



REPORT ON TRAINING NEEDS ASSESSMENT FOR STUDENTS AND PROFESSIONALS IN DEFORESTATION-FREE SUPPLY CHAINS

EMMA4EU D.2.2 DELIVERABLE (TASK 2.2)



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Main authors

Aynur Mammadova, Mauro Masiero, Giovanni Bausano, Todora Rogelja, Davide Pettenella (University of Padova)

Contributors

Kedar Uttam and Kristjan Jespersen (Copenhagen Business School), Elena Massarenti, Helena Leonel Ferreira and Nicola Andrighetto (Etifor | Valuing Nature), Metodi Sotirov and Laila Berning (University of Freiburg), Jelle Behagel and Kees Kaffka (Wageningen University)

Documents main authors and EMMA4EU contacts

Aynur Mammadova, aynur.mammadova@unipd.it

Mauro Masiero, mauro.masiero@unipd.it

Giovanni Bausano, giovanni.bausano@unipd.it

www.emma4eu.eu

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The EMMA4EU project, co-funded by the European Commission, aims to tackle embedded deforestation by connecting higher education institutions, businesses and NGOs and creating new opportunities for capacity development, training and knowledge sharing.



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LIST OF ABBREVIATIONS

DFSC Deforestation-free supply chains

EMMA4EU Innovation Alliance for Training Programmes for deforestation-free supply chains in Europe

EU European Union

EUDR European Union Deforestation-Free Products Regulation

TNA Training Needs Assessment

DEFINITIONS

Source: Regulation (EU) 2023/1115 of the European Parliament and of the Council of 31 May 2023 on the making available on the Union market and the export from the Union of certain commodities and products associated with deforestation and forest degradation and repealing Regulation (EU) No 995/2010.

PE/82/2022/REV/1

OJ L 150, 9.6.2023, p. 206–247

ELI: <http://data.europa.eu/eli/reg/2023/1115/oj>

The European Union (EU) Deforestation Regulation (EUDR)

A regulation to tackle deforestation and forest degradation in commodity producing countries and reduce the EU's footprint. The EUDR entered into force in June 2023 and will repeal the previous EU Timber Regulation (Regulation (EU) No 995/2010) with the effect from 30 December 2024.

Benchmarking system and support

The European Commission will establish a system to assess countries or regions based on their risk of non-compliance with the Regulation. Additionally, it will develop instruments to assist businesses, public entities, and consumers in accessing information, such as the EU Observatory on Deforestation and Forest Degradation (<https://forest-observatory.ec.europa.eu/>).

Deforestation

The conversion of forest to agricultural use, whether human-induced or not (the Article (2) of the EUDR).

Deforestation-free

The Regulation establishes that commodities shall not have been produced on land subject to



deforestation (or forest degradation, in the case of wood) after December 31, 2020.

Due Diligence

The EUDR sets mandatory due diligence requirements for operators and large traders of the covered commodities and products. Before importing, trading or exporting a relevant item from the European Union (EU) market, a due diligence statement must be submitted to the central Information System.

Enforcement & Monitoring

National authorities will enforce the Regulation, checking operators and traders based on the risk levels of production countries of the commodities.

Forest

A land spanning more than 0.5 hectares with trees higher than 5 metres and a canopy cover of more than 10%, or trees able to reach those thresholds in situ, excluding land that is predominantly under agricultural or urban land use (the Article (2) of the EUDR).

Forest degradation

Structural changes to forest cover, taking the form of the conversion of: (a) primary forests or naturally regenerating forests into plantation forests or into other wooded land; or (b) primary forests into planted forests (the Article (2) of the EUDR).

Relevant commodities

Commodities covered by the EUDR are cattle, cocoa, coffee, oil palm, rubber, soya and wood. 'Relevant products' are the products listed in Annex I that contain, have been fed with or have been made using relevant commodities (e.g. raw hides) (the Article (2) of the EUDR).

Traceability

Operators (and traders who are not small-medium enterprises, SMEs) must collect and submit the geolocation of all plots of land where the commodities were produced as part of their due diligence statement, along with detailed information about suppliers and recipients.



SUMMARY

The present Training Needs Assessment (TNA) report is the Deliverable 2.2 of the **EMMA4EU** project. This report presents the data collected through an online survey aimed to collect knowledge, skills, and competency gaps of students and professionals who are/will be involved in the topic of reducing deforestation risk in commodity supply chains and in the implementation of the EU Deforestation-Free Products Regulation (EUDR). The identified training needs will be incorporated in building a training programme that is better tailored to the needs of students, professionals, and organisations that constantly seek skilled professionals. The survey consisted of five parts: Part 1. Personal Information and Background; Part 2. Main Themes and Topics; Part 3. Learning Outcomes and Skills; Part 4. Training Methods and Tools; Part 5. End of Survey.

In terms of background of the respondents, the majority (over 60%) belonged to the age group 18 -34, identified themselves as women (50%), men (45%), non-binary (ca. 2%). They represent 36 different nationalities and 25 countries of place of study or employment. Slightly more than half of them indicated their status as employed (47%) or self-employed (6%) while 44% as student and more than 1% as unemployed. The student category mainly consisted of Bachelor students (58%) and Master Students (40%), the remaining being Doctoral (PhD) students.

In terms of main themes and topics of the respondent backgrounds and the future training programme, most of the respondents rated *Environmental impacts of deforestation and forest degradation* (47%), *Systemic drivers of deforestation and forest degradation* (43%), *Compliance mechanisms, policies, rules and regulations* (42%) as top three themes covered by their background to a greater extent. All pre-selected themes of Deforestation-free supply chains (DFSC) were considered as relevant to a greater extent to be included in future training programmes.

As for learning outcomes and skills, *Forest policy and politics of deforestation* (64%), *Certifications and standards for sustainability* (60%), *Land use / land cover change monitoring tools* (42%) and *Regulatory frameworks and compliance mechanisms* (41%) were listed as the main knowledgeable/skilled topics at the moment. While *Indigenous and local community perspectives* (58%), *Supply chain management for sustainability* (54%), *Technological applications in supply chain management* (55%), *Smallholder and farmer perspectives* (53%) and *Traceability applications* (49%) were indicated as the top five themes to expand knowledge and skills in the future.

Data collection, management and analysis (82%), *Land use/land cover change monitoring tools (e.g. GIS)* (60%), *Traceability applications* (58%), *Artificial intelligence applications* (40%), *Blockchain technology* (35%) and *Auditing* (32%) were rated as the technical skills that the respondents will benefit most in their future career in the field of DFSC.

In terms of managerial skills, *Supply chain management for sustainability and deforestation risk* (67%), *Certification and standards management* (62%), *Management of social, cultural and gender aspects (i.e. fair benefit sharing, diversity, disability, climate justice, etc.)* (55%), *Project management & design (e.g. logframe, theory of change, design thinking)* (51%) and *Organisational management* (46%) were indicated as the most useful, however – though to a lower extent - also *Smallholder and farmer management* (38%), *Legal management* (37%), *Business management* (27%), *Entrepreneurship and innovation management* (25%), *Budget and financial management* (25%) were largely reported as relevant.

In terms of soft skills, *Communication* (71%), *Critical thinking* (70%), *Conflict resolution* (59%), *Teamwork* (55%) and *Networking* (48%) were listed as the most relevant to be nourished through future training opportunities. *Interpersonal skills* (43%), *Leadership* (42%), *Active listening* (40%), *Marketing and promotion* (24%) follow, though still being largely mentioned as important.

The teaching methods and tools that the respondents prefer to see to a greater extent include *Real-life case study analysis or Case clinic* (43%), *Field visits and study tour to companies/organizations* (37%), *Non-academic (e.g. industry, supply chain, certification, etc.) expert seminars* (37%), *Participation in conferences/events/exhibitions* (35%) and *Roundtable discussions with experts* (35%). As for the preferred format of the potential course



on DFSC, *Internship program* (32%), *Short (i.e. max 1 week) intensive professional face-to-face course* (30%), *Full academic blended course (online + face to face)* (28%), *Short certificate programme* (27%), *Academic Summer/Winter School* (23%) were the most cited.

The results of the survey show that the existing training programmes and courses partially cover the themes and topics relevant for DFSC, which results in low coverage of the skills and learning outcomes relevant for DFSC and EMMA4EU as well. Thus, there is still a need for bridging different disciplines and sectors to build a more holistic training programme in DFSC that will be promoted through the partner institutions of EMMA4EU.

The future TNA surveys should try to reach out to more diverse and larger audiences to represent the perspectives of a larger population sample. It should also be made available for a longer period of time to allow the dissemination efforts to bring results in terms of higher number of participation in the survey.

The future training programme in DFSC should cover the social, environmental, economic, technological aspects of management of deforestation and forest degradation, with particular attention to diverse country and region perspectives, the voices of the producers, smallholders, indigenous and local communities. Social, managerial and soft skills development should be considered as important as the development of technical and thematic skills. To go beyond the conventional teaching and to allow transformative, reflective and action-oriented learning to take place, the training programme should incorporate diverse teaching methods and formats, seek to incorporate diverse perspectives and actor representations. This would allow it to be innovative and attract the necessary audience.





1. ABOUT EMMA4EU

EMMA4EU, co-funded by the Erasmus + programme of the European Commission, is a 3 year-long project to build an innovation alliance for training programmes on deforestation-free supply chains in Europe. **The EMMA4EU project aims to develop innovative approaches to education and training to reduce deforestation risk in supply chains**, bridging different disciplines and sectors in forestry, agriculture, business, commerce and connecting their key actors through an alliance. This will enable knowledge exchange and create a new professional figure: the **Deforestation-Free Supply Chain (DFSC) Manager**.

The EMMA4EU acronym comes from the project's full title: Innovation Alliance for Training Programmes for deforestation-free supply chains in Europe. This description holds together the project's main goals and takes inspiration from the method EMMA, developed by the coordinating partner, Etifor. In this acronym, each letter stands for a specific action: **E**xplore the value chain, **M**ap the impacts, **M**itigate risks and **A**dvance and regenerate ecosystems.

The project will focus its activities on three thematic areas: 1) Compliance, 2) Technology, and 3) Corporate Social Responsibility (CSR).

EMMA4EU will:

- Address sustainability questions in EU supply chains, responding to regulatory demands for more sustainable practices.
- Enhance knowledge exchange among universities and vocational schools in agriculture, forestry, business, and commerce.
- Build a strong alliance to create a space for EU and non-EU actors to exchange knowledge and experiences and share opportunities.
- Improve employment opportunities by co-creating new professional profiles and curricula for DFSC Managers.
- Contribute to the EU Green Deal and support the EU 2050 climate targets.

The project relies on a partnership of ten expert organizations aiming to reduce deforestation risks in supply chains. As part of this project, they are launching an alliance and developing an innovative educational approach.

For more information, please visit our website: www.emma4eu.eu

1.1 About the report

The present **Training Needs Assessment (TNA) report** is the Deliverable 2.2 of the EMMA4EU project and aims to present identified knowledge, skills, and competency gaps of students and professionals who are/will be involved in the topic of reducing deforestation risk in commodity supply chains and in the implementation of the EU Deforestation-Free Products Regulation (EUDR). The identified gaps will help to build a training programme that is better tailored to the needs of students, professionals, and organisations that constantly seek skilled professionals.

This report follows the Task 2.2 of the EMMA4EU project that reads the following: *Training needs assessment for students and professionals in DFSC: A training needs survey will be launched at EU level through partners' networks for the target sector and department typologies in order to collect feedback on the most requested training needs in the field of DFSC and the three thematic areas. Results will be assessed and used to define the objectives, materials and targets for the training activities in WP4 and 5. The output will be a report. Task is led by University of Padova (P2).*

The targets of the Task 2.2 are the following:

- 20 (twenty), number of countries to be involved in survey



- 150 (one hundred and fifty), number of stakeholders to be involved in the survey (focus on gender balance)
- 100 (hundred), number of report downloads/visualizations from the web-platform and social networks
- 50 (fifty), number of presentation given using report data.

1.2 Methodology

The main data collection method for this report entailed an online survey disseminated through partner networks, in the classrooms and among students of the academic partners, EMMA4EU social media platforms and EMMA4EU website. We used LimeSurvey platform with the institutional access of the UNIPD to host the survey and to analyse the results.

The survey consists of five parts: Part 1. Personal Information and Background; Part 2. Main Themes and Topics; Part 3. Learning Outcomes and Skills; Part 4. Training Methods and Tools; Part 5. End of Survey. The compilation of the survey was expected to take approximately 15 minutes. The final results of the survey are published anonymously and in an aggregated way in this report which will be further disseminated through the project channels.

The data collected through this survey is/will be treated confidentially and anonymously for the purposes of the research of the EMMA4EU project, in compliance with Regulation (EU) 2016/679 (General Data Protection Regulation), Personal Data Protection Code (Legislative Decree 196/2003 and subsequent amendments) and the subsequent implementing measures adopted by the European Authorities and the Italian Data Protection Authority (www.garanteprivacy.it). For more information, please visit: <https://www.unipd.it/en/privacy>.

The Privacy Policy of the project can be found here <https://www.emma4eu.eu/privacy-and-cookie-policy/>.

