TRADE4SD

Fostering the positive linkages between trade and sustainable development

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Deliverable 4.1: Policy note: How to make the best use of model results in trade policy: Insights from stakeholders' views

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About TRADE4SD Project

Trade is a central factor in shaping not only global, but also regional and local development. Trade policy has an especially important part to play in achieving the UN Sustainable Development Goals (SDGs). The premise of the TRADE4SD project is that trade has the power to produce positive outcomes when the policies which define the rules of the game are framed and designed in a way to promote access to markets, fair prices and standards of living for farmers, as well as alleviating rural poverty and ensuring sustainable farming practices. Addressing the relation between trade and SDGs requires an integrated approach to policy-making and inclusive governance.

The main objective of the TRADE4SD project is to contribute to build new opportunities for fostering the positive sustainability impacts of trade supported by improved design and framing of trade policy at national, EU and global level, including WTO modernisation, increased policy coherence at different domains including agricultural, energy, climate, environmental and nutritional policies.

To meet this objective, the project will develop an integrated and systematic approach that combines quantitative models from different perspectives, and several qualitative methods recognising that SDGs and trade are highly context-related. On the one hand, a robust analysis of economic, social and environmental impacts is given by using diverse but integrated modelling techniques and qualitative case studies. On the other hand, a wide consultation process is implemented involving stakeholders both in the EU and in partner countries as well as those with a wide international scope of activity, providing opportunities for improved understanding, human capital building, knowledge transfer and dissemination of results. To this extent, the consortium involves, as co-producers of knowledge, a number of research and stakeholder participants with different backgrounds who will use their networks to facilitate the civil society dialogue and build consensus on the subject of gains from trade in view of sustainability.

Project Consortium

No.	Participant Organisation Name	Country
1	Corvinus University of Budapest (CORVINUS)	HU
2	University of Kent (UNIKENT)	UK
3	Consiglio per la Ricerca in Agricoltura e l'Analisi dell'Economia Agraria (CREA)	IT
4	Johann Heinrich von Thünen-Institut, Bundesforschungsinstitut für ländliche Räume, Wald und Fischerei (THUENEN)	DE
5	The University of Sussex (UOS)	UK
6	University of Ghana (UG)	GH
7	Luonnonvarakeskus (LUKE)	FI
8	Centrum Analiz Spoleczno-Ekonomicznych-Fundacja Naukowa (CASE)	PL
9	Food and Agriculture Organization of the United Nations (FAO)	IT
10	Institut national de recherche pour l'agriculture, l'alimentation et l'environnement (INRAE)	FR
11	Confederazione Generale Dell'Agricoltura Italiana (CONFAGRICOLTURA)	IT
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List of Abbreviations

Abbreviation	Definition
CAP	Common Agricultural Policy
CGE	Computable General Equilibrium
CBAM	Carbon border adjustment mechanism
CIRAD	Centre Cooperation International in Agricultural Research Development
DC	Developing country
EAAE	European Association of Agricultural Economists
EC	European Commission
EESC	European Economic and Social Committee
EU	European Union
FP	Framework Programme
GHG	Greenhouse Gases
JAKFISH	Judgement and Knowledge in Fisheries involving Stakeholders
MIT	Massachusetts Institute of Technology
NGO	Non-Governmental Organisation
SAM	Social Accounting Matrix
SDG	Sustainable Development Goals
SUPREMA	Support for Policy Relevant Modelling in Agriculture
USA	United States of America
WP	Workpackage

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1 Introduction

This deliverable provides new unique information on stakeholders' and general public preferences and opinions on sustainability, and on the impact of policies towards agri-food trade liberalisation. Research on the interplay between trade and sustainability cannot be done in isolation of those who it might impact. It requires a deep understanding of stakeholders' views which will not only inform the TRADE4SD modellers in WP3 to make their work on the modelling of the complex relations between agri-food trade and sustainable development more relevant, but will also provide new insights to the European Commission (EC) on preferences of the food chain stakeholders and general public. In the context of sustainability, it is also important to understand opinions concerning the effects of trade liberalisation and more stringent sustainability polices in respect of food products.

During the period when this study was carried out, the war in Ukraine broke out. Although it has been too early to provide empirically-based research due to the lack of systematic data on its impact on sustainability, it was judged necessary to include questions on the impact of Ukrainian war in the surveys of stakeholders and the general public in order to provide information about the main immediate concerns in relation to sustainability.

Following this introduction, a short background of participatory approaches is presented, followed in section three by a review of previous studies that report experiences with engagement of stakeholders in formal modelling and lessons learnt. The fourth section details the main methodological approach employed in the study and section five presents the explorative analysis of results of the surveys conducted by this project team. This work is split with one survey canvasing project stakeholders, and a second, the general public. To better understand the views of stakeholders on the picture that has emerged from the general public survey, our Polish partners from CASE reported our results to a pool of stakeholders, not consulted before, and investigated whether they agree with our results and if not why. The Polish team called this survey as 'perceptions of perceptions'. It is followed by a brief overview of the so-called 'brainstorming' survey carried out by modellers from CASE about future of agri-food trade and its impact on CO2 emissions and GDP, carried out in WP3. Section six summarises the outcome of feeding these results and modelling scenarios concerning environmental sustainability into a joint stakeholders and experts workshop, expanded by short conclusions from a discussion with experts/ researchers on aspects of model-based analysis of social Pillars of sustainability in a session organised by the leader of WP3 on 'International Agricultural Trade and Sustainability Challenges to Applied Trade Models' at the European Association of Agricultural Economists (EAAE) Congress in Rennes (29th August- 1st September 2023). To summarise, in order to interact with stakeholders the activities carried out included four surveys some more extensive some smaller, and two two-way interactions with stakeholders. Section seven of this policy note concludes.

2 Background

Participatory approaches are gaining importance in academic literature, in particular when analysing complex subjects requiring multi- inter- or transdisciplinary approaches. Sustainability is a typical example of such a complex subject. Sustainability is defined as the ability of humanity "to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs" (Report of the World Commission on Environment and Development, 1987, para 27). Agyemang et al. (2002, p. 78) argue that "a truly sustainable society is one where wider questions of social needs and welfare, and economic opportunity are integrally related to environmental limits imposed by supporting ecosystems". Concerning agriculture, Gray (1991) defines sustainability as the maintenance of the net benefits agriculture provides to society for present and future generations.

The above definitions reflect the complexity of this societal issue bringing important inter-generational implications. Adequate approach to sustainability requires a toolbox of several disciplines and a variety of expert opinions (Stock and Burton, 2011). The subject becomes even more challenging analytically when the focus is not only on sustainability *per se* but on its relationships with trade in the agri-food sector what is the case of TRADE4SD project. Perrot et al. (2016) emphasise that agri-food is one of the most important sectors of the industry in Europe and a contributor to the global warming. Researching sustainability is a challenge due to "the variety of considered scales, the number of disciplines involved, the out-of-equilibrium states, the complex quantitative and qualitative factors" (Perrot et al., 2016, p. 88).

When dealing with such an important and complex societal issue, it is necessary to consult relevant stakeholders and understand their views and individual motivation to make sacrifice now for the benefit of future sustainability (Shanen et al., 2021). Stakeholders' involvement in policy and governance decision-making has mushroomed since the second half of 20th century, originally starting in the United States of America (USA) (Voinov and Bousquet, 2010). Often, it has been based on stakeholders' participation in the modelling process. Over decades of development of the so-called stakeholders based modelling there has been a proliferation of different applications with different degrees of stakeholders' involvement and methods used to integrate their views. Different "clones" of stakeholders' engagement in modelling exist which have often (but not always) been used interchangeably. Several of these clones are related to a particular organisation or research group (e.g. 'companion modelling' – SIRAD, France, or 'participatory simulation', MIT, USA) (Voinov and Bousquet, 2010). For our policy note, based on the research on Task 4.1 in TRADE4SD project, we suggest that the most useful is the generic definition of participatory approach, i.e. "the use of modelling in support of a decision-making process that involves stakeholders" (Voinov and Bousquet, 2010, p. 1269). We follow this definition in the current policy note.

