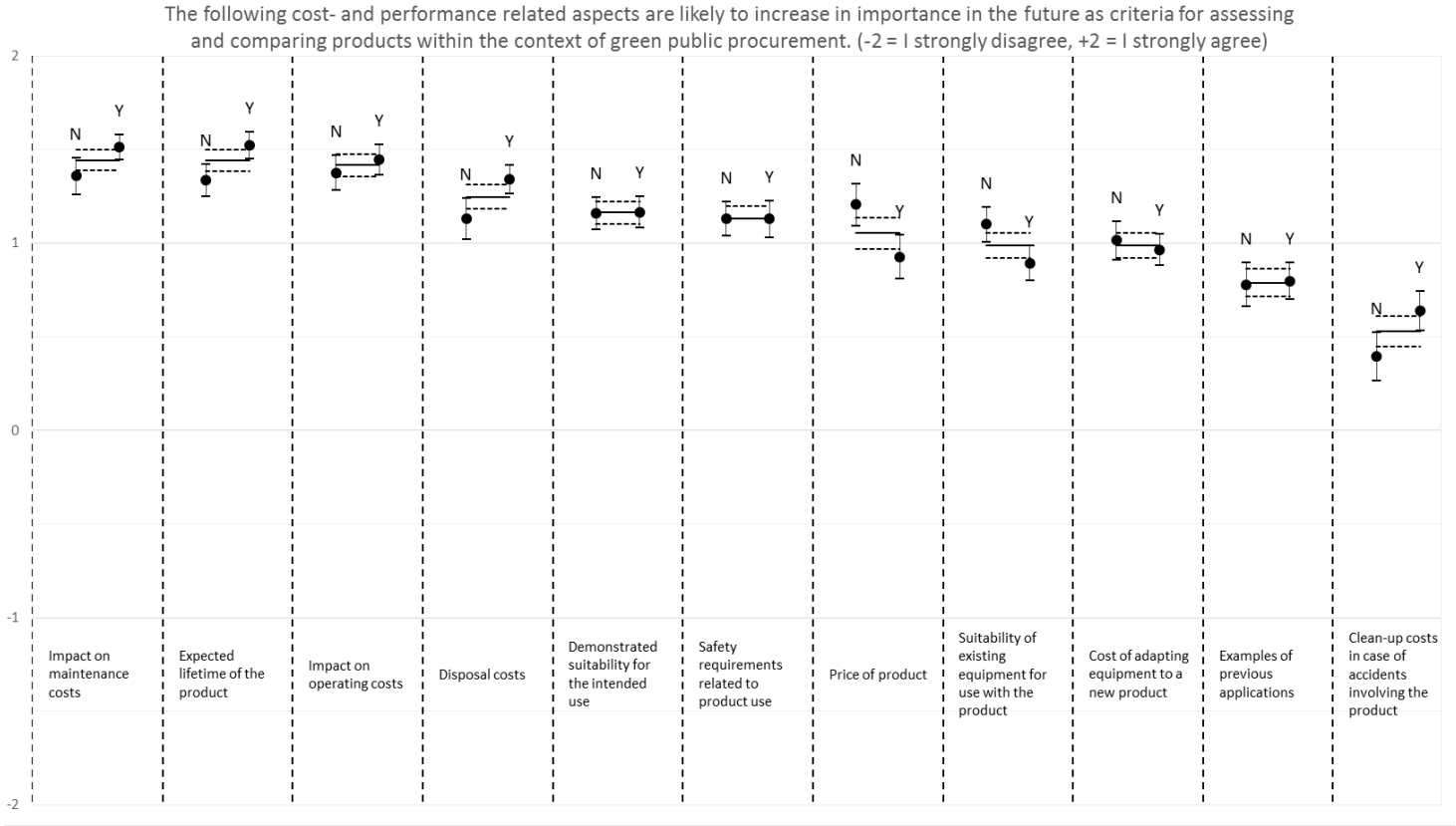
Figure 44: Importance of cost- and performance-related aspects in green public procurement - Differences across levels of IPP expertise



This figure depicts estimated means and standard errors for the entire sample of respondents (horizontal lines) and for each group separately (circles with vertical bars). Hollow circles indicate group means that significantly differ based on two-sided tests at the 0.05 level in at least one pairwise comparison.

Subgroups: Do you consider yourself an expert in the field of innovation-oriented public procurement? Y = yes / somewhat, N = no.

Figure 45: Increase in importance of cost- and performance-related aspects in GPP - Differences across levels of IPP expertise



This figure depicts estimated means and standard errors for the entire sample of respondents (horizontal lines) and for each group separately (circles with vertical bars). Hollow circles indicate group means that significantly differ based on two-sided tests at the 0.05 level in at least one pairwise comparison.

Subgroups: Do you consider yourself an expert in the field of innovation-oriented public procurement? Y = yes / somewhat, N = no