1.3 About commodity driven deforestation and its importance

Tropical forests regulate the world's climate, provide water resources and biodiversity, and support livelihoods. This is why deforestation and forest degradation are among the leading causes of climate change and biodiversity loss. In 30 years, between 1990 and 2020, approximately 420 million hectares forests were lost (FAO, 2020¹). 23% of anthropogenic greenhouse gas emissions stem from agriculture, forestry, and other land uses (IPCC, 2020²). The primary reason behind deforestation and degradation is the expansion of agricultural land to produce forest-risk commodities (FRCs) such as **soy, palm oil, beef and leather, wood, cocoa, coffee, and rubber**.

The European Union (EU) contributes to this issue as it is the second-largest importer of FRCs, accounting for 16% of global embedded deforestation. The EU recently approved the EUDR to tackle this issue, highlighting the need for a broader, more cohesive approach. The EUDR has the potential to significantly impact the promotion of deforestation-free products in the European market.

On December 6th, 2022, the EU reached a pivotal agreement on the EUDR, a law designed to prevent companies from introducing, exporting and trading commodities associated with deforestation and forest degradation into or out of the EU market. On June 29th, 2023, the Regulation on deforestation-free products entered into force. The Regulation on deforestation-free products repeals the EU Timber Regulation. As of June 29th, 2023, operators and traders will have 18 months to implement the new rules. Micro and small enterprises – as defined in Article 3 of Directive 2013/34/EU of the European Parliament and of the Council – will enjoy a longer adaptation period, as well as other specific provisions.

¹ FAO (2020). The State of the World's Forests 2020 <https://www.fao.org/state-of-forests/en/>

² IPCC (2020). An IPCC Special Report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems. Summary for Policymakers https://www.ipcc.ch/site/assets/uploads/sites/4/2020/02/SPM_Updated-Jan20.pdf



To be sold in or exported from the EU market, commodities must be deforestation-free, comply with the producing country's legislation, and have a due diligence statement. The Regulation covers soy, cattle, palm oil, wood, cocoa, coffee, rubber, and specific products within these categories. A due diligence procedure includes information gathering, risk assessment and risk mitigation based on the producer country risk benchmarking.

2. TRAINING NEEDS IN THE FIELD OF DEFORESTATION-FREE SUPPLY CHAINS

A total number of 167 entries was recorded in the TNA survey (different per question depending on the type of a question). In this section we present the results of the analysis of the survey in four different sections. First, we present some information about the background of the respondents which aims to profile the respondents and better contextualize the data in the next section. Next, we discuss the results of the main themes and topics for developing a training course. In the third subsection, we focus on skills and learning outcomes. In the fourth subsection we present the results on teaching methods and tools.

2.1 Background of the respondents

The background information of the respondents to the TNA survey consists of the information on a) age group; b) gender; c) nationality; d) country of employment/study; e) current status; f) current main field of study or experience; g) current employment field and sector; h) main sector of company/organization; and i) currently occupied role in a company/organization.

In terms of age, most of the respondents belong to the age group of 25-34 (32%³), followed by the age groups of 18-24 (28%), 35-44 (18%), 45-54 (13%), 55-64 (7%) and 65 or over (1%). We can say that above 60% of the respondents belong to the larger age group 18-34 and that the survey managed to gain attention of a younger generation of probably students and young professionals (Figure 1).

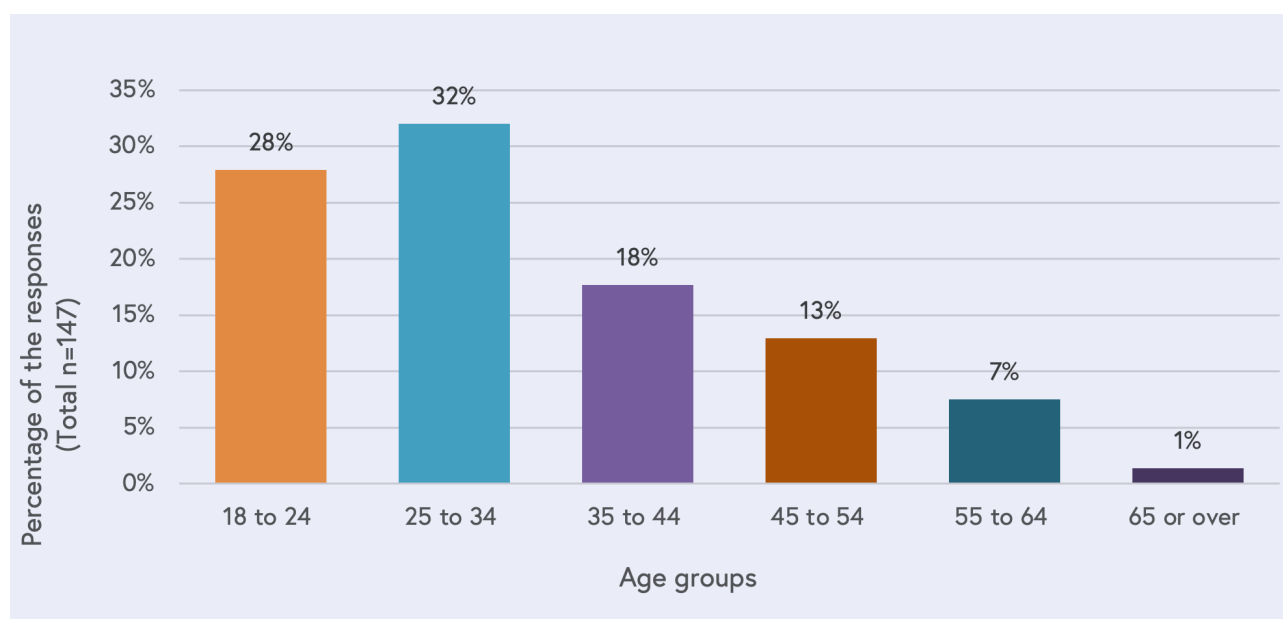


Figure 1. Results of the Q 1.1 Please indicate your age group. Choose one of the following options.



In terms of gender, 50% of respondents identify as woman, 45% as man, 1% as non-binary and 3% prefer not to indicate their gender. This can be considered satisfactory to meet the condition of paying a particular attention to gender balance when reaching out to respondents, set in the description of the Task 2.2 (Figure 2).

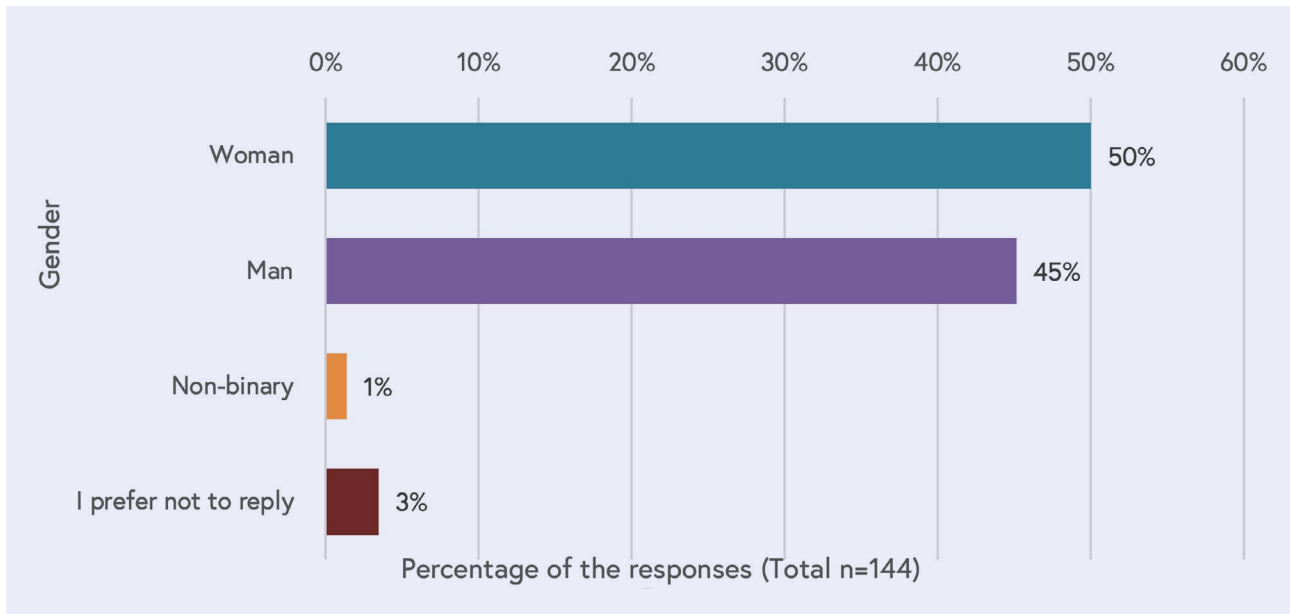


Figure 2. Results of the Q 1.2 Please, indicate your gender. Choose one of the following options.

The survey also asked the respondents to indicate their nationality to approximate the geographical span of the dissemination of the survey. Out of total 143 responses to this question, in the top 10 places, 39 (equivalent to about 27% of total respondents) indicated Germany, 23 (16%) the Netherlands, 15 (10%) Brazil, 7 (5%) Italy, 6 (4%) Indonesia, 6 (4%) Uganda, 5 (3%) Colombia, 4 (3%) China, 4 (3%) Denmark, 3 (2%) Peru as their nationality. In total 36 country nationalities are represented, despite the higher number of European nationalities that makes Europe as the most represented region within the sample (Figure 3).

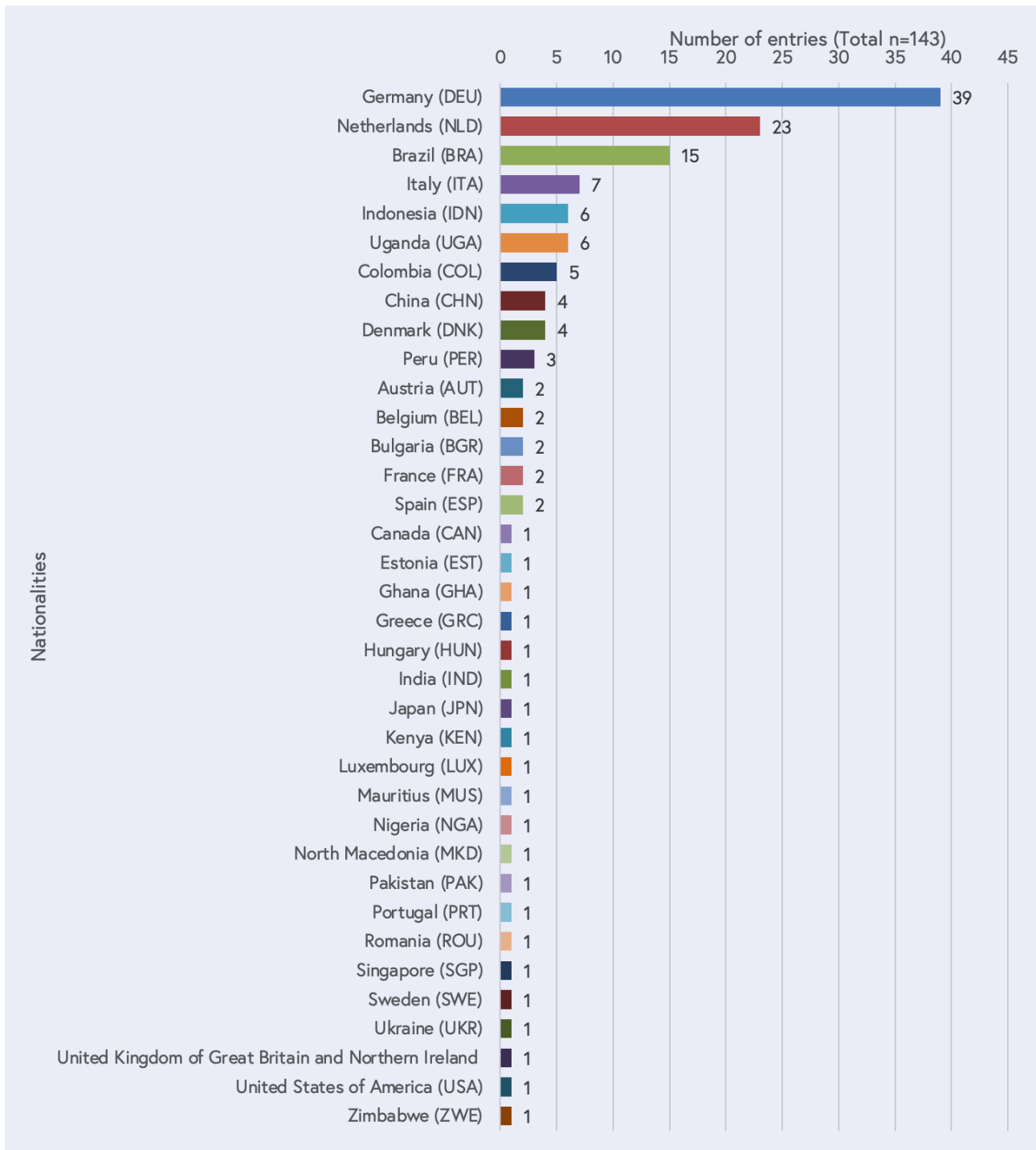


Figure 3. Results of the Q 1.3 Please, indicate your nationality. Choose from the drop-down list.



In terms of the main country of employment or study the results are similar, indicating the Netherlands (31%), Germany (28%), Italy (7%), Brazil (7%), Uganda (4%), Denmark (4%), Spain (2%), Austria (1%), Indonesia (1%) and Peru (1%) as the top 10 countries (Figure 4).