3 Lessons from previous studies

Sustainability has three interrelated aspects (sometimes called pillars) - economic, social and environmental - and modelling allows scientists to analyse intricate relationships between these aspects and assess the impacts of different interventions, practices and policies aimed at achieving sustainable outcomes (Lempert et al., 2006). However, it has been proposed that standard modelling techniques, relying on the use of quantitative proxies and indicators, only facilitate quantitative comparisons across model scenarios and potential time frames (Hallberg-Sramek et al., 2023). Researchers have sought to overcome this limitation by integrating qualitative data from stakeholders' opinions using participatory methods (Bizikova et al., 2012; Noor et al., 2022). Stakeholders views/opinions provide information about the relative values (prices) what otherwise would not be available through only quantitative modelling. A diverse array of stakeholders (representing key members in the agri-food supply chain) could be integrated to give their views on trade policy decisions affecting various Sustainable Development Goals (SDG) outcomes[1] (Patel et al., 2007).

In this section, in order to identify appropriate methods for integrating stakeholder viewpoints into formal models, relevant literature from the last 20 years has been screened. The search method involved running several search strings that had been refined using a trial-and-error approach (see Table 1). Subsequently, these search strings were executed across three databases, encompassing Scopus, Web of Science, and Google Scholar. This structured literature review has been expanded by expert search and includes additional studies suggested by the researchers working on this policy note.

Table 1 Search strings used in the structured literature review

Field	**Search String**	**Logic Operator**
Title, abstract or keywords	"stakeholder" AND "model" AND "view*"	AND
Title, abstract or keywords	"stakeholder" AND "model" AND "sustainab*"	AND
Title, abstract or keywords	"stakeholder" AND "model" AND "particip*"	AND
Title, abstract or keywords	"stakeholder" AND "model" AND "qualitative"	AND
Title, abstract or keywords	"stakeholder" AND "model" AND "trade"	AND

Source: Own composition.

3.1 Why is participatory modelling so widely used

Several strengths of participatory modelling have been emphasised in the literature. The first aspect relates to enhancing mutual knowledge and understanding of a particular policy or

[1] The mid-term UN Sustainable Development Agenda for 2030 is based on the achievement of 17 SDGs.

management issue, and improving the decision-making. Röckmann et al. (2012) claim that involving stakeholders in the modelling process contributes to collective learning.

From the point of view of stakeholders, participatory modelling can (i) enhance the stakeholders knowledge and understanding of a system and its dynamics under various condition and (ii) identify and clarify the impacts of solutions to a given problem, usually related to supporting decision-making, policy, regulation or management.

From the point of scientists, participatory approaches increase research legitimacy and advance scientific understanding, increase the realism and impact of scientific modelling. Stakeholders contribute specific knowledge, accumulated through their practical experience. They can indicate omissions in the models and scenarios from the point of view of assessing the impact of policy changes and/or shocks on practice (Bijlsma et al., 2011). Stakeholders can criticise the methods of analysis which provides signals to scientists where to look for improvements.

However, not all reported experience is positive. There is a serious problematic side of participatory approaches. The first challenge is that stakeholders (users of modelling results) are generally very diverse (Basco-Carrera et al., 2017). Due to this, it is easier to achieve participatory modelling for improving a firm management, but much more difficult, e.g. in natural resource management due to the heterogeneity of stakeholders having conflicting interests (Voinov and Bousquet, 2010). This may increase the risk of stakeholders bias, may delay the modelling process and increase its costs. Moreover, different stakeholders have different perspectives, and they are required to deal with different types of models with different research objectives (Perrot et al., 2016). Therefore, the implementation of participatory modelling requires careful assessment of costs and benefits.

Another problem is that the perception of stakeholders can vary over time and can also be swayed by events – national and international. The outcome also depends on the composition of stakeholders, their personalities and their personal interest in the outcome of the topic at hand. This requires the researchers to achieve a balanced participation across various groups of stakeholders. Geography matters as well – it is easier to organise a workshop in one country than on, e.g. European Union (EU) as a whole.

Modellers may experience issues to ensure that enough stakeholders are willing to participate in the workshops and they may experience attrition in attendance over repeated workshops (Gonzalez-Martinez et al., 2022). Additionally, when modellers gather stakeholder views, they must take extra care to ensure that they employ the most appropriate elicitation method for their study's goals. Choosing less relevant stakeholders may also bias modelling results as they will no longer be representative of the viewpoints of affected agents. However, the use of a smaller stakeholders group decreases the costs of participatory modelling and facilitates a more focused discussion. In the previous studies, there is a variety of the number of participants and the coverage of different stakeholders, depending on the task at hand and budgetary constraints.

Table 2 summarises some strengths and weaknesses of integration of stakeholders' opinions in modelling.

Table 2 Strengths and weaknesses of integration of stakeholders opinions in modelling

Strengths	Weaknesses
Incorporates qualitative information into a process that often only provides quantitative data which can be argued to enrich model output.	The quality of stakeholder input may be insufficient, and their views may be unreasonable or unrealistic.
Allows modellers to capture a greater picture of reality in their estimations.	Some relevant stakeholders may not have expressed any interest when asked to participate or may be wrongly excluded.
Can provide ranked lists of scenario preferences which is useful for policy design.	Stakeholders' workshops are complex to orchestrate and resource consuming.
Facilitates horizontal and vertical cooperation along the supply chain as it exposes agents to different viewpoints which can alter their behaviour.	Stakeholders' workshops may have a relatively small number of people invited following their selection process; also, those chosen for the study are not guaranteed to attend repeated meetings.
Avoids disappointed stakeholders by promoting acceptance and transparency, and adds greater credibility to modelled results.	Non-policymaker stakeholders may struggle to grasp complex policy aspects of model scenarios; greater care must be taken to ensure participants understand the methods modellers are using.

Own composition.

3.2 Requirements for successful participatory modelling

One of the most important principles in the participatory modelling is that the appropriate stage(s) for stakeholders' input in the modelling process has to be identified early in designing the work (Bots, Van Daalen, 2008). Additionally, modellers must identify the roles they wish the stakeholder to play in the participatory process.

Hare et al. (2003) argue that there are six criteria one must consider when designing participatory modelling methods. They are as follows: identification of the goal of the overall study and the goals with respect to stakeholders participation in a democratic manner; recognition of different political and social power structures in the surveyed communities; accurate account of the number of potential stakeholders involved in the issue; the scale at which decisions are made regarding any practical decision-making; additionally, researchers must be aware of their normative beliefs regarding the topic investigated. Table 3 illustrates an example of how these criteria may be satisfied using the study by Hallberg-Sramek et al. (2023).

Table 3 Example of satisfaction of Hare et al (2003) criteria for designing participatory modelling

Criterion:	The way it was satisfied
1) Project goals	Clearly defined goal - to develop future forest management scenarios in Sweden with stakeholders and identify preferences for ecosystem services with respect to climate change.
2) Democratic participatory goals	The authors were focused on local representation and aimed for a bottom-up scenario building approach whereby smaller stakeholders could express their views on the use of forests and their opinions towards climate change.
3) Existing power structures	Prior land use statistics indicated that 1/3 of forests were owned by the state, approximately 20 per cent was privately owned by forest companies and 40 per cent was owned by family forest owners. Also, there were other groups that had a stake in forest management as Swedish forests were subject to public access rights, home to indigenous groups and used by hunters and fishers.
4) Stakeholder numbers	Stakeholders chosen to participate were based on different groups identified in the area, including the non-governmental organisations (NGOs), businesses with interest in forest use and local forest users like hunters and reindeer herders.
5) Researchers' normative beliefs	To form their normative beliefs concerning the future sustainability of the studied Swedish forests, modellers created treatment scenarios each focusing on a different element of sustainability. Management scenarios were created using current data on their measured outcomes and looked at biodiversity conservation, forest owners' livelihoods and tree preservation. These scenarios were simulated over 100 years and the results were presented to stakeholders for their feedback.
6) Scale of decisions	The scale at which decisions were supported by stakeholders was considered. Through focus groups modellers were able to uncover the actions that different stakeholders would have to implement locally to achieve climate smarter forestry. Modellers found that depending on which indicator the focus with respect to climate change mitigation was put on, stakeholders anticipated significant impacts on the forest's delivery of ecosystem services. To achieve a climate smarter forestry system, modellers found necessary to re-calibrate their model to focus their simulations on more active management of timber production and less active management of biodiversity.

Source: Hallberg-Sramek *et al*. (2023).

3.3 Methods used to involve stakeholders in modelling

Participation can be one-way, whereby information can be collected from the stakeholders with no interaction from the modellers (Patel et al., 2007). Conversely, a two-way participation requires interaction between the modellers and stakeholders through discussions, negotiations, and deliberations (Patel et al., 2007).