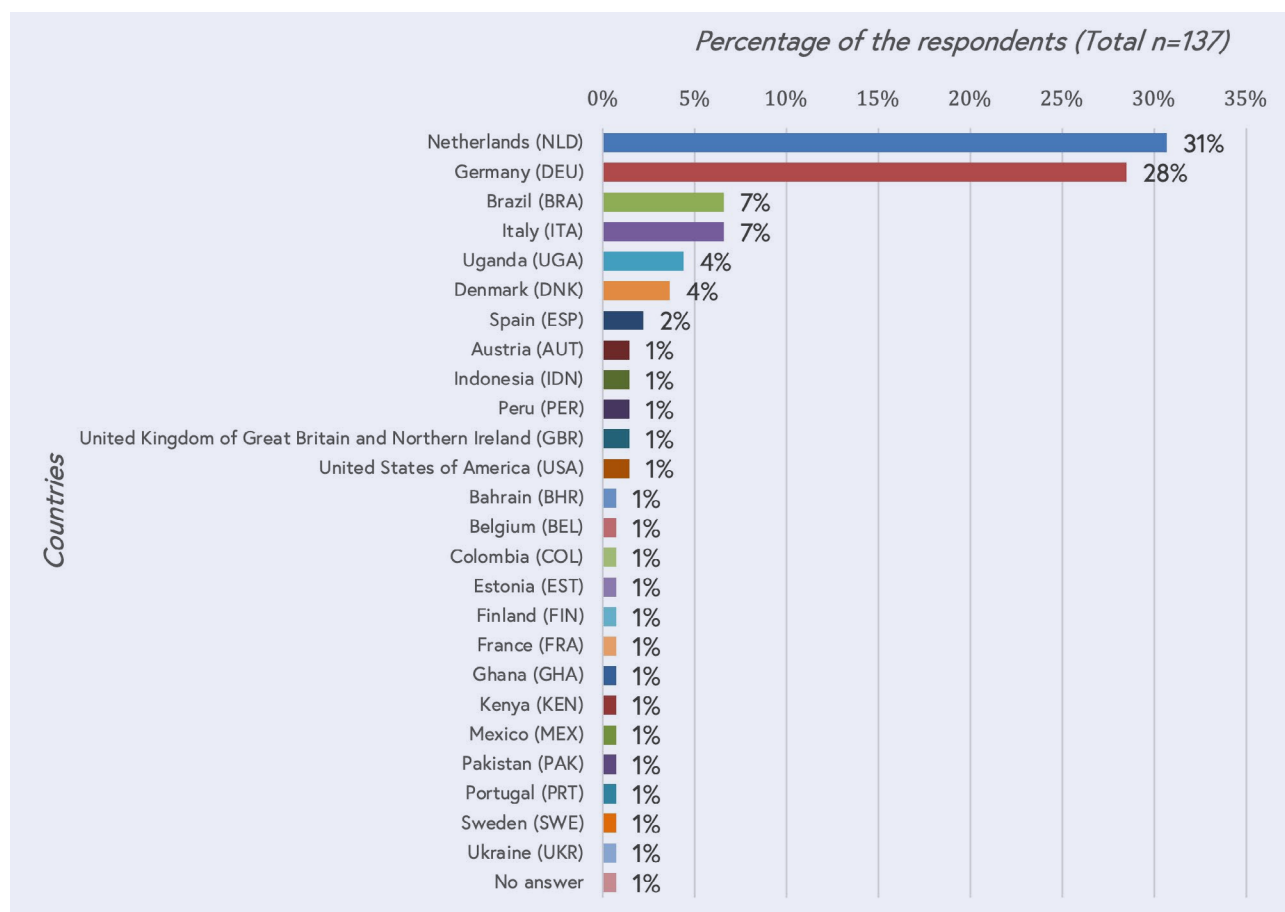


Figure 4. Results of the Q 1.11 Please, indicate the main country of your employment or study. Choose from the drop-down list.

With reference to the current status of the respondents, 47% indicated their status as employed, 44% as student, 6% as self-employed, 1% as unemployed and 2% as other. The former group included free entries such as retired, consultant and student and employed. Within the total 62 entries as student, 2% reported to be PhD student, 40% Master student and 58% Bachelor student (Figure 5).

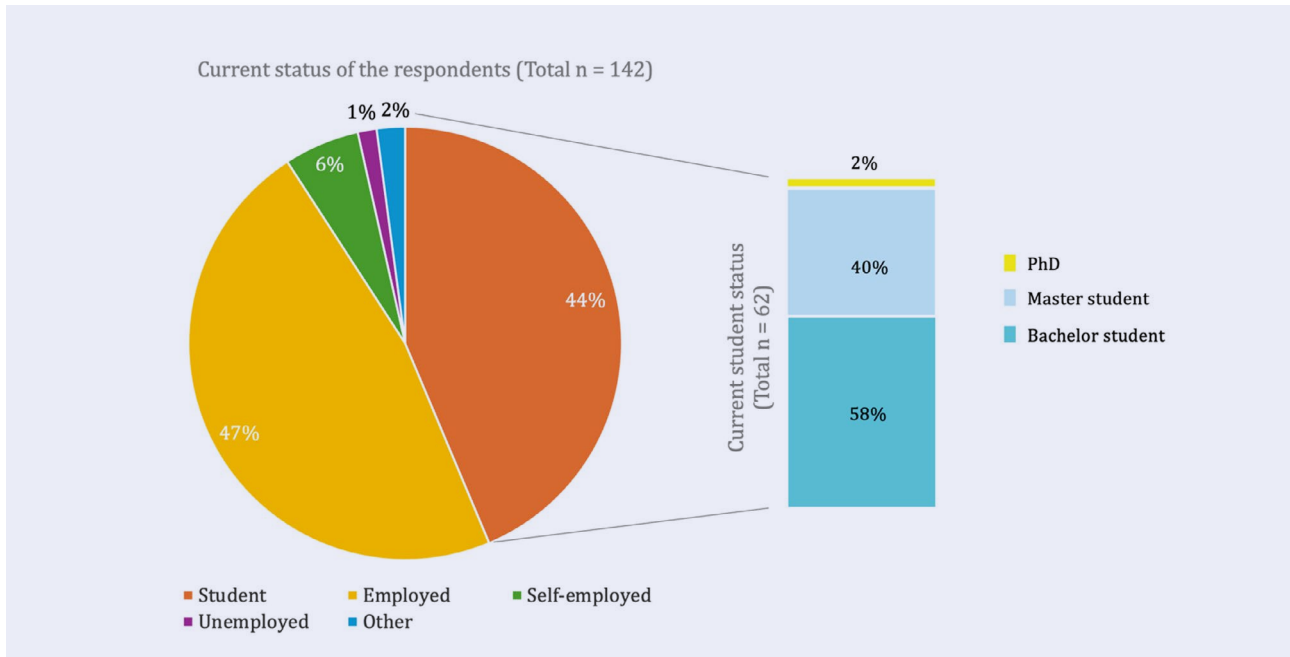


Figure 5. Results of the Q. 1.4. Please, indicate your current status. Choose one of the following answers

In terms of the main field of study of the students, Nature Conservation and Management (33%), Forestry and Silviculture (22%), Land Planning and Landscape Management (7%), Policy and Law (3%), Agriculture and Farming (2%) were indicated as the top five categories from the provided ones. The category Other (30%) ranks second as the most chosen, however when considering single free entries within it is broken down into multiple fields, including Environmental Sciences, International development studies, Environmental policy and economics, Earth Systems and Global Change, Climate Studies, Environmental politics, Forestry, Policy and Economics (MEDFOR Erasmus programme) and Environmental Governance (Figure 6).

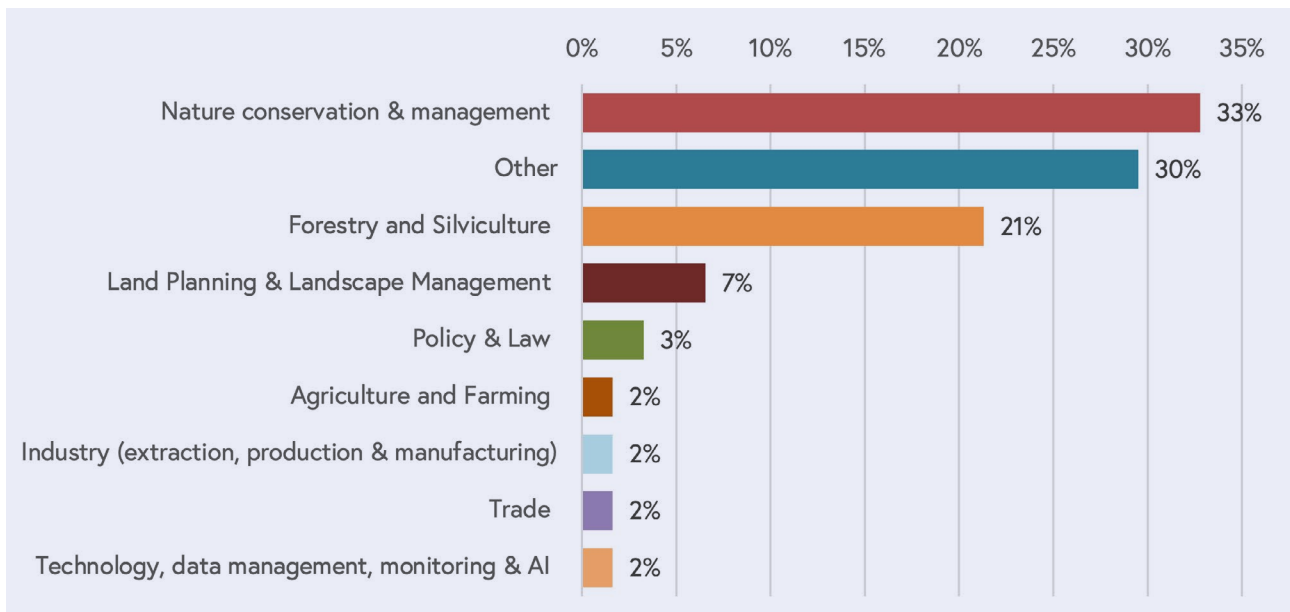


Figure 6. Results of Q 1.6 Please, indicate the current main field of study. Choose one of the following answers.



In terms of employment sector of those who indicated their status as employed and self-employed (n=75), Private sector (48%), Research & Academia (23%), Non-governmental and civil society (20%), Public sector (7%) were the most represented. The free entries within the category Other (3%) included Federation, likely to fall within the public sector, and the United Nations (UN) (Figure 7).

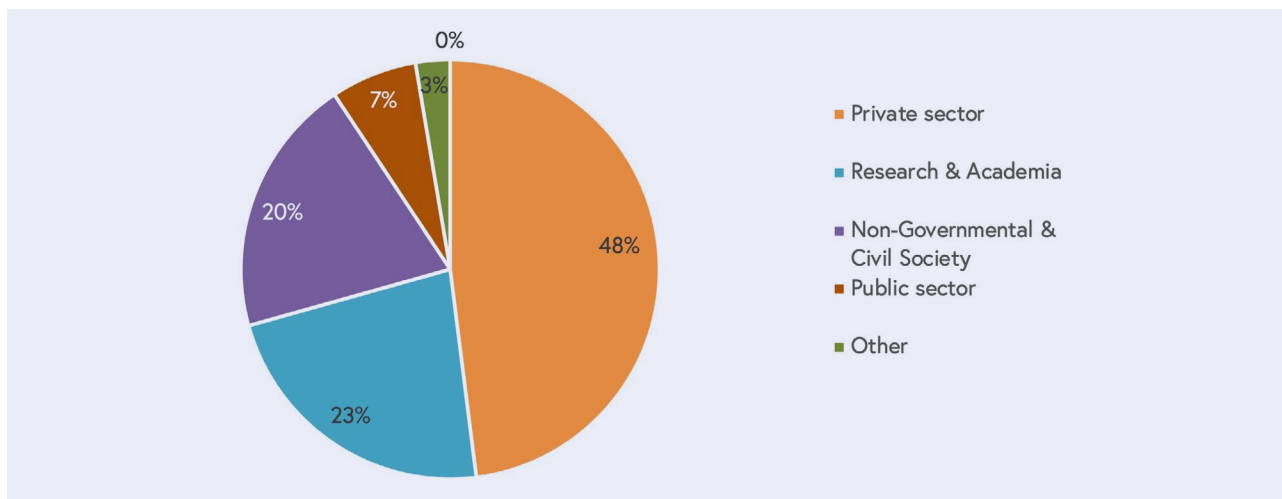


Figure 7. Results of the Q 1.7 Please, indicate the current employment sector. Choose one of the following answers.

As regards the main field of employment (Total n=73), Nature conservation and management (18%), Traceability (Supply chain and commodities) (11%), Nature policy and governance (10%), Industry (extraction, production and manufacturing) (10%), Standardization and certification (10%) were mentioned as the top five. The free entries in the category Other included Geosciences and environmental modelling, Purchasing for wholesale of wood products, Human Rights and Social Sustainability, Timber trade, and Agrifood economics and policy (Figure 8).

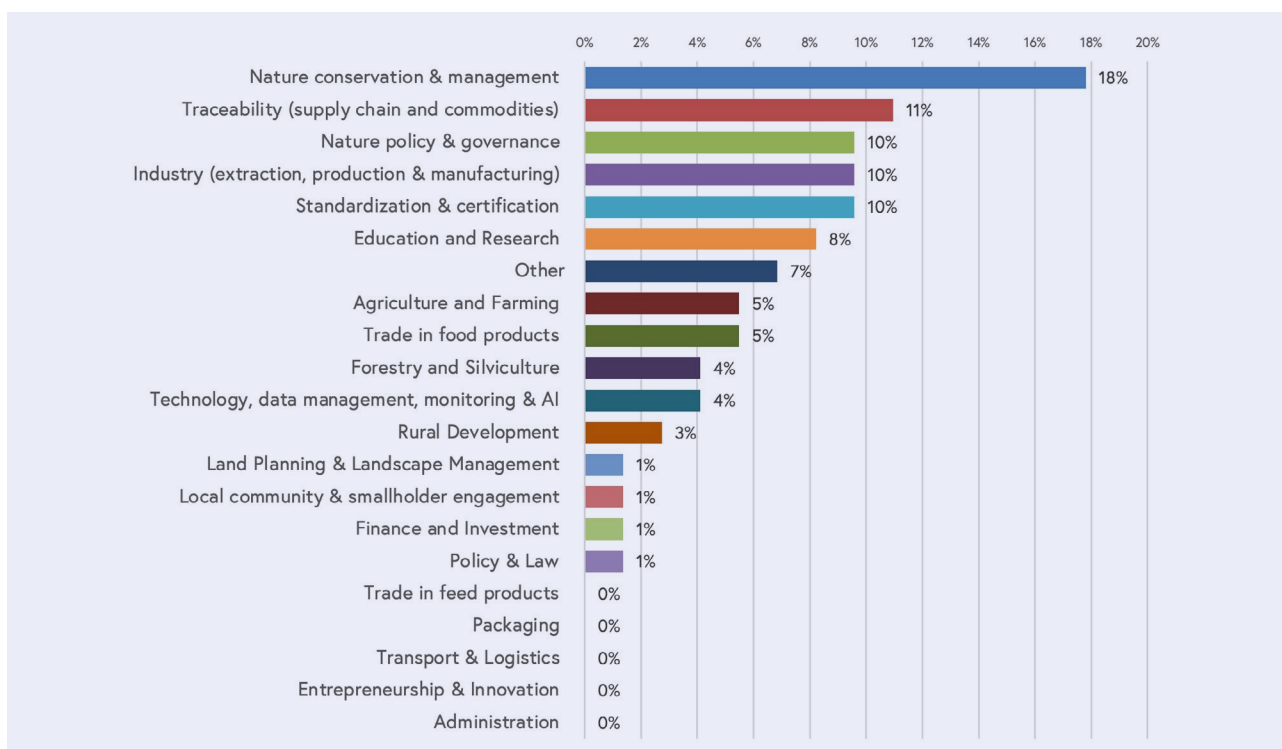


Figure 8. Results of the Q 1.10 Please, indicate the main field of employment. Choose one of the following answers.



Additionally, the respondents (Total n=34) were also asked the main field that their company or organization are involved in and their respective role in a company or organization. Wood & Timber (41%), Food and Agriculture (32%) and Packaging (3%) were indicated as the top three. The category Other (21%) included free entries such as Training Technology, Consultancy, Agroforestry, Information Technology (Figure 9). In terms of roles in a company/organization, Sustainability Management (38%), Buying and Sourcing (15%), General Management & Leadership (12%) were indicated as the top three. The category Other (18%) included free entries such as Project Officer, Vice President of Legal & Compliance, Auditing, Consulting, and Public Affairs.

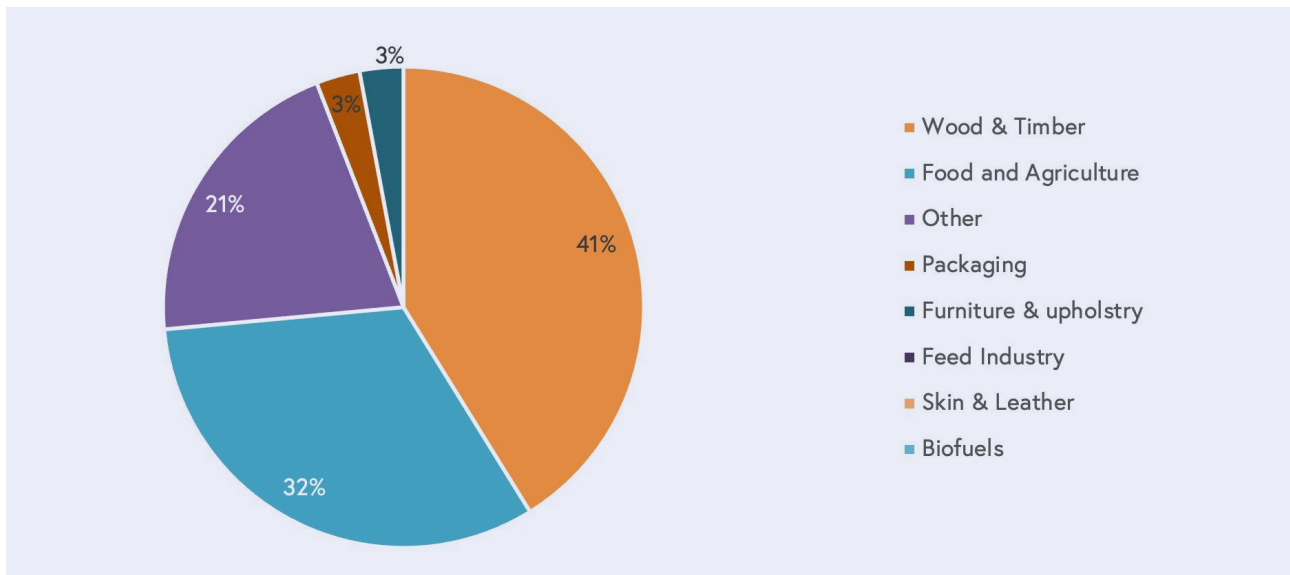


Figure 9 Results of the Q 1.8 Please, indicate the main sector of your organization or company. Please, choose the most relevant answer

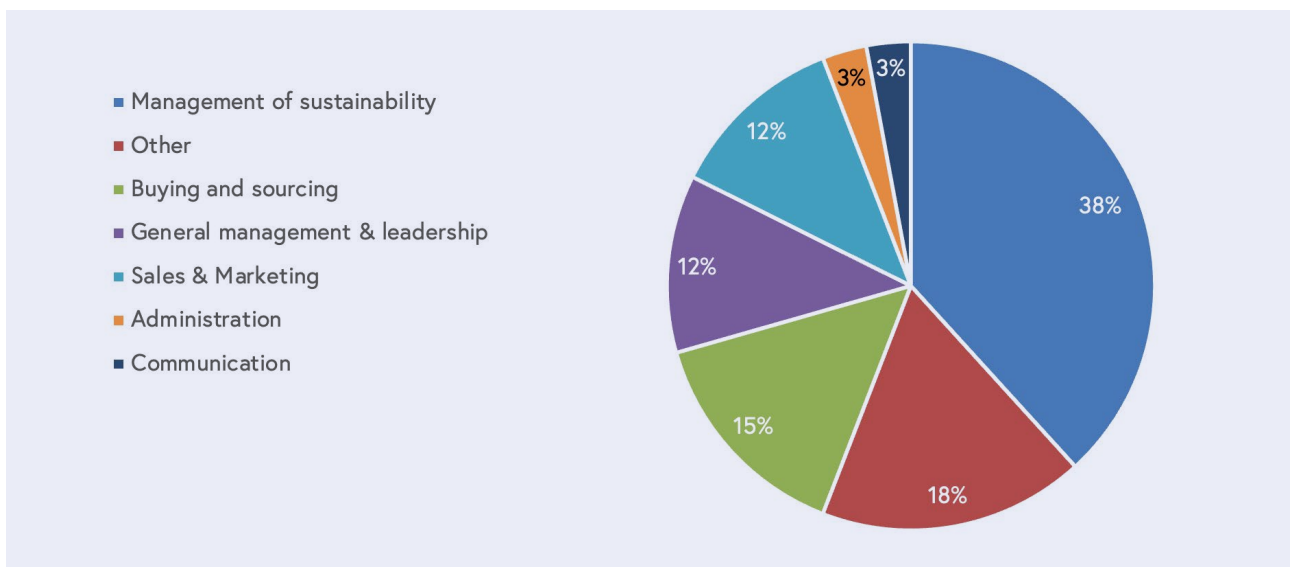


Figure 10. Q 1.9 Please, indicate your role in your organization or company. Choose one of the following. In case of Other, please elaborate.



2.2 Main topics of the respondent backgrounds and the future training programme

In this section we present the survey results that focus on the main topics of both the respondents' experiences and the future training program. Gathering this information aims to better tailor future training opportunities to the needs of the intended audiences, within the EMMA4EU project lifetime and beyond.

To better understand the current educational and professional experience of the respondents, we provided some pre-selected themes related to DFSC and the main focus of the EMMA4EU project. These themes were defined based on the project GA and an internal brainstorming process among project partners. The respondents (Total n=113) were asked to rate each topic in terms of coverage from 1= to a small extent, to 5 = to a great extent. Figure 11 shows the results of this question, where we aggregated the values 1 and 2 as to a smaller extent, 3 as average, 4 and 5 as to a greater extent. Most of the respondents rated *Environmental impacts of deforestation and forest degradation* (47%), *Systemic drivers of deforestation and forest degradation* (43%), *Compliance mechanisms, policies, rules and regulations* (42%) as the top three themes covered to a greater extent. In terms of coverage to a smaller extent, the majority indicated *Technologies, innovative tools and applications on reducing the risk of deforestation in commodity supply chains* (36%), *Supply chain management for sustainability* (26%), *Economic impacts of deforestation and forest degradation* (24%) as the top three themes that are covered less in current educational and professional experience of the respondents.

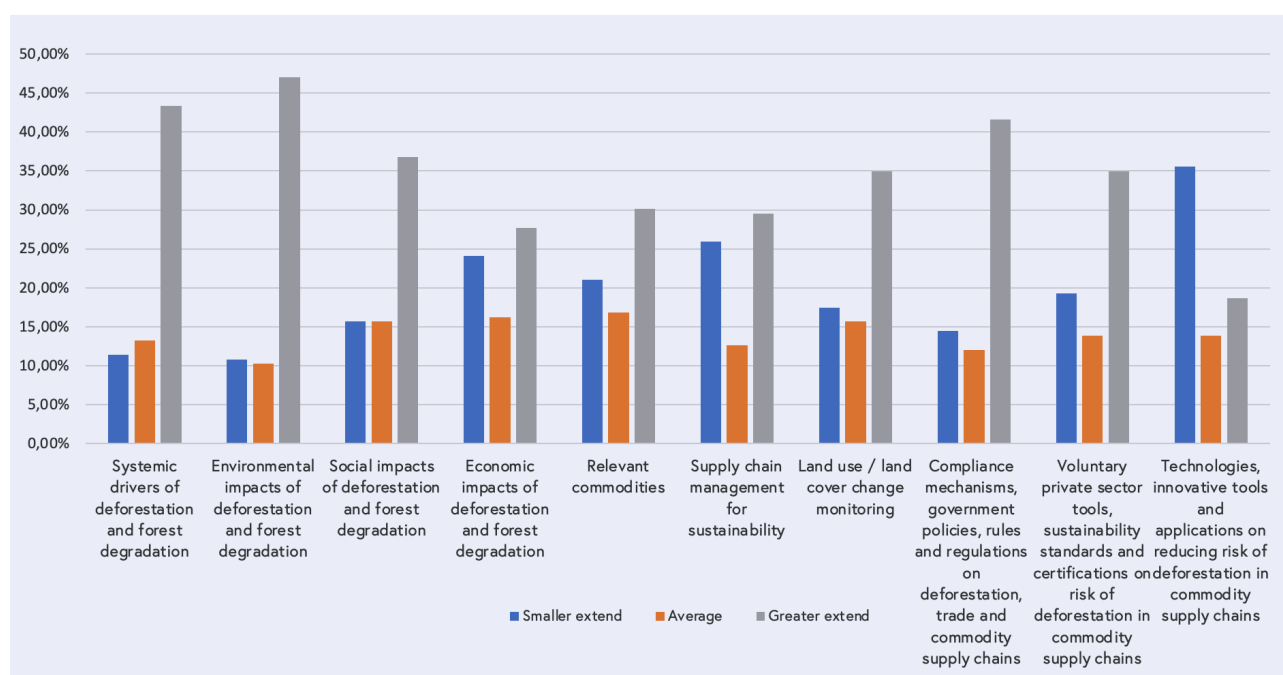


Figure 11. Results of the Q 2.1 To what extent does your current educational or professional experience deal with the following themes? Please select one option for each row (1= to a small extent; 5 =to a great extent. Results aggregated as follows: 1 and 2 as "to a smaller extent", 3 as average, 4 and 5 as "to a greater extent").

When comparing responses from students with those from professionals, differences emerge. Professionals reported significantly larger experience with reference to Economic and Social impacts of deforestation, Supply chain management and Voluntary private sector tools. For all of them, between 50% and 60% of professional reported to be experienced to a greater extent, while for students values range between 13% and 23%, with 50% to 60% reporting "to a smaller extent". Different positions are identified also with reference to Technologies, innovative tools and applications on reducing risk of deforestation in commodity supply chains: about 79% of students reported to deal with them to a smaller extent and only 8% to a greater extent, while values reported by professionals are 32% and 42%, respectively.