One of the most frequently mentioned participatory approaches, which falls into two-way participation case, was the organisation of stakeholders' workshops. A stakeholders' workshop can facilitate social learning by providing a platform for individuals to discuss and debate a complex topic (Gonzalez-Martinez et al., 2022). Questionnaires were also widely used for modellers to either understand the stakeholders' perceptions on the issue at hand, or collect feedback on, e.g., modelling scenarios, intermediate and final model results. Although workshops and questionnaires have been the most widely used methods, a wide range of other methods have been employed to integrate stakeholders points of view, as presented in Table 4.

Table 4 Methods to integrate stakeholders opinions in the modelling process

Method	Study	Description
Focus Group	Green and Vergragt (2002)	Authors focused on bottom-up approach to get opinions from households to understand their willingness to adopt sustainable practices with respect to clothing, shelter and food choices. A focus group of 'green', 'mainstream' and 'dynamic' consumers was used as a reality check for scenarios to identify barriers to adoption.
Citizen Jury/ Consensus Conferences	Bellamy et al. (2016)	A citizen's jury was assembled to deliberate on different UK policy options to tackle climate change, such as carbon and solar geoengineering proposals. The jury was representative of the population by age, race, gender, socio-economic status and geographical location. As well as the citizens' jury, the authors simultaneously conducted their research with specialist stakeholders. These two groups were both exposed to various policy option scenarios and were engaged in debates over their potential impacts. From this exercise, they were able to map out differences in viewpoints between the general public and expert stakeholders.
Management Plan Development	Noor et al. (2022)	The authors conducted a stepwise participatory modelling framework looking at groundwater depletion in Pakistan. They were able to develop stakeholder supported management plans by incorporating stakeholders' viewpoints from workshops into causal loop diagrams. Individual causal loop diagrams were developed with potential stakeholders and then merged to create a holistic causal loop diagram to overview the management system in its entirety.
System Model Building	Coletta et al. (2021)	This study investigated whether nature-based solutions go far enough to manage water related risks to biodiversity, agricultural production and health. To build a model of the shared water system, multiple techniques were used, including individual semi-structured interviews and fuzzy cognitive maps to form a baseline scenario of general system understanding. In the first of two workshops, collective group discussions with stakeholders were used to identify relevant nature-based solutions and ranking of the benefits. In the second workshop, stakeholders defined a shared view of the

		system which was translated into a causal loop diagram. This workshop looked at the potential trade-offs of the various solutions to help construct a qualitative performance matrix of policy objectives and definition of fuzzy logic rules to assess the quantitative performance of these solutions.
Participative Backcasting	Sandström et al. (2020)	Participatory backcasting is a solution-oriented scenario technique used to analyse complex long-run issues. In this study, backcasting was used to show stakeholders novel ways to handle forest management that started with the desired outcomes and backtracked their thoughts to identify a preferred path to a sustainable society. In two half-day workshops, stakeholders were presented with different policies and had to rank the most important policy goals to them based on their own vision for the future. Stakeholders were not required to have any prior knowledge of the methodology used for this technique.

Source: Own composition.

Regardless of the method or tools a modeller chooses to adopt, it is essential that the rationale is completely transparent, and modellers should address any ethical or social concerns in their design (Voinov et al., 2018). Furthermore, the authors identified different steps modellers could take in the participatory modelling process. In any study, modellers must begin by identifying the issue they wish to investigate. From there, a 'fact finding' process must be employed to acquire data and information relevant to the investigated topic, this can be conducted using techniques such as interviews, surveys, and crowdsourcing. In many studies this is followed by a 'process orchestration' phase which can involve the scheduling of stakeholder workshops or meetings to brainstorm ideas. Additionally, modellers may initiate role playing games with their stakeholder groups to provide players with better knowledge for a given situation by showing individuals the context behind real decisions stakeholders must make (Barreteau, 2003).

3.4 Levels of stakeholders participation and stages of their involvement in modelling process

However, the above methods do not provide information about the level of engagement of stakeholders in the modelling process. The definitions of different levels is based on the so-called ladder approach (Arnstein, 1969). Arnstein is very critical to levels that do not provide real power to stakeholders. The ladder approach incorporates five levels.

1/ Manipulation: this is the lowest level of engagement. Stakeholders maybe members of advisory committees or invited to participate in surveys, provide feedback, or are given other activities to perform, but no much notice is paid by the project team to the information provided.

2/Informing: providing information to stakeholders of their rights, responsibilities, and/or options, can be the first step towards effective stakeholders' participation in the project and its outcomes. However, at this stage frequently the information flow is one way from the project (researchers) to the stakeholders.

3/Consultation: at this stage researchers invite stakeholders' opinions, thus, there is information flow from stakeholders to researchers but there is no certainty that their views will be incorporated in the project activities.

4/Placation: stakeholders have some degree of influence, but simply including stakeholders in, e.g. by organising focus groups, where they do not have power, only gives the appearance of stakeholders' engagement without any of the benefits.

5/Partnership: this is the highest step on the ladder. At this level there is a power sharing between scientists and stakeholders for outcome beneficial to all. At this level, particular attention should be paid to select the right stakeholders with keen interest in the outcome.

The incorporation of stakeholders in formal modelling can span over the whole process from model construction to model results use or only over some stages. For example, stakeholders can be asked to provide input to model use in form of scenarios (in terms of policy or management options) (Röckmann et al., 2012). Other options are to involve stakeholders in the review of model assumptions. The stages for stakeholders' involvement depend on the need of modellers and the costs of the methods to involve the stakeholders.

3.5 Examples of the use of participatory modelling in research of EU policies

There are several positive examples of the use of stakeholders in modelling outcomes of EU policies. Concerning agriculture, Espinosa et all. (2014) developed a recursive dynamic regional Computable General Equilibrium (CGE) model to assess *ex ante* the potential economic impacts of reduction of Common Agricultural Policy (CAP) payments in Pillar 1 (direct payments) and their replacement by an European Union (EU) wide flat payment, accompanied by an increase in the payment for Pillar 2 – rural development. Modellers have created a social accounting matrix (SAM) based on the existing data but subsequently they "superiorised" the original SAM entries with values obtained through interviews with local policy-makers and other stakeholders. The authors characterised these values as more accurate.

Two projects related to agri-food reported their experiences in stakeholders participation in modelling – the EU-funded project 'Support for Policy Relevant Modelling of Agriculture' (SUPREMA) and 'Scenario study on future directions for the development of Dutch agriculture in 2050' (Gonzalez-Martinez, 2022). The main method used were stakeholders and experts workshops organised at different stages of the projects. SUPREMA used three workshops, with the first one starting with the needs for model development, the second looking at CAP instruments and climate change mitigation policy, and the third looking at stakeholders' feedback on modelling results and further direction of research. The list of stakeholders invited to the above mentioned workshops covered a broad range of societal actors: policy community, businesses in the value chain including farmers, the scientific community, civil society and NGOs among others.

Stakeholders' workshops were also organised within the project 'Scenario study on future directions for the development of Dutch agriculture in 2050' which supported the discussion of the Dutch 'Climate Table for agriculture and land use'. Stakeholders had core contribution at different stages of the project: e.g. the definition of several packages of mitigation measures

and iterative process of improving parameters of simulation models, followed by several rounds of expert workshops in order to identify and further refine the parameter values that were used to populate the simulation models.

Another example with an extensive use of stakeholders is in respect of the EU Common Fisheries Policy where the long practice of modelling without stakeholders has created frictions between scientists, who provided policy advice based on their models, and practitioners. This has created "credibility crisis" impeding stronger policy contribution to economic and biological sustainability (Röckmann et al., 2012). EU Framework Pprogramme (FP) 7 project FP7 JAKFISH ('Judgement and Knowledge in Fisheries Involving Stakeholders') tested modelling with the participation of fisheries stakeholders. They carried out four case studies with different scope and methods of stakeholders participation. The wider participation included in one of the case studies involved the stakeholders in the review of model assumptions, and they provided suggestions on scenarios and on evaluation criteria. The most limited participation in another of the case studies mainly used stakeholders in problem framing.