When the respondents (Total n=107) were asked to rate the exact same themes in terms of preference for future educational and professional experiences to cover, a large proportion of them (39 to 50%) rated all themes as a preference to a greater extent (Figure 12). This indicates that most of respondents consider all suggested themes relevant to be covered in future training opportunities.

Students tend to report higher rates for *Systemic drivers of deforestation and forest degradation* as well as both *Economic and Social impacts of deforestation* (about 90% of them are willing to have these topics covered to a greater extent vs. 64 to 67% for professionals), while professionals report higher interest for *Compliance mechanisms, Voluntary private sector tools and Technologies, innovative tools and applications on reducing risk of deforestation in commodity supply chains* (with 75-80% reporting to be interested to a greater extent vs. 50 to 59% for students).

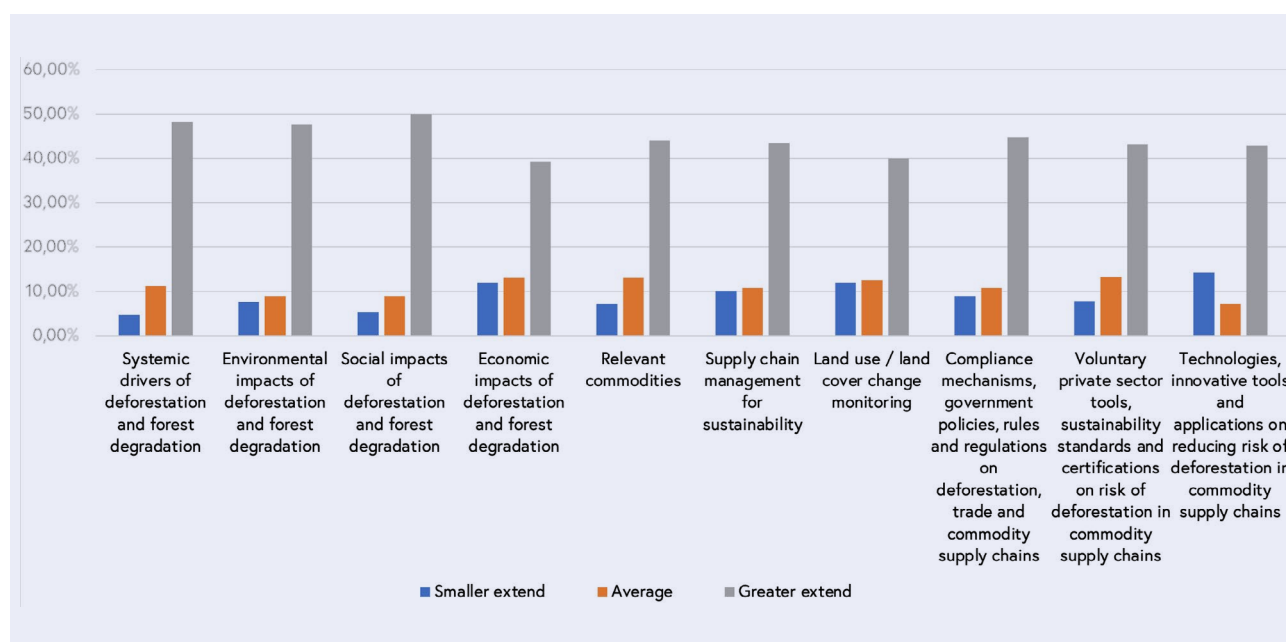


Figure 12. Results of the Q 2.2. To what extent would you prefer your future educational or professional experience to deal with the following themes? Please select one option for each row (1= low preference; 5 = high preference). Results aggregated as follows: 1 and 2 as "to a smaller extent", 3 as average, 4 and 5 as "to a greater extent".

The survey also suggested some pre-selected topics relevant to DFSC and within the main focus of the EMMA4EU project, that the respondents might have covered in their training courses in the last 5 years. They were also asked to indicate the type of training course that covered each topic. Figure 13 shows a summary of the replies to this question, where Bachelor and Master courses are indicated as the ones mostly covering the targeted topics (Total=104).

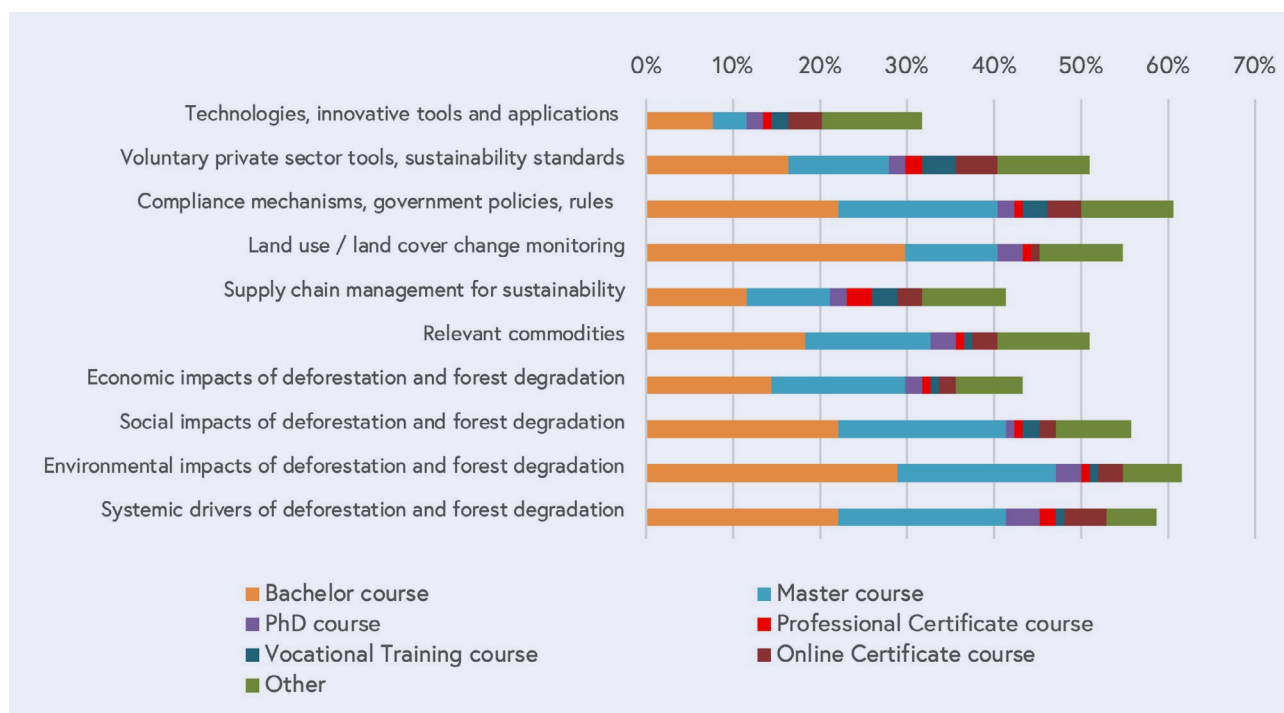


Figure 13. Results of the Q 2.3 In the last 5 years, have you attended any training courses on the following topics (rows), and to which type they belong to (columns)? Please tick the most recent options for the type of the course you attended.

Going beyond the pre-selected topics, to collect the list of topics emerging empirically from the respondents, they were also asked to list additional themes and topics for training programmes in reducing deforestation and forest degradation in commodity supply chains falling within the scope of the EUDR. The list of free entries for this question is provided in Table 1 within Annex 1.

2.3 Learning outcomes, current and future skills

This section of the survey was designed to collect information on the current skills in relevant topics in DFSC and understand what future skills they would like to obtain and learning outcomes they would like to achieve through future training activities in DFSC.

First, we provided a pre-defined set of topics to analyse the current skills of the respondents in each one of them. *Forest policy and politics of deforestation* (64%), *Certifications and standards for sustainability* (60%), *Land use/land cover change monitoring tools* (42%), *Regulatory frameworks and compliance mechanisms* (41%), *Indigenous and local community perspectives* (39%) were listed as the top five knowledgeable/skilled topics. The category Other, included free entries such as Ecological consequences of deforestation; Social Sustainability Risk and Impact Assessments; information technologies (IT); How deforestation impacts the climate change (Figure 14).

Professionals tend to report they have higher perceived skills compared to students for almost all the topics, except for Land use/land cover change monitoring tools and Indigenous and local community perspectives. Both categories reported the largest knowledge gaps for topics like Technological applications in supply chain management for sustainability and deforestation risk, Expert knowledge on specific commodity production, trade, networks and supply chains, Trader and retailer perspectives (especially for students) and Auditing and certification.

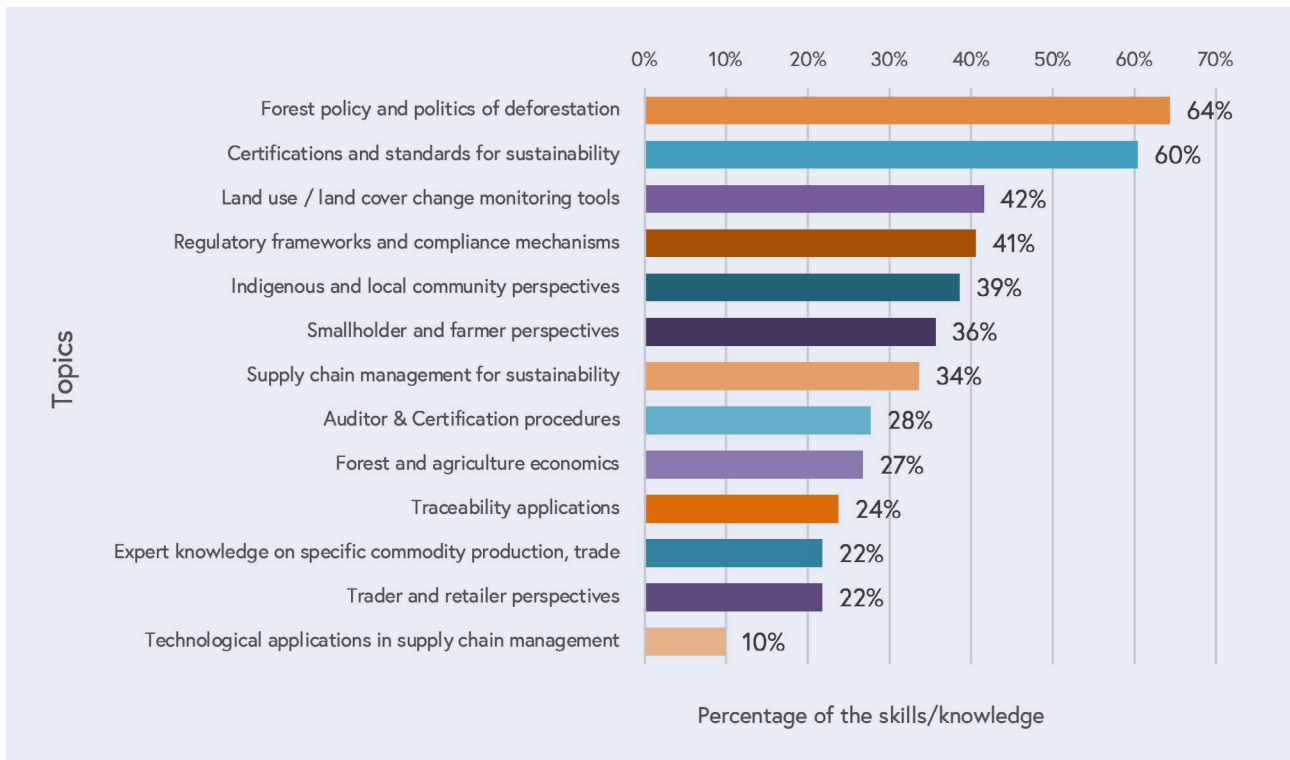


Figure 14. Results of the Q 3.1 Based on your training or experience, what are the current topics that you are knowledgeable about? Please tick options you believe might be relevant for you. Multiple selection is possible. In the case of Other, please, specify the topic not listed.

The respondents were also asked to indicate which ones of the pre-selected topics they would like to gain more knowledge and skills about through future training. Topics such as *Indigenous and local community perspectives* (58%), *Supply chain management for sustainability* (58%), *Technological applications in supply chain management* (55%), *Smallholder and farmer perspectives* (53%) and *Traceability applications* (49%) were indicated as the top five themes to expand knowledge and skills in the future. The category Other, included free entries such as Artificial Intelligence (AI) Application to detect unnormal dataset in mass data, Ecology problems, Biodiversity, etc. (Figure 15).

For many topics students and professionals show the same level of interest in gaining more and better knowledge, however in some cases differences emerge. In particular, professionals are more interested than students to topics like *Supply chain management for sustainability*, *Technological applications in supply chain management for sustainability and deforestation risk*, *Regulatory frameworks and compliance mechanisms for sustainability* and *Expert knowledge on specific commodity production, trade, networks and supply chains*.