Researchers in JACKFISH used different methods to involve stakeholders. They organised interactive meetings with stakeholders to discuss scenario objectives and provided non-technical presentations to the main stakeholders. The use of questionnaires to understand the stakeholders' views on the relevance of the project approach and the quality of information provided by the project faced a low response rate; most of stakeholders argued they did not like filling questionnaires and would prefer a collective publication. Another method used were workshops - stakeholders were asked to participate in two workshops. The first was private involving individual stakeholders in order to gain their views on building the model independently of the peers. The second workshop took place at the end of the project, with the aim to present the analysed models to all stakeholders together, to discuss them, and to get systematic feedback. This was expanded by questionnaires to only six carefully selected stakeholders to collect more in-depth feedback. Overall, the major difficulty faced by the JAKFISH modellers was the integration of non-technical 'folklore' narrative of stakeholders into complex biological models.

3.6 Conclusions informing our research

- Participatory approaches have costs and benefits which have to be carefully balanced when a decision is made to proceed with participatory research.
- Since stakeholders are usually numerous with differing vested interest, a careful selection of who to invite to participate is necessary in order to avoid selection bias.
- In order to reveal/mitigate the potential bias, in addition to stakeholders experts could be invited to participate.
- Stakeholders' input has to be decided at early stage of the research as well as the goal of their participation.
- Stakeholders have to be properly informed about the research and their role in it, the rationale has to be transparent and all ethical concerns have to be addressed.
- There is no systematic evidence whether more or less stakeholders should be invited to participate. There are examples when a broad range of societal actors are involved and others with the use of a smaller stakeholders group since it decreases the costs of

participatory research and facilitates a more focused discussion. Each case has to be carefully decided depending on the tasks at hand and budgetary constraints.

- Both one-way participation, collecting information from stakeholders without interactions with researchers, and two-ways with interactions are possible but higher level of interaction when stakeholders have influence on research design and the results use is more beneficial.
- The most frequently used methods to involve stakeholders in research are questionnaires and workshops usually used in combinations. These are often complemented by focus groups, individual consultations and more advanced methods as a citizens jury.
- The incorporation of stakeholders can span over the whole process of research from development of a framework to results use, or is used only in some stages, e.g. a review of research results.
- Stakeholders' surveys may be compromised by a low response rate since stakeholders prefer more involvement in joint publications.
- Fundamental problem in participatory modelling is the integration of stakeholders narrative into complex models.

4 Method and data collection

Two surveys were carried out to understand stakeholders' and general public perceptions about trade and sustainability. They aimed to provide information to TRADE4SD modellers on where to put emphases in their modelling work in order to increase its relevance to stakeholders and policies. The results of these surveys will also inform the EC on the preferences of food chains stakeholders and the general public in the context of sustainability, and their perceptions about the effect of trade liberalisation on different Pillars of sustainability. These two surveys were followed by a survey of different pool of stakeholders, thereafter referred to as 'perceptions of perceptions' survey, to see whether they agree with our results. The latter was organised by the Polish TRADE4SD partner CASE. CASE has also organised a 'brainstorming' survey concerning modelling of EU and global trade.

4.1 Overview of stakeholders and general public surveys

The overall objective of the stakeholders' and general public surveys was to reveal the priorities of interested parties on a range of aspects of linkages between international trade and sustainability. Carrying out two surveys on the same theme, with project stakeholders and the general public, tried to elicit whether better knowledge and information of stakeholders on the broad theme of sustainability, and probably their vested interests, will lead to differences in responses in comparison to the general public. In more concrete terms, the intention was to understand (i) the level of knowledge stakeholders and general public have about sustainability within its three Pillars – economic, social and environmental; (ii) the aspects within each Pillar they find more important, thus revealing some relative values; and (iii) the social acceptability of agri-food trade liberalisation and tightening of sustainability policy. Since during the period of the study the war in Ukraine broke out, it was judged necessary to include questions on the impact of Ukrainian war in the surveys of stakeholders and the general public to provide information about the main concerns in relation to sustainability.

The stakeholders' survey was carried out first. A group of stakeholders, identified by the partners in TRADE4SD, were asked to answer an online survey organised in three rounds based on three different questionnaires (see Appendix 1). Invited stakeholders were from different parts of the agri-food chain, and also included farm consultants and researchers working on issues relevant to agri-food trade interactions with sustainability in developed and developing economies. Before the start of the survey, stakeholders were informed of its aims and the importance of their participation. Initially, it was thought to look for a consensus in a typical Delphi approach. After discussions amongst the partners involved in Task 4.1, it was decided that more informative for the modellers and the EC would be to investigate the heterogeneity in stakeholders' opinions on the interactions between trade and sustainability.

As stated previously, the survey was organised in three rounds. The first round was the most general, it included questions trying to elicit stakeholders' opinions on the importance of each Pillar of sustainability, the perceived effect on sustainability of trade liberalisation and the perceived effect on agriculture of further drive to sustainability. Some political economy aspects were also included by asking the stakeholders to give their opinion on which vested

interest groups may support, be indifferent or oppose policies designed to increase agri-food trade and policies to strengthen agricultural sustainable development. Before the 'content-related' core questions in the first round, a section was included with questions on gender, age, work experience etc. The personal information collected at the beginning of the questionnaire was necessary to understand whether there is a systematic difference between opinions due to respondents group profile.

The second round was more detailed asking stakeholders to rank attributes within each Pillar of sustainability, pre-determined by the TRADE4SD team. During the implementation of the survey, war in Ukraine broke out, which was an unexpected shock to international environment with implications for trade and sustainability. As a result, a third round was introduced. The aim of this third round was to understand how the opinions of stakeholders may have changed in light of the ongoing war in Ukraine. Both Ukraine and Russia are major exporters of agricultural commodities, energy, and fertilisers. The devastation of war combined with economic sanctions imposed on Russia are expected to have important consequences for the agri-food markets, food security and attainment of SDGs. Additionally, the difference (if any) in the views and priorities of identified stakeholders working in EU countries and the opinions of stakeholders in a developing country (Vietnam used as a case study) was investigated.

After each round TRADE4SD researchers were analysing the responses and were sending a summary feedback to the respondents. The survey was anonymous and the different rounds of responses were only electronically linked by tokens without researchers knowing who is the respondent. Only the survey manager in Thünen Institute knew stakeholders identities.

A survey of the general public was carried out after the completion of stakeholders' survey. It was commissioned to an external company (Szinapszis ltd, Hungary), specialised in market research. It aimed to aid understanding of the prevailing opinions about the importance of different aspects of sustainability. The survey was not intended to address a specific target group, but to cover as representative as possible cross-section of the population as in the countries involved. Due to budget constraints, the survey was only implemented in three countries from which institutions participated in TRADE4SD – Germany, Hungary and the UK. It has to be noted that this work was above and beyond what was promised in the Grant Agreement. The choice of countries for the survey was based on the research teams from these countries being heavily involved in developing and managing the stakeholders' survey, and on different demographics and GDP/capita which may influence the opinions.

This survey consisted of one round only, and the three questionnaires used in the three rounds of stakeholders' survey were consolidated in one questionnaire, editorial amendments were incorporated to avoid technical concepts and to make the questionnaire comprehensible for non-experts. The open questions were removed since the observations were that they had not contributed substantially in the stakeholders' survey. Since there were comments during different academic presentations of the results from the stakeholders' survey that attributes within the three Pillars of sustainability sometimes were not close enough to the SDG terminology, the attributes were reformulated to make them closer to the SDG text. Since the market research company did not have a panel in a developing partner country, the questionnaire was divided into two different parts. The first one was looking for an answer from the point of view of respondent's country of residence ('own country'). The second part asked

the same respondent the same questions but prompting them to say what they consider important from a developing country point of view (see Appendix 2).

Similarly to the stakeholders' survey, before the core content there was a section with questions requiring personal information without disclosing the individual respondent since the survey was anonymous. The survey covered a sample of 1,000 people (in fact the returned results were for 1,001 respondents) in each of the respective countries. The sample in each country was representative with respect to gender, age and location within the country.

Table 5 presents the logic of the two surveys – stakeholders and the general public.