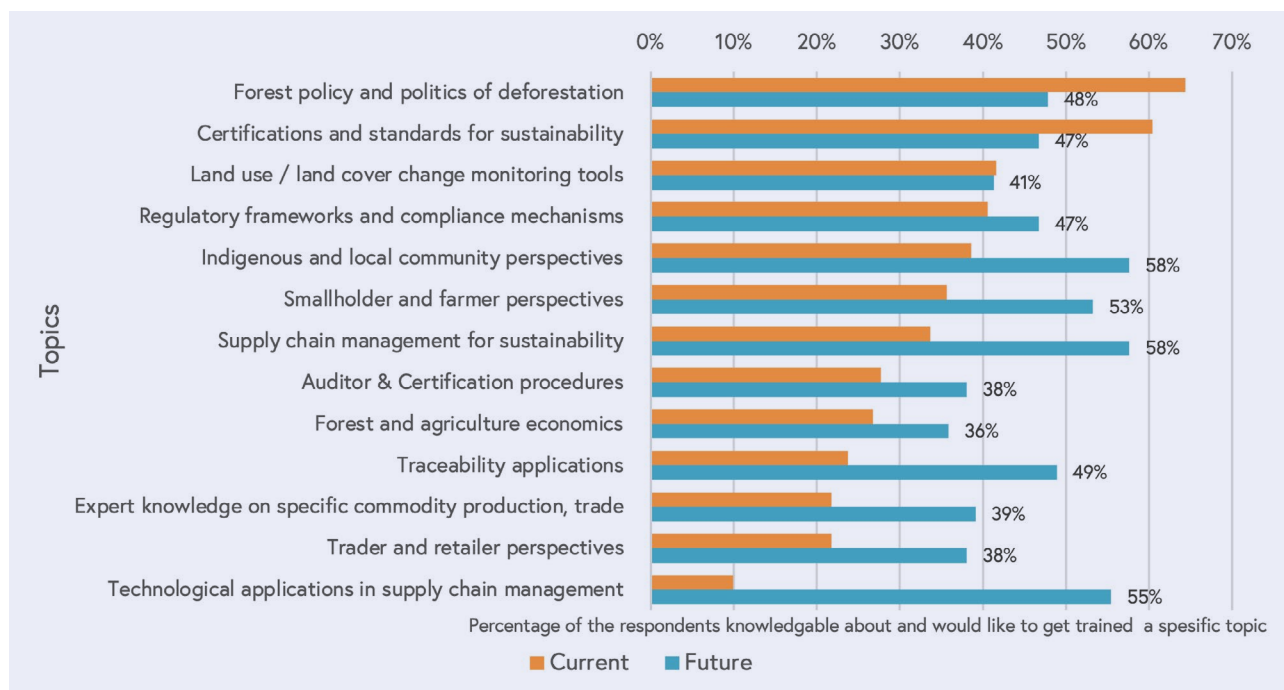


Figure 15. Results of the Q 3.3 In which of the following topics would you like to expand your knowledge through future training? Please tick the options you believe might be relevant for you. Multiple selection is possible. In the case of Other, please, specify the topics not listed.

To better contextualize the respondents' experience, we asked them (Total n=92) to indicate the perspective of their current education or experience, in reducing deforestation and forest degradation. The 33% reported to hold the perspective of the Demand side (i.e., the perspective of the countries and regions that import and/or consume relevant commodities), 32% of the Supply side (i.e., the perspective of the countries and regions that produce and export relevant commodities), 11% of Brokering or intermediary (i.e., the perspective of a person or organization that makes a profit by trading in goods as an intermediary between the producer and the consumer) and 25% as of all three perspectives (Figure 16).

No significant differences were detected between students and professionals.

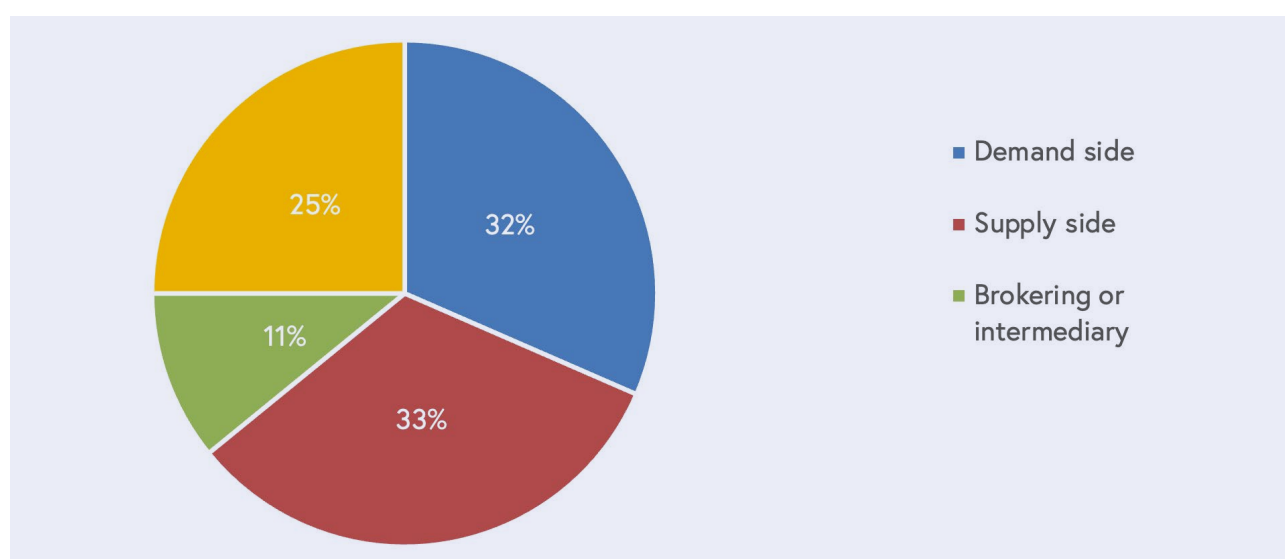


Figure 16. Results of Q 3.4 What is the focus of your current education or experience, in reducing deforestation and forest degradation? Choose the most relevant answer.



The respondents were also asked to indicate specifically the continents, regions and countries to which their current experience is mainly linked to. Europe (63%) was the most reported region, while for non-European regions South America (49%) was the most mentioned, followed by Asia (35%), Africa (26%), North America (16%) and Australia and Oceania (5%) (Figure 17). The detailed list of regions and countries per continent is listed in Table 2 within Annex 1.

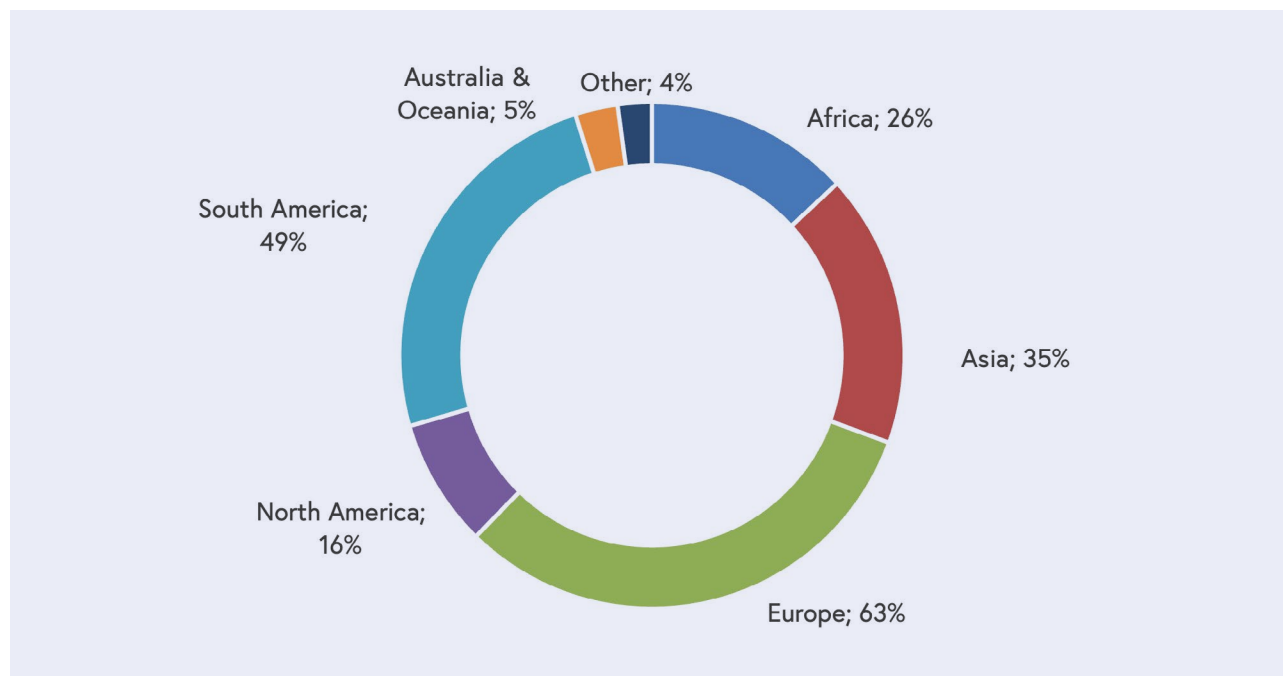


Figure 17. Results of the Q 3.5 Which continents, regions and countries does your expertise cover? Please, specify the regions and countries when you choose an answer. Multiple choice is possible.

When asked about the desired technical skills relevant for DFSC and EMMA4EU themes, *Data collection, management and analysis* (82%), *Land use/land cover change monitoring tools* (e.g. GIS) (60%), *Traceability applications* (58%), *Artificial intelligence applications* (40%), *Blockchain technology* (35%), *Auditing* (32%) were chosen respectively as those that the respondents will benefit most in their future career in the field of DFSC. The category Other, included free entries such as *Ecological modelling; Environmental Education; Mitigation strategies; Impact assessment (incl. socioeconomic impact on producer groups); internet technologies; Social skills (conflict management and resolution, fostering collaborations and understanding among different stakeholders...); supplier engagement; Inter-sectorial approaches (finance sector, security sector, educational sector, health sector)* (Figure18).

Data collection, management and analysis is also the kind of skill that is equally perceived as important by both students and professionals. In all other cases, professionals assign slightly higher importance to the proposed skills, in particular in the case of *Traceability applications* (51% professionals report it to be a relevant skill for DFSC and EMMA4EU themes vs. 21% of students). On the contrary, students report *Land use/land cover change monitoring tools* more frequently than professionals (47% vs. 30%).

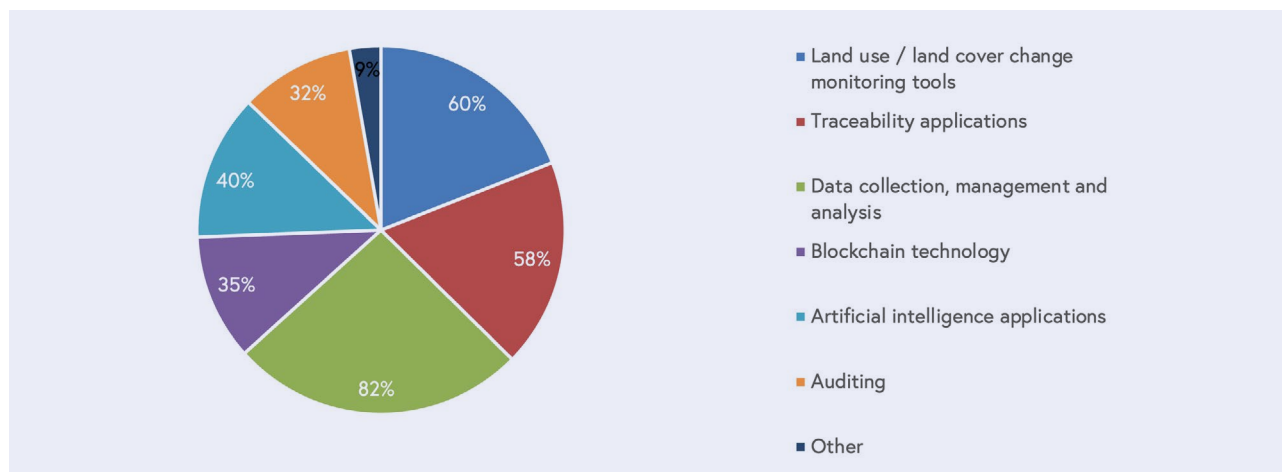


Figure 18. Results of the Q 3.6 What technical skills do you think you will benefit most in your future career in the field of deforestation-free supply chains? Please tick options you believe might be relevant for you. Multiple selection is possible. In the case of Other, please, specify the desired technical skill.

When asked about desired managerial skills relevant for DFSC and EMMA4EU themes, *Supply chain management for sustainability and deforestation risk* (68%), *Certification and standards management* (62%), *Management of social, cultural and gender aspects (i.e. fair benefit sharing, diversity, disability, climate justice, etc.)* (55%), *Project management & design (e.g. logframe, theory of change, design thinking)* (51%), *Organisational management* (46%), *Smallholder and farmer management* (38%), *Legal management* (37%), *Business management* (27%), *Entrepreneurship and innovation management* (25%), *Budget and financial management* (25%) were indicated as most useful respectively. The category Other, included free entry Diplomacy as a necessary managerial skill (Figure 19).

When compared to professionals, students indicate more frequently *Management of social, cultural and gender aspects* as a desired managerial skills relevant for DFSC and EMMA4EU themes (48% vs. 27%). On the other hand, professionals give more emphasis to *Certification and standards management* (45% vs. 36%) and *Supply chain management* (49% vs. 37%).