Table 5 Themes and subthemes covered in the stakeholders and general public surveys

Stages	Major themes	Subtheme 1	Subtheme 2	Subtheme 3
Stakeholders				
Stage 1	Ranking the three Pillars of sustainability	Pillars of sustainability most affected by trade policy	Environmental impact of trade liberalisation in developed and developing countries	Political economy aspects – groups that may support /oppose further trade liberalisation and sustainability policies
Stage 2	Ranking again the three Pillars of sustainability	Ranking attributes within economic Pillar	Ranking attributes within social Pillar	Ranking attributes within environmental Pillar
Stage 3	Effects of war in Ukraine	Directions of effect on sustainability's attributes by Pillar (+, neutral, -)	Effect on agents along the food chain (in EU and in developing partner countries)	Impact of war on international and domestic consensus (5 degrees of effect from marginal to strong)
General public one stage only	Opinions on sustainability from the point of view of own country and from the point of view of society in a developing country	Ranking Pillars of sustainability and attributes within each Pillar	Political economy aspects – groups that may support /oppose further trade liberalisation and sustainability policies	Effects of war in Ukraine

Source: Own composition.

4. 2 Overview of ‘perceptions of perceptions’ and ‘brainstorming’ surveys

Both these surveys were organised and implemented by CASE-Poland.

As argued in section 3.1, from the point of scientists, participatory approaches increase research legitimacy and increase the realism when stakeholders have contributed to the review of study results. This was the purpose of the ‘perceptions of perceptions’ survey, i.e. to understand whether respondents agreed with the study's results regarding the analysis of stakeholders’ and general public surveys. This approach helped the research team to obtain a fuller picture of the diversity of opinions on the topics at hand. The ‘perceptions of perceptions’ survey was directed at a variety of stakeholder groups in Poland and Ukraine, which included scientists, decision-makers, representatives of non-profit organisations, farmers, and agricultural advisors. Altogether 18 stakeholders responded, 11 from Ukraine and 7 from Poland.

The purpose of the other, i.e. ‘brainstorming’ survey was to implement participatory modelling by consulting the stakeholders at the initial stages of work on the modelling ideas and scenarios. The CASE team prepared an online survey tackling the issues of trade liberalisation and primarily its impact on environmental issues. The survey looked at stakeholders opinions on feasibility of further trade liberalisation, and its effect on CO2 emissions and GDP in the EU and globally. From the point of view of modelling scenarios, opinions on three types of policy measures were sought for, i.e. imposition of CO2-based import tariff, CO2-based output tax, and mixed policy scenarios. The questionnaire prompted stakeholders to think about their political feasibility, and impact on emissions and GDP in the EU and globally. Forty-seven stakeholders answered this survey located not only in various EU Member-States and but also in Ukraine (14 respondents) and Côte d’Ivoire (1). In terms of the work experience, the respondents included farmers (4), agricultural industry representatives (4), policy makers (5), NGO workers (7), agricultural advisors (5), researchers (21) and private sector agents (1).

5 Explorative analysis of surveys results

5.1 Stakeholders' survey

5.1.1 Overview of results of Round 1

As explained in the previous section, the stakeholders' survey was carried out in the EU as well as in Vietnam as one of the trade partner country included in TRADE4SD. Responses to this round were received from 43 respondents from the EU and 24 from Vietnam.

The majority of the EU respondents were from the research community, aged between 35 and 50 years, and were based in developed countries. The demography of Vietnamese respondents was similar. The majority were researchers within the same age bracket. Understandably, they were based in, or worked on, developing countries issues.

Environment was the sustainability Pillar which was most frequently ranked first or second by the EU respondents, while the majority consistently selected the social Pillar as a third, thus the least important. However, analysing in more detail the responses according to the area of work experience, most researchers and just under half of NGO workers ranked the environmental Pillar as the most important, whilst traders, government employees and majority of NGO workers ranked the economic Pillar as the most important. There was a stark contrast with the ranking of Vietnamese stakeholders who consistently ranked the economic Pillar as the most important.
Therefore, the ranking of the Pillars of sustainability appears to be influenced by the income level in different countries and by the concerns of economic underdevelopment.

One of important aspects in the survey which related to trade was to elicit stakeholders' opinions on the effects of trade liberalisation on sustainability. In general, the opinions were split between economy and environment, with differences between respondents from developed and developing country. However, these differences have disappeared when asking a more concrete question about the effect on GHG emissions. The majority expect GHG emissions to increase with further agricultural trade liberalisation.

Both groups of stakeholders expected positive effects of trade. EU stakeholders argued that trade in agri-food products will increase productivity, distribute better the factors of production, and will allow countries to exploit their comparative advantage. However, stakeholders working for NGOs raised concerns that trade may lead to price volatility and price distortions, as well as undermining food security in developing countries. Nevertheless, stakeholders indicated their views that these negative effects may not always materialise and the impact depends on the fairness (or a lack of) of the trade agreements between the developing and developed countries. Vietnamese stakeholders responded in a similar positive way and indicated trust in trade as a driver to increase wealth, income, and efficiency in the use of resources. They have also argued that trade will boost inter- and intra-country trading which may lead to Vietnam's economy becoming more vibrant. Some stakeholders were more cautious claiming that trade may widen inequality between the North and South of Vietnam (consuming and producing regions) amid unfair trading or pricing of products.

Concerning the trade effect on social sustainability, survey responses showed mixed opinions in both groups. Many from the EU suggested that trade will have a positive impact on society by giving consumers a better access to commodities and creating jobs within the trading countries. This has been aligned with the responses from Vietnam as trade was said to benefit society by providing access to essential life-improving goods. Nevertheless, both groups also recognised that society may incur significant issues with increased trade, the most frequently mentioned being abuse of human rights with the use of child labour or having to work in poor working conditions to meet the demanded quantity of exported goods. Similarly, policies to boost trade may hinder social sustainability if they discourage or exclude the participation of vulnerable communities and/or require the use of resources above the socially optimal level to achieve policy targets.

Concerning the impact of trade on environment the responses were more subtle, with some opinions underlying negative, other positive effects. EU stakeholders argued that trade has potential to help environmental sustainability outcomes, however, it will be difficult to ignore the fact that economic interests are frequently prioritised over environmental objectives. Both groups identified that trade could introduce sustainability standards in the production of traded goods which may improve the quality of environment. However, many argue any environmental benefits may take too long to materialise, especially if trade policies promote the production of goods that eventually lead to more GHG emissions. Overall, the negative impact was reasoned through an increase in GHG emissions from the transportation and production of goods, excessive agricultural expansion and general over-exploitation of resources. Both groups mentioned that trade could also entail other negative externalities such as deforestation, reduced biodiversity, and water scarcity.

Despite these positive and negative aspects underlined in the survey concerning the effect of trade on the three Pillars of sustainability, stakeholders in both groups, on balance, believed that policies designed to improve sustainability using trade in agricultural goods wouldn receive public support and are feasible.

In more detail, concerning the domestic political economy, the stakeholders were asked to give their opinions on which domestic interest groups may support, oppose or stay indifferent to policies to increase agricultural trade and to strengthen sustainable agricultural development. Seven interest groups were included in the questionnaire: farmers' unions, processors, traders, environmental organisations, workers' unions, policy makers and consumers. The EU respondents expected environmental organisations and farmers' unions to oppose policy to increase agricultural trade. This reflects the situation in the EU where farmers are usually anxious when a new free trade agreement is negotiated/signed by the EC, since they expect their interests to be undermined due openness to foreign competition. Support would come from traders and policy makers. Vietnamese stakeholders were more optimistic – their answers overwhelmingly showed that they would expect support from all interest groups. The only case where some opposition was expected, but from a small share of stakeholders, concerned environmental groups. It appears, differently to the EU respondents, Vietnamese were thinking about opportunities which increased trade may bring for exports, therefore, farmers would be willing to support it, whilst EU respondents were thinking about increased imports and tougher competitions from foreign producers.

In respect of more stringent policies for sustainable agricultural development, the same difference in opinions between the EU and Vietnam appeared. Whilst Vietnamese stakeholders expected mainly support, the answers of the EU stakeholders were more subtle. Some share of stakeholders expected opposition from farmers, processors and traders, whilst most support would be provided by policy makers and consumers. Between 32 per cent and 43 per cent of respondents expected several interest groups to be indifferent, in particular workers' unions and environmental groups. The latter seems counter-intuitive since environmental groups are a logical supporter of sustainability. The difference in opinions between Vietnamese and the EU stakeholders might be due to the fact that Vietnamese stakeholders were observing unsustainable practices and believed that all interest groups might support the drive to more sustainable agriculture.