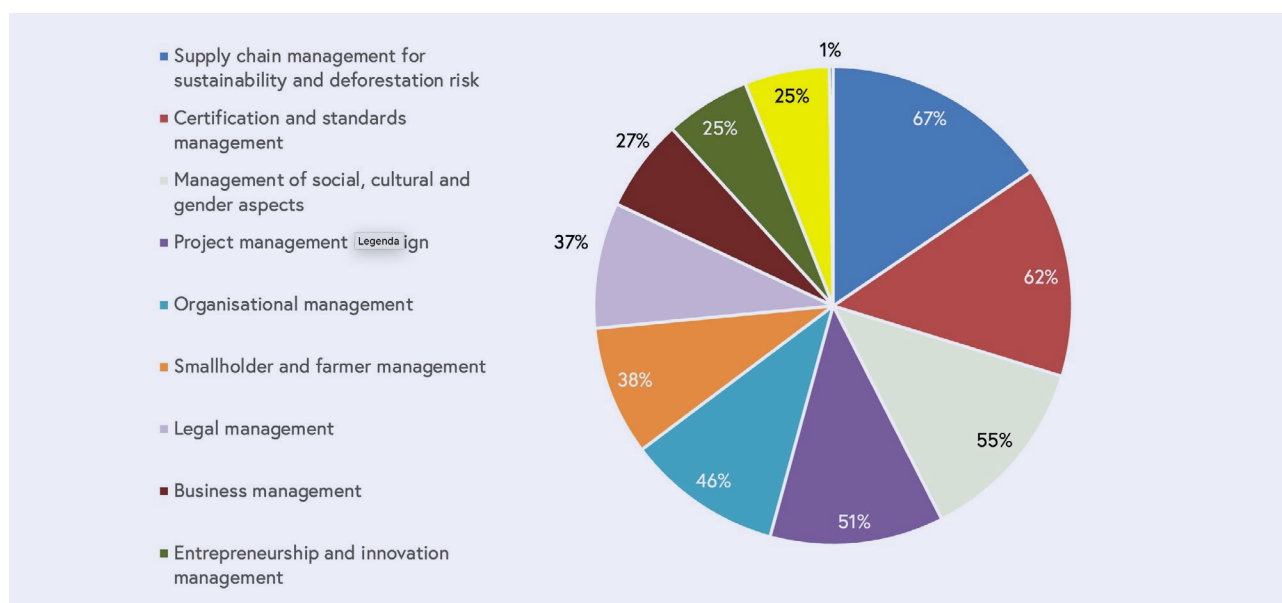


Figure 19. results of the Q 3.7 What managerial skills do you think you will benefit most in your future career in the field of deforestation-free supply chains? Please tick options you believe might be relevant for you. Multiple selection is possible. In the case of Other, please, specify the desired managerial skills.



Soft skills also make an important part of the skillset of a DFSC manager and when asked which soft skills the respondents would benefit the most, *Communication* (71%), *Critical thinking* (70%), *Conflict resolution* (59%), *Teamwork* (55%), *Networking* (48%), *Interpersonal skills* (43%), *Leadership* (42%), *Active listening* (40%), *Marketing and promotion* (24%) were listed as the most relevant to be nourished through future training opportunities (Figure 20).

Critical thinking is the most preferred soft skill by both professionals and students (43% and 47% respectively), followed by *Communication* (40% and 50% respectively). *Leadership* and *Marketing* are perceived as relevant mainly by professionals, while students tend to prefer *Conflict resolution* (which however is also reported as relevant by professionals), *Teamwork* and *Active listening*.

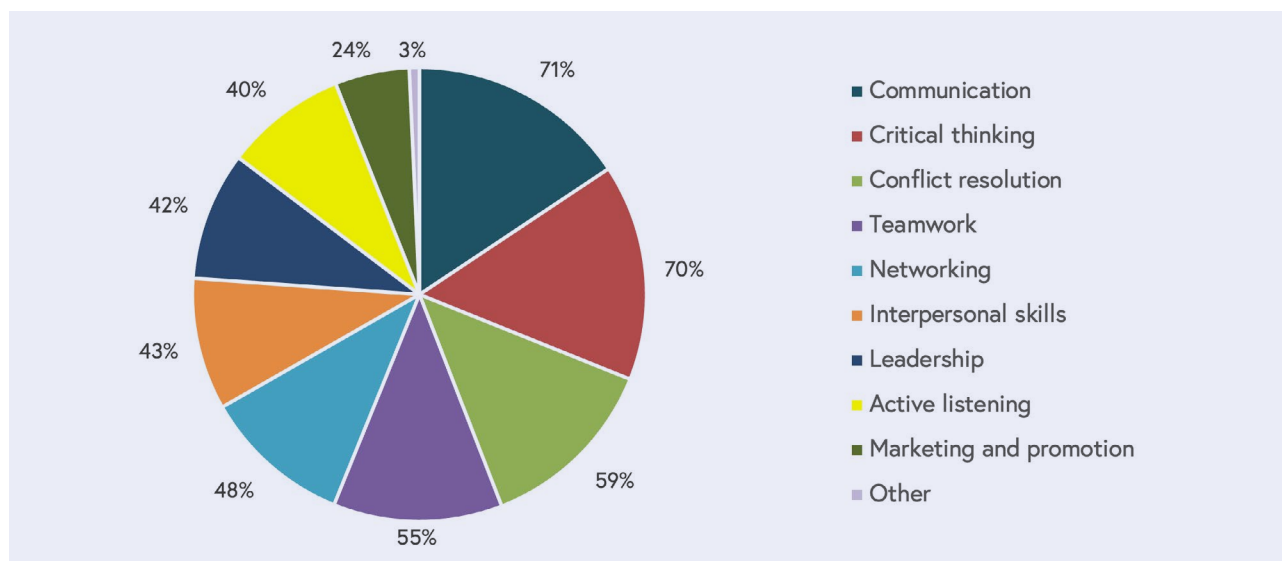


Figure 20. Results of the Q 3.8 What soft skills do you think you will benefit most in your future career in the field of deforestation-free supply chains? Please tick options you believe might be relevant for you. Multiple selection is possible. In the case of Other, please, specify the desired soft skills.

2.4 Training Methods and Tools

In this section we present the results of the questions that were designed to collect data on the desired format, teaching methods and tools of the future training courses in DFSC. When asked what kind of teaching methods and activities would be preferable in a training course dedicated to deforestation free commodity supply chains, *Real-life case study analysis or Case clinic* (42.86%), *Field visits and study tour to companies/organizations* (37.5%), *Non-academic (e.g. industry, supply chain, certification, etc.) expert seminars* (36.90%), *Participation in conferences/events/exhibitions* (35.12%), *Roundtable discussions with experts* (34.52%) were indicated as the top five activities/methods that the respondents would prefer to see to a greater extent (Figure 21). The respondents were also asked what other teaching methods and activities they would suggest for a training course in deforestation free commodity supply chains and the free responses to this question are presented in Table 3 within Annex 1.

Students and Professionals show similar preferences, however the former give more emphasis to *Field visits and study tour to companies/organizations*, *Real-life case study analysis or Case clinic* and *Participatory and co-creative activities*, and the latter to *Seminars and frontal lessons by both academic and non-academic experts* and to *Multimedia and video recordings*.

The respondents were also asked to state their preference for the format of the potential course in DFSC. *Internship program* (32%), *Short (i.e. max one week) intensive professional face-to-face course* (30%), *Full academic blended course (online and face to face)* (28%), *Short certificate programme* (27%), *Academic Summer/*



Winter School (23%) were indicated as the top five formats that the respondents prefer to see to a greater extent (Figure 22).

Students and Professionals give preference to different types of formats, with the former preferring longer and face-to-face solutions (e.g. *Full academic face-to-face course*, *Short (i.e. max 1 week) intensive professional face-to-face course* and *Extended certificate programme*) and the latter to shorter and online ones (e.g. *Full academic online course*, *Short (i.e. max 1 week) intensive professional online course* and *Short certificate programme*). Students also prefer *Internship programmes* to a larger extent.

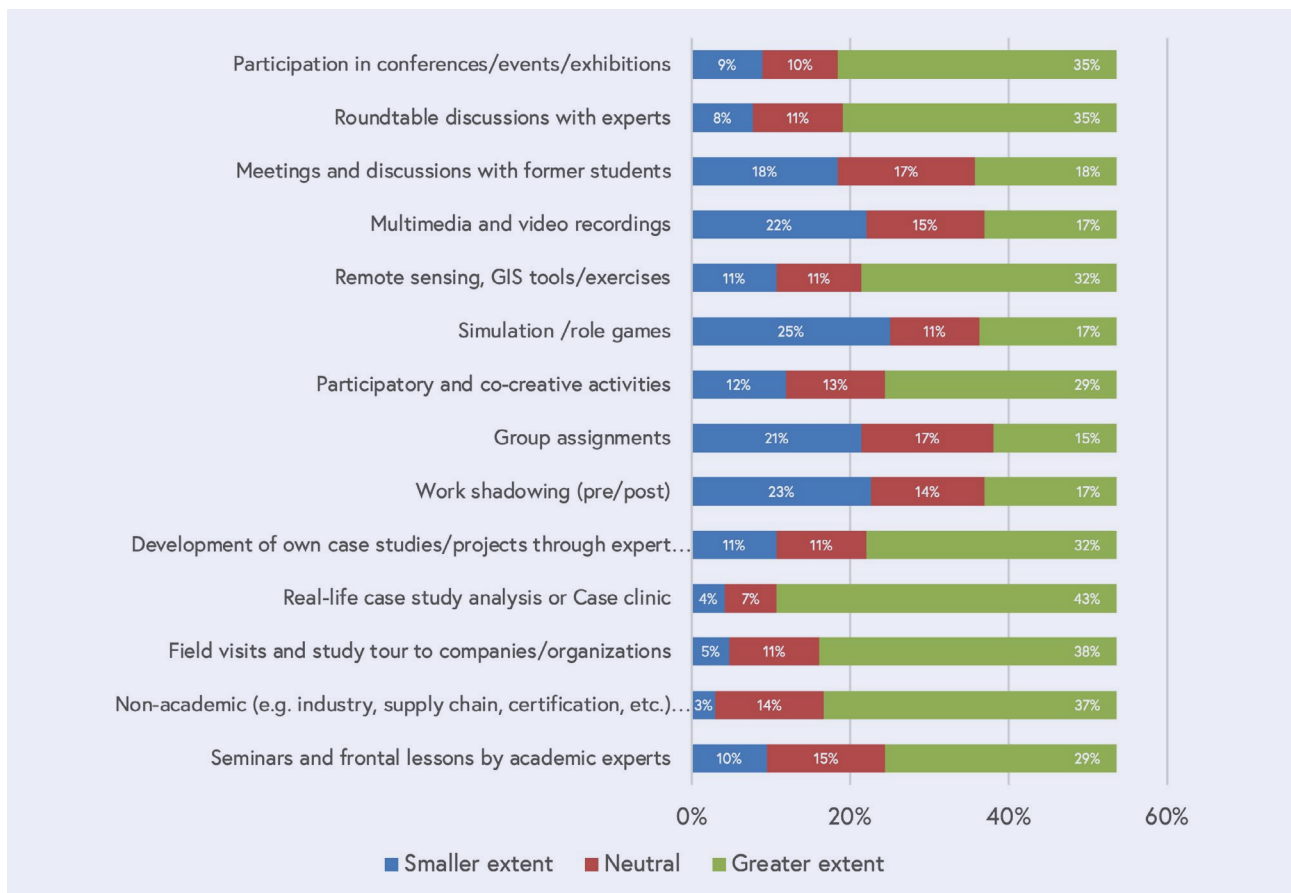


Figure 21. Results of the Q 4.1 What kind of teaching methods and activities would you prefer to see in a training course dedicated to deforestation free commodity supply chains? Please select one option for each row (1= to a small extent; 5 = to a great extent. Results aggregated as follows: 1 and 2 as "to a smaller extent", 3 as average, 4 and 5 as "to a greater extent").

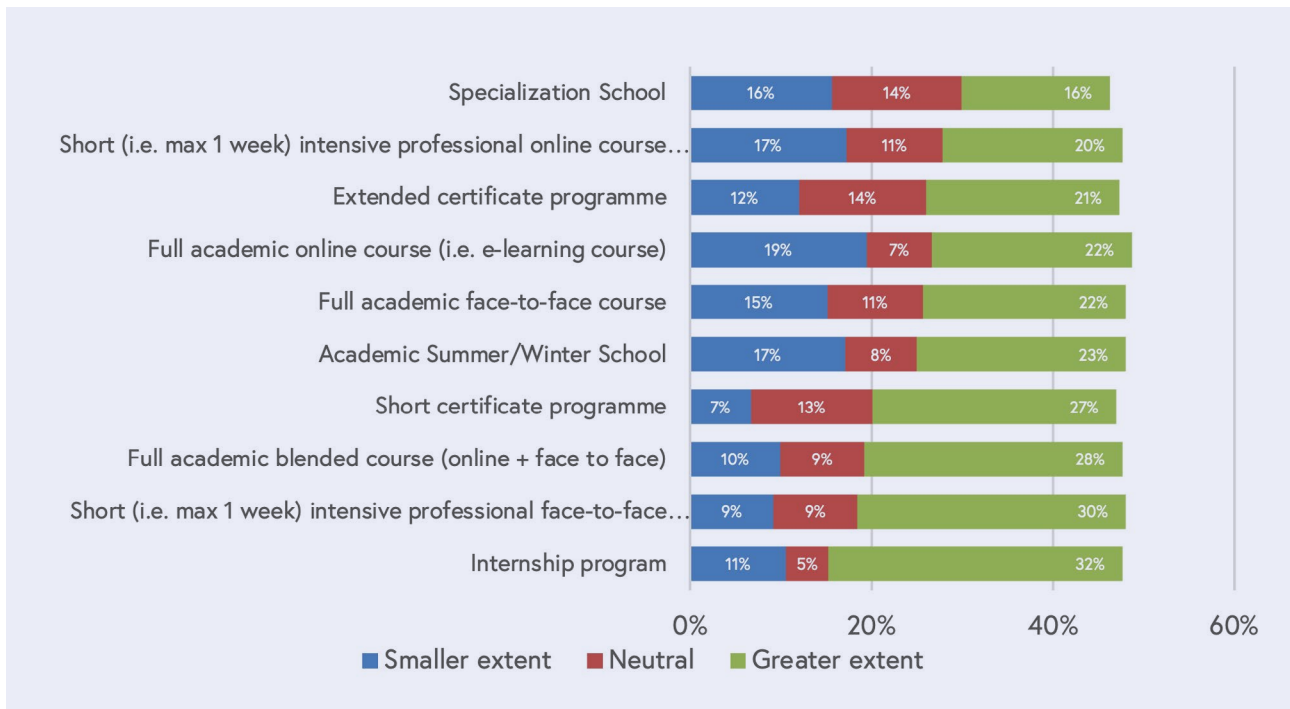


Figure 22. Results of the Q 4.3 Please state your preference about the format of the potential course on above mentioned themes. Please select one option for each row (1= to a small extent; 5 = to a great extent. Results aggregated as follows: 1 and 2 as "to a smaller extent", 3 as average, 4 and 5 as "to a greater extent").



3. DISCUSSION AND FUTURE RECOMMENDATIONS

This report presented the data collected through an [online survey](#), to collect knowledge, skills, and competency gaps of students and professionals who are or will be involved in the topic of reducing deforestation risk in commodity supply chains and in the implementation of the EUDR. The identified training needs will be incorporated in building a training programme that is better tailored to the needs of students, professionals, and organisations that constantly seek skilled professionals.

The results of the survey show that the existing training programmes and courses attended or referred to by respondents – e.g., at the universities they are enrolled to – cover the topics relevant for DFSC just partially, which results in low coverage of the skills and learning outcomes relevant for DFSC and EMMA4EU as well. Thus, there is still a need for bridging different disciplines and sectors to build a more holistic training programme in DFSC that will be promoted through the partner institutions of EMMA4EU. This may include, for example, combining environmental and socio-economic disciplines, or technology-based with participatory approaches.

The future TNA surveys should try to reach out to more diverse and larger audiences – e.g. in geographical terms, including within producing countries, as well as within public bodies and civil society organizations involved in deforestation-related topics from different angles – to represent the perspectives of a larger population sample. It should also be made available for a longer period, e.g. 3 to 6 months, to allow the dissemination efforts to bring results in terms of higher number of participants in the survey.

Besides TNA results, the future training programme in DFSC should also consider additional references and inputs collected during individual meetings and talks EMMA4EU project partners had and will have with various stakeholders. While these are not covering all countries or commodities, they nevertheless give valuable insights of which challenges organisations face in preparing for the EUDR. This contributes to the interpretation of the market research and the development of materials, events and courses.

The future training programme in DFSC should cover the social, environmental, economic, technological aspects of management of deforestation and forest degradation, with particular attention to diverse country and region perspectives, the voices of the producers, smallholders, indigenous and local communities. Social, managerial and soft skills development should be considered as important as the development of technical and thematic skills. To go beyond the conventional teaching and to allow transformative, reflective and action-oriented learning to take place, the training programme should incorporate diverse teaching methods and formats, seek to incorporate diverse perspectives and actor representations. Real-life case study analysis, case clinic, field visits and study tours, expert seminars, participation in conferences/events/exhibitions, roundtable discussions with experts, are just a few examples of learning methods and tools emerged during the survey. Adopting, adjusting and combining them into an effective blend would allow the training programme to be innovative and attract the necessary audience.



ANNEX 1

Table 1. Responses to the Q 2.4 Which additional themes would you suggest the training programmes in reducing deforestation and forest degradation in commodity supply chains should cover? Please, provide your answer below as a concise list of themes and topic

1	I think it would be helpful to think ahead of the EUDR and cover more commodities, than those covered by the EUDR at the moment. It's already clear, that the list of commodities will be expanded in a few years, so the training programme should already prepare for upcoming changes and follow a more future-oriented approach.
2	Basics not only in regulations but also international conventions and agreements (e.g. The Rotterdam Convention, for Prior Informed Consent)
3	Geospatial analysis to inform due diligence procedures Legal frameworks covering socio-and-environmental compliance at the property level Mapping accuracy assessment
4	Mitigation measures to apply in cases where deforestation has occurred, the adaptation of small farmers and family farmers to new rules and how to be competitive when lacking capacities, opportunities with nature-based solutions and actual certification schemes of ecosystem services such as water, biodiversity and carbon to be implemented in the framework of the EUDR, landscape approaches
5	In-depth understanding of supply chain tracing mechanisms - data sources, data management plan, etc
6	Rio principles like the CBDRR Linkage with climate negotiations
7	Forest engagement Market demand Supplier/ industry possibilities
8	Carbon sequestration, Carbon credits and roles of forest, Carbon sinks, urban forests
9	Carbon Credits: Measurement and Validation in Forest Supply Chain Business
10	<i>Capacitação no Regulamento Desmatamento da União Europeia (UE) (EUDR)</i> <i>Panorama socioambiental das principais áreas produtoras de commodities no mundo;</i> <i>Sistemas de monitoramento do desmatamento disponíveis na atualidade;</i> <i>Principais impactos socioeconômicos nos mercados produtores de commodities em razão da EUDR;</i> <i>Metodologias de monitoramento comunitário disponíveis na atualidade;</i>
11	Positive incentives to halt deforestation
12	Impact of EUDR specifically on sourcing countries; their challenges and potential solutions.
13	Tools in use; standards for data transfer; interoperability; national solutions; commodity specific solutions worldwide; public bodies and institutes pushing standardisation; standardised classification of goods and customs declaration; segregation of batches - especially of bulk ware and their identification; role of handling and packaging; identification of plots; evidence on legal farms; unique identification with barcodes; involvement of small-holders and SME; public funding and other support to farmers and local authorities; ...
14	Rural livelihood; Government policies; geopolitics
15	How companies must adapt the data and informatic systems to comply with the EUDR need to associate DDS in each invoice, as well as how Companies must develop risk assessment and mitigation plans (guidelines)
16	The concept of Risk Assessment and how to evaluate risks and find proper mitigation measures for the specific risks
17	Methodologies to raise awareness among the local population about the consequences of deforestation and illegal logging.
18	Carbon trading and related issues International law and multilateral agreements
19	Developments and social science of the local communities in commodity-producing countries
20	Empowerment of the indigenous communities and their involvement in the decision- making process.
21	Interactions between themes (social, economic and environmental) that affect farmer livelihoods and resilience. So a more interdisciplinary approach. E.g. the loss of biodiversity due to deforestation has impacts on interacting social and economic aspects that are not covered in the very "disciplinary" examples given (e.g. equality etc. and prices and competition) .



22	Ecosystem services: if deforestation is going on to restore the degradation, what could us get benefits from this process, rather than environmental conservation? Land use improvement and local community collaboration: If deforestation can be beneficial to local residents? and how can we collaborate with them to implement the restoration and deforestation in the source of supply chain? How can we protect native culture and community in this project?
23	Decision-making in management (rational choice, economic behaviour, bias) Understand people choice and how it can be influenced
24	Governance, political lobbying, policy making, how to bring this topic up during business meetings.
25	Application of Artificial Intelligence
26	Financing mechanisms/streams in addressing impacts of deforestation and forest degradation
27	Challenges in obtaining confidential supply chain data, challenges to verify data related to traceability
28	EU Trade
29	Deforestation-free supply chain for EUDR
30	Carbon sequestration...
31	Maybe some entrepreneurial views and skills to understand how to integrate this subject job market (as an employee or external consultant), and coming from a country with a high rate of deforestation (Brazil), I would suggest a huge focus on conflict management and resolution, how to deal with poor governance and low trust from suppliers who may have greenwashing activities. I heard stories about buyers visiting stocks with legal products, but receiving instead illegal products and an expert saying that deforestation was driven by a "mafia" kind of framework, so it could be interesting to learn and explore more about how to deal with trust and/or policy and economic related measures (incentives, fines, punishments...).
32	Probably additional topic such as how the existing practice from developing countries to reduce the deforestation and forest degradation (as they are often highly associated with such activities). It therefore might be interesting to learn how they are dealing with that by using, for instance, voluntary private tools
33	Challenges to Traceability and how to overcome them How to close Farmer knowledge gaps as partners in Traceability
34	Field trips Visiting different companies Having different keynote speakers We had/heard related topics quite many times in theory, we need more practical input and perspectives from different actors & countries!
35	Governance, Access to justice Alternative ways to understand, organize and thrive economic development (instead of extractivism and capitalism) e.g. commons
36	A more holistic view there are lots of training for each aspect of deforestation e.g. economic, environmental, social but it is hard to find a course that covers all of it and how each aspect interacts.
37	How we can stop the huge amounts of deforestation caused by the agricultural industry.
38	Indigenous Practises in Forest / Land use
39	What does the society do now to stop deforestation and degradation Real Examples by NGO's, State, current projects etc What we already done? How can we help?
40	comparative analysis between commodities and supply chains
41	I'd love to learn more about ideas to solve the problems and thereby learn by example what are the drivers and problematic actors in the field, but also get an idea of how people are already trying to solve it in creative ways. Also I had the feeling that we're talking very little about the land use rights of indigenous people and how they are ignored and violated by states and companies. Here I think my course could shine a much more critical light on tools like certification for example



Table 2. The responses to the Q 3.5 Which continents, regions and countries does your expertise cover? Please, specify the regions and countries when you choose an answer. Multiple choice is possible.

Kenya, Tanzania, Uganda	Africa
Ivory Coast and Ghana	
Sub-Saharan	
Côte d'Ivoire	
Ghana, Côte d'Ivoire, Cameroon, DRC, Gabon, Uganda	
Sub-saharan Africa (e.g. Burkina Faso, Niger, Mali, Kenya)	
East Africa	
Vietnam, China, Taiwan	Asia
Pakistan	
Singapore and ASEAN	
Indonesia	
China	
The natural environment and technology in China, including quality assessment, identification and statement analysis.	
Turkey	
Indonesia, Malaysia, Russia	
Indonesia, India, Thailand	
Malaysia	
Southeast Asia	Europe
Indonesia	
Germany, Italy, Portugal	
Italy	
France, Belgium	
Germany; EU	
The Netherlands, European forest	
Netherlands	
Finland	
Netherlands, and partially EU	
The Netherlands, Italy	
Belgium, Netherlands	
Austria, Germany, Czech Republic, Slovakia	
Scandinavia, Germany, Baltic countries, Poland, Czech rep, Romania, Ukraine, Belarus, Russia	
North-West Europe	
Western Europe	
Italy	
Romania, Germany,	
EU27	
Poland, importing countries, Bulgaria	
Mainly the Northern Mediterranean countries (Spain, Italy, France)	
Spain	



Sweden	
EU	
Europe	
Germany	
Germany and northern countries. Missing south and east: Italy, Spain, Portugal, Poland...	
Mexico,	North America
USA	
Mexico to Panama	
Brazil	South America
Brazil	
Honduras, Guatemala, Colombia, Mexico, Brazil and Peru	
Brazil	
Ecuador	
Brazil and Chile	
Loreto, Ucayali, San Martin - Peru	
Latin America and mostly Brazil	
South Brazil, Chile, Uruguay	
Bolivia, Peru	
Ecuador, Peru	
Rain Forest	
Colombia, Peru	
Pacific islands, Large Ocean States	Australia & Oceania
Honduras, Guatemala, Cuba, Haiti, Dom. Rep., Mexico	Other



Table 3. Responses to the Q 4.2 What other teaching methods and activities would you suggest for a training course in deforestation free commodity supply chains? Please, provide your answer below as a concise list.

1	Some type of activity that would involve stakeholder's engagement for upstream supply chains
2	Spatially explicit modelling and simulation Ex-post assessment of policies and traceability tools Risk analysis at the landscape level
3	South to South learning for the commodity supply chains in medium to long-run once the EUDR takes effect
4	Industry visits
5	MOOC
6	Training focusing on industrial needs through field studies.
7	<i>Visitas a campo em que prevaleça diferentes perfis produtivos</i>
8	Mentoring with experts / practitioners
9	Expert training with certificate - blended eLearning, groups, use-cases, excursions, metaverse Basic training with certificate - online, test, games, metaverse
10	Local stakeholder interviews/cooperative projects
11	Practical tutorial, group work with real stakeholders, real-case experiences
12	Stakeholder integration in the course, much like a role-playing game
13	Qualitative research methods to facilitate stakeholder engagement and active listening
14	Perhaps comparison of third-party software providers
15	Online course
16	A focus on personal/professional experiences (what happened, what worked out, what didn't, what we could do best next time)
17	Internships
18	Field Trips



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