Looking at the future, stakeholders indicated several policy aspects they thought had been overlooked and required more attention in short (approximately 3 years) and long term (around 10 years). In the short term, TRADE4SD stakeholders suggested mainly environmental policy issues, such as the impact of trade policy for meat, and the need to decrease deforestation and food waste. Vietnamese stakeholders suggested that environment and economic policy issues require more attention. These included fair pricing of goods and services, appropriate land and water use, and chemical disposal. They proposed that short-term policy should focus on cultivation certifications, such as green label products, to signal whether human rights and environmental considerations in production have been met. In the long term, the differences in stakeholders opinions depending on the average income in the country they resided were much more exacerbated. Whilst the EU respondents argued that long-term policy should ensure structural changes in the agri-food sector that comply with sustainability objectives, Vietnamese stakeholders indicated that greater focus should be given to address poverty.

5.1.2 Overview of results of Round 2

Responses to Round 2 were received from 28 stakeholders in the EU and 21 in Vietnam. A question from Round 1 to rank the three Pillars of sustainability was repeated in order to investigate whether there was consistency between Round 1 and Round 2 responses. Whilst the prevailing opinion in Round 1 of the EU respondents was that the environmental Pillar was the most important, the second round revealed a change with half of the sample electing economic sustainability as the central one. It has to be noted that the second round was implemented several months after the first one. The difference in the rankings between the rounds suggests that in a period when there were growing concerns for prices and incomes nationally and globally due to the Russian invasion in Ukraine the need of stronger economic sustainability has taken a priority. Social sustainability was maintained as the least important Pillar as in Round 1. The second round respondents did not reach a definitive conclusion on the ranking of the environmental Pillar - most of the responses showed it to lie between first and second rank.

The core of Round 2 was to produce evidence of stakeholders' ranking of pre-determined attributes within each Pillar. Overall, it was designed to gain more detailed insights than from the previous round. The aspects ranked the highest in terms of importance within the economic Pillar were agricultural profitability (60 per cent shareholders ranked this as the highest level

of importance), per capita income, and maintenance of economic growth. Stakeholders appeared to be indifferent to factor intensity in agricultural production and international development aid. The opinions on the dependency on food imports were almost equally split. Approximately the same proportion of stakeholders (36 per cent) believed that depending on food imports was extremely important or felt complete indifferent to its significance.

The issues of water quality and access, and biodiversity were two of the main concerns in respect of environmental sustainability, as increased agricultural trade may lead to increased production resulting in reduced land available for sustaining habitats for local wildlife. Perhaps this explains the high level of importance given by 43 per cent of stakeholders in the rankings to the land use for agriculture. In addition, increased production could jeopardise the quality of water in the producing country if the generated waste is not disposed of appropriately. Food loss and waste was met with indifference which was surprising given the fact that in Round 1 several stakeholders put forward food waste as one of their concerns that future policy must address.

The most prevalent social issues underlined in the responses were societal stability and income distribution with 75 per cent of stakeholders voting for societal stability as having the highest importance. The level of employment in the agri-food sector was also regarded of great value. The only attribute within the social Pillar stakeholders were clearly indifferent towards was the share of calories from cereals and rice, signalling that in their opinion no big shock in staple food intake was expected. The remaining attributes within the societal sustainability were all regarded as moderately important, this included food consumption per capita, targetedness of social aids, and fair tax burden sharing of social groups. The policy implications from this ranking are that under the present circumstances would be best for policy makers to focus on the stability of society and the distribution of income. This stability of society could be impacted by an increase in agricultural trade as it may alter the income distribution. This potential change in the distribution of income may increase the income gap between farmers and traders. This suggest that is important in the modelling to focus on the income distribution under different scenarios of agri-food trade.

A comparison with the Vietnamese responses showed surprising consistency with those from the EU. Some marginal differences appeared only in the attributes. The Vietnamese stakeholders regarded factor intensity in agriculture, international development aid and dependency on food imports as moderately important. The only economic attributes met by them with indifference were the level of protection of the agri-food sector and international development aid. Concerning the environment, both groups indicated water access and quality as the most essential attributes. However, general stakeholders thought biodiversity was one of most important, whilst Vietnamese stakeholders ranked higher GHG emissions and land use for agriculture.

5.1.3 Overview of results of Round 3

The third round of the survey aimed to understand what stakeholders thought of the war in Ukraine, its impact on Pillars of sustainability, on various attributes within the Pillars and on SDGs. Stakeholders were asked to give their opinions on whether they perceived the impact of war to be positive, neutral, or negative, and whether the impact would occur in the short, medium or long term. The number of responses in the EU was disappointing – only 12 responses were received, whilst in Vietnam 27 stakeholders participated. It is difficult to generalise based on such a small number, but for information only, we include a summary of the answers.

Similarly to Round 2, there was a surprising consistency in the answers from the EU and Vietnam. Both groups ranked economic as the most negatively affected Pillar. The conditions of war enhanced the feeling of the value of social sustainability which was ranked higher than the environment. Concerning the ranking of the SDGs that would be the most affected by the war both groups indicated SDG 16 Peace, Justice and Strong Institutions. The EU stakeholders ranked at the same level also SDG2 Zero Hunger. Regarding the time horizon in which the effect on SDGs would occur there was a difference between the EU and Vietnamese stakeholders, since the majority in the EU expected the effect to occur in the short term, whilst in Vietnam over half of respondents believed this impact would occur in the long term.

Similarly, as in the previous round, stakeholders were asked to rank a list of pre-determined attributes within each Pillar, but in this round depending on the effect of war. Within the economic Pillar these attributes included agricultural profitability, financial health of food processors, productive capital stock in agriculture, security of food supply chains and general economic growth. Both groups ranked the security of food chains and general economic growth as potentially the most negatively impacted, expecting the effects to take place in the medium term.

Under the Pillar of social sustainability, the attributes included income distribution, social safety nets for the poor, provision of public services, health and education, levels of employment and societal stability. Both groups expected societal stability and employment to be most negatively impacted. Most of the respondents expected the negative effect on the attributes of social sustainability to be felt in medium term.

Concerning the environment, the stakeholders were asked to rank the impact on air quality, biodiversity, water quality and access, natural capital stock and climate. In the EU, stakeholders ranked first biodiversity, followed by air quality and natural capital stock. In this ranking there was an important difference with Vietnam where more than 70 per cent of stakeholders expected the strongest negative effect to occur on air quality, water quality and access, and climate. Having in mind that water quality and access was the most important attribute in the environmental Pillar in the previous round, this ranking reveals the concern of Vietnamese stakeholders that a core natural resource, crucial to agriculture and their main water thirsty crop – coffee, will be strongly negatively impacted.

The questionnaire for Round 3 included an additional survey question, not covered in the previous rounds, to produce more detail on stakeholders' concerns for the effect of war (see Appendix 1). This question added additional aspects that stakeholders were asked to rank depending on the impact of war. These aspects included social unrest, forced changes in dietary composition, increasing food aid requirements, compromise of existing trade agreements, compromise of the creation of new trade agreements, international political consensus, domestic political consensus, and agricultural trade. Both groups of stakeholders took a broader view and ranked as the most affected agricultural trade, international political consensus and social unrest. One difference between the EU and Vietnam was that in the EU the responses revealed expectations for increased international aid requirements, which might require increased financial flows from developed to developing countries.

Stakeholders were then asked to rank seven risks (again pre-determined by TRADE4SD researchers) that potentially may emanate from the war at a global level. The seven risks included production risk, price risk, food security risk, trade risk, migration risk, logistics risk, and GDP growth risk. Both groups thought that prices and food security were most at risk. Stakeholders also revealed their opinions on whose livelihood will be most of all damaged across the agents of the food chains in developed and developing countries. These agents included food consumers, input suppliers for agriculture, agri-food importers, agri-food exporters, domestic traders for agri-food products and agricultural producers. The rankings ranged from marginal (rank 1) to strong undermined livelihoods (rank 5). Most of stakeholders believed that food consumers in both groups of countries would be strongly impacted by the war on Ukraine. The EU stakeholders also expected strong negative impact on agri-food importers.

5.1.4 Conclusions from the stakeholders' survey

These conclusions summarise the unique evidence brought about by the stakeholders' survey to inform the policy community in the EU as well the modellers within TRADE4SD.

- Priority in policy should be put on economic sustainability.
- From the point of view of economic sustainability the main concern is about agricultural profitability.
- The issues of water quality and access, and biodiversity are two of the main concerns in respect of environmental sustainability.
- Increased agricultural trade could have many positive effects on the economy – increased productivity and jobs in the trading countries. However, a balanced approach is necessary as increased agricultural trade may lead to increased production resulting in reduced land available for sustaining habitats for local wildlife, and increase of GHG emissions.
- Societal stability could also be impacted by an increase in agricultural trade as it may result in changing the income distribution. It is necessary to investigate the income distribution under different scenarios for agri-food trade.

- In periods when there are growing concerns for prices and incomes nationally and globally, exacerbated by the Russian invasion of Ukraine, the need of stronger economic sustainability takes a priority over environment.
- Whilst in peaceful times, stakeholders place less emphasis on social sustainability, its importance increases substantially in turbulent periods of armed conflict and overtakes the environment.
- The main priorities in the social Pillar under the circumstances of the war in Ukraine become societal stability, employment level and income distribution.
- Under the conditions of war the main emphasis should be put on security of food supply chain, the general economic growth and the protection of food consumers who are expected to be most of all hurt by the economic changes as a result of the war.
- Concerning future policy, the priorities in the EU should be to ensure structural changes in the agri-food sector that comply with sustainability objectives.
- The future emphasis of policy in Vietnam must address poverty.

A graphical representation of the responses to stakeholders' survey is included in Appendix 3.

5.2 General public survey

There were three main reasons to proceed with a general public survey. First, in a democratic society, an important indication of future policies is what citizens think of the issue at hand. Therefore, it was deemed essential to provide new evidence of general public views on the interactions between trade and sustainability. Second, there might be a difference in opinions between more informed and potentially biased by vested interests stakeholders, and the general public which could be more objective and only having general knowledge. It is important to investigate whether such a difference exists, and if yes, in what aspects. Third, the general public survey helps overcome one of the limitations of stakeholders' responses, i.e. a small number of observations.

5.2.1 Overview of results

As stated previously, the survey was commissioned to an external company specialised in market research. They were asked to create a sample representative of the population in the respective country by gender, age and residence in the country. The returns covered 1,001 responses per country. Country samples included both male and female with a slightly predominant share of female. The predominant age group of respondents was 45 - 54 years of age. In Germany one fourth of the respondents were between 55 and 64 years old, which reflected the well-known fact of aging population in the country. More than one half in each country were employed in a 'secure job' with nearly 9 per cent difference between Hungary and the UK in favour of the latter. There was also a large dispersion according to the area of work experience. As we pointed out earlier, we did not expect the membership of country samples to have specialised knowledge or to favour any particular vested interests in the agri-food area. This has been confirmed by the small share of respondents with work experience in the sector - 4.3 per cent in Hungary, 2.7 per cent in Germany and 1.7 per cent in the UK. The years of work experience show that the respondents were either at the beginning of their working life with less than 5 or between 5 and 10 years of experience, or with a lengthy work career of more than 21 years. The respondents were relatively well-educated. Those with only

elementary school were less than 5 per cent in Hungary and Germany, with the notable exception of the UK with just above 10 per cent. The majority of the sample in Hungary and the UK have completed high school or possessed an advanced degree. The data represented well the differences in educational systems between countries. The fact that Germany has a well-developed traditional vocational education and training system, which provides learning on the job through apprenticeships, is likely responsible for fact that nearly one half of their sample had a completed vocational school. Possible home ownership was included in the survey as a proxy for wealth. Here also the traditions in different countries have influenced the sample. Germans are traditionally 'renters'. There are interrelated reasons of available supply, government policy encouraging renting, relatively low rent due to control, and social acceptability to rent all lifetime. In the sample, nearly 55 per cent of Germans were renting, whilst these percentages were 15 and 31 in Hungary and the UK respectively. A majority of the respondents in all three countries resided in urban area. The details of the sample are included in Appendix 4.

Before proceeding with a discussion in respect of the core content of the survey, two analyses were performed to see whether there are significant differences in the responses by country and by socio-demographic groups. Since such differences were not detected, what follows and hereafter referred to as 'total', includes all the responses. As indicated previously, the survey was only performed in 3 EU countries but respondents were asked to answer the same questions twice. First, from the perspective of their own experience and country of residence, and second, from the vantage they anticipate the issue would be viewed in a developing country. In the discussion and the graphical representation the answers are labelled 'own country' and developing country (DC).

Nearly one half of the respondents ranked the economic sustainability first. This is consistent with the answers to Round 2 and 3 of stakeholders' survey and with what Vietnamese stakeholders supported through all the rounds. Consistently to Round 2, general public ranked social sustainability second and environmental third. It has to be noted that the general public survey was carried out at the beginning of 2023 over which, similarly to Round 3 of the stakeholders' survey, the war in Ukraine cast its shadow. The slight differences in the answers provided from the point of view of own country and a developing country appear to be logical, e.g. a marginally higher percentage of respondents ranked economic sustainability as a first concern in a developing country than in their own; the same relativities were observed in respect of social sustainability. The differences in the ranking of the environmental Pillar were more pronounced – whilst 40 per cent of respondents ranked it third for own country, 53 per cent ranked is last from a point of view of a developing country.

Concerning the attributes within the economic Pillar, in both cases reducing poverty and achieving productive employment were the most valued attributes. The difference in respondents' answers from own country and from a point of view of a developing country was that in the developed world citizens thought that it was crucial to reduce food losses, whilst in a developing country it was a priority to decrease inequality – an endemic issue in the development world. Within the social Pillar, in both developed and developing countries, citizens ranked to eradicate hunger first and to improve food security second. A difference appeared in the third ranked attribute – for developed own country this was to make both rural

and urban areas safe and sustainable, and for developing countries to improve human nutrition. Similarly to the stakeholders survey, the issue of water quality and waste featured highly in the general public ranking of attributes of environmental sustainability both in developed and developing country. The other attribute that featured within the three highest rankings was to protect nature.[2]

Since TRADE4SD project focuses on the nexus of trade and sustainability, the respondents were asked to rank Pillars of sustainability according to the effect of agri-food trade liberalisation. The ranking for own country was almost equally split between the economic and environmental Pillars, 40.4 per cent of respondents and 40.6 per cent respectively. For a developing country there was a clear ranking of economic sustainability as most affected followed by social sustainability. The conclusions from the stakeholders' survey were that both the EU and Vietnamese respondents believed in the positive outcomes of trade. In the public opinion questionnaire, we have included a better indicator asking for opinions of whether the effect will be positive or negative. Findings from this general public survey supported the results of stakeholders survey since, for own country, slightly more than 70 per cent of respondents viewed trade liberalisation as a positive impact on Pillars of sustainability. Similar results were observed for economic and social sustainability in a developing country. Only for environmental sustainability in developing countries just above two thirds viewed agri-food trade liberalisation as a negative phenomenon.

The answers provided to the questions of who may support, oppose or stay neutral to policies of further trade liberalisation or to more stringent policies to strengthen agricultural sustainability appear more difficult to interpret. This perhaps reflected the lack of information about the interests of different pressure groups plus some over optimism generating an expectation that such policies would be widely supported. The most surprising were the views that farmers would support both policies in both groups of countries with more than 50 per cent of the respondents expected such behaviour by farmers' unions. The next puzzling results was that respondents expected that environmental groups would support policies to boost trade liberalisation. Furthermore, a large number of the sample expected that home-country policymakers would be indifferent to trade liberalisation and more stringent sustainability policy. This view was not mirrored from the developing country vantage where opinions on the support for trade liberalisation were equally split between indifference and support.

Similarly to the Round 3 of the stakeholders' survey, the general public questionnaire included a section on the perceived effect of the war in Ukraine. More than one half of the respondents expected the strongest effect to be felt in the economic sphere and the weakest impact resting on the environment. This was the opinion for both groups of countries. Concerning the five SDGs which would experience the highest impact, the respondents indicated for both groups of countries 'No poverty', ranked first for a developing country and second for own country, and 'Affordable and clean energy', ranked first for own country where citizens had experienced a high spike in prices due to energy costs stemming from the war, and fifth in a developing country. The other common SDGs for both groups of countries were 'Zero hunger' and 'Good health and well-being'. The only difference in the choice of the 5 most impacted SDGs was due

[2] Since this attribute was wider in coverage than the rest of the pre-determined attributes this may have biased the answers towards it.

to the choice of 'Peace, justice and strong institutions' in own country and 'Clean water and sanitation' in a developing country. More than one half of the respondents indicated that the effect on SDGs will be negative with overwhelming majority of 71 per cent who emphasised that the effect on affordable and clean energy in own country would be negative. Once again it appears that citizens views were built on the living cost crisis they had experienced, resulting from the high energy costs.

Asked in more detail on which attributes the strongest impact would be felt, for both groups of countries (albeit with a slightly different ranking order) citizens pointed to increasing food aid requirements, social unrest, agricultural trade, and international political consensus. A comparison with stakeholders' responses to Round 3 shows important consistencies: (i) the most affected by the war Pillar of sustainability would be the economic one; (ii) both stakeholders and citizens indicated that within the most negatively affected SDGs would be 'Peace, justice and strong institutions', 'Zero hunger' 'Good health and well-being' and 'No poverty'; (iii) Food aid requirements and social unrest were indicated as the most affected attributes.

5.2.2 Conclusions from the general public survey

- Beyond doubt, in the post-Covid and the war in Ukraine environment, the major concerns are about the economic sustainability, where policy efforts should be focused (at least in a short to mid-term).
- Within the broad area of economic sustainability, citizens preferences are for reducing poverty and securing employment. These two are interrelated as productive employment generating incomes is a major factor to reduce poverty.
- Policies to reduce food losses are necessary in developed countries and to decrease inequality in developing world. Although currently governments in both parts of the world have these issues on their agenda, our survey suggests that implicitly citizens want more policy actions in these areas.
- The war in Ukraine has increased the concerns about social sustainability, which was ranked second following the economy.
- The big social issues raised by citizens are to eradicate hunger and to improve food security - two important areas which in many places of the world have been undermined by disruptions to trade in foodstuff and agricultural inputs due to the war in Ukraine.
- Water quality and water waste have been put at the centre of environmental sustainability. These issues are closely inter-related to eradication of hunger, and good health and well-being since in many developing countries agricultural yields and human health have been jeopardised by droughts and the lack of clean drinking water.
- The general public appear to believe in the sustainability benefits of trade liberalisation and they appear to be willing to lend support for trade liberalisation and strengthening policies that boost agricultural sustainability.
- The inclusion of more detailed political economy questions on a specialised topic does not appear to have proved very successful in this case. They appear to create difficulties for the general public due to a mix of lack of knowledge and information, and of interest in the outcome.

- A comparison between citizens views on the effect of the war in Ukraine and stakeholders' responses to Round 3 shows important consistencies. These consistencies somehow increase the relevance of stakeholders' responses, despite the low response rate.

A graphical representation of the responses to general public survey is included in Appendix 5.

5.3 Summary of 'perceptions of perceptions' survey

The survey of general public covering respondents from Germany, Hungary and the UK was additionally evaluated by selected stakeholders from Poland (representing views of respondents from an economically-developed EU country) and Ukraine (being the view of a non-EU developing country). The online survey was conducted in August 2023 covering 18 stakeholders with 7 from Poland and 11 from Ukraine. Out of the 18 respondents, 13 were researchers, 3 were representatives of NGOs and the remaining two included an agricultural advisor and a policy maker. Respondents were allowed to include open comments, in particular when they disagree with the results of the survey of general public.

First, stakeholders were asked if they agree with the general public views regarding the most important sustainability Pillar in developed and developing countries. There were 16 positive responses, with both Poland and Ukraine stakeholders' approval rate being 86 per cent and 91 per cent respectively. One of the two respondents disagreeing with the results (the policy maker from Ukraine) stated that the most important sustainability Pillar in developed countries would be the social one, while the most important sustainability Pillar in developing countries would be the economic Pillar. The second stakeholder disagreeing with the results (an NGO representative from Poland) stated that the most important sustainability Pillar in developed countries would be the environmental one, while the most important in developing countries would be the social Pillar. The comments provided by respondents indicated that, overall, it is difficult to identify the most important Pillar, as they are all central to sustainability and are interrelated, but in order to develop an economy in a sustainable way, primarily economic and environmental aspects have to be taken into account, whether in developed or developing countries.

The second question was whether the stakeholders agreed with the respondents' choices regarding the least important Pillar of sustainability both in developed and in developing countries. Overall, 14 (78 per cent) responses were positive showing agreement, prevailing in Ukraine where 10 respondents agreed with the results. Among the three respondents from Poland who disagreed with the previous results, two argued that the economic Pillar is the least important in developed countries. As for the least important Pillar in developing countries, the responses varied, with each respondent selecting one of the three Pillars. From the Ukrainian respondent's perspective who disagreed with the results (the NGO representative), the economic Pillar seemed the least important in both developed and developing countries. In one of the comments, it was additionally emphasised that each of these Pillars is extremely important for sustainable progress, irrespective on whether the focus is on developing or developed countries, since the three Pillars are equally important to achieving sustainable and balanced social, economic and environmental development.

In terms of attributes within the economic Pillar from the perspective of developed countries, there was a 71 per cent agreement by Polish stakeholders and 73 per cent by Ukrainian respondents. Within the comments of the stakeholders disagreeing with the results, the key attributes selected included reducing inequality (3 answers), sustaining the economic growth (3 answers), reducing poverty (2 answers) and employment for all (1 answer). No selections were made for limiting the food loss and food waste either in the production processes or by consumers.

Regarding the attributes within the social Pillar, from the perspective of developed countries there was even higher rate of agreement with the obtained results, as 83 per cent of stakeholders agreed with them. Among the three respondents disagreeing, two selected laws and policies aimed at achieving sustainable development goals as the social attribute with the highest value, and the other two stated the importance of safe and sustainable rural and urban areas.

Similarly, in terms of the environmental Pillar the support of the results was high, 83 per cent of respondents agreed with the presented results covering its attributes (71 per cent from Poland and 91 per cent from Ukraine). The Polish stakeholders disagreeing with the results emphasised that the primary attributes within the environmental Pillar should include the protection/improvement of the water quality, as well as protection of soil from erosion. The only Ukrainian stakeholder disagreeing with the results singled out the primary importance of improved technologies.

The stakeholders were also asked whether they agree with the general public respondents regarding the Pillar of sustainability that would be most affected by the liberalisation of agri-food trade in developed countries. Among the 18 answers, there was an 83 per cent approval rate. Among the three persons disagreeing (1 from Poland and 2 from Ukraine), two respondents stated that economic Pillar would be most affected, while one respondent outlined the environmental one.

When asked whether they agree with the general public views on the expected reactions of different interest groups to policies designed to stimulate agricultural trade in developed countries, there was 83 per cent agreement (71 per cent in Poland and 91 per cent in Ukraine). Regarding the similar question about the expected reactions from interest groups on policies to boost sustainable food production in developed countries, 94 per cent of stakeholders agreed.

Similar responses were obtained regarding the opinions on the impact of the war in Ukraine on the Pillars of sustainability in developed countries. Eighty nine per cent of the surveyed stakeholders agreed with the results, with two stakeholders (one per country) disagreed, arguing that the strongest impact would be on the social Pillar, the effect on the economic Pillar would be neutral and the environmental Pillar would be exposed to the weakest impact.

The final question was to rank the issues in developed countries that would be most affected by the war in Ukraine. The highest impact was expected on international political consensus (13 answers), social unrest (12 answers), increasing food aid requirements (9 answers), agri-food trade and domestic political consensus (6 answers each), creation and implementation of trade agreements (3 answers each), and forced changes in diet composition (2 answers).

The ‘perceptions of perceptions’ survey conducted with Polish and Ukrainian stakeholders allowed to verify the results of the general public survey carried out in Workpackage 4 and provided, overall, strong confirmation of the obtained results. The responses also provided insights into the views of stakeholders from Ukraine, extremely valuable to see whether the stakeholders in the country agree with the opinions of EU citizens outside Ukraine on the ranking of sustainability degradation resulting from the war. The ‘perceptions of perceptions’ survey indicated the prevailing common understanding of, and concerns about, sustainability, both from the point of view of developed and developing countries.

5.4 Summary of ‘brainstorming’ survey

The brainstorming survey resulted in comments by stakeholders concerning the EU and global trade between developed and developing nations. The following summarises the most relevant results.

- The EU's role in world trade:

EU, once a dominant force in global trade, is now challenged to maintain its foothold in the face of emerging economies such as China and India. This observation provides an interesting insight into the changing dynamics of international trade. Historically, the EU has been at the forefront of setting trade standards, shaping policy and fostering cooperation. The concerns raised in the brainstorming survey suggest that the EU must not only adapt to the changing landscape, but also redefine its strategies to promote sustainable trade practices. One might ponder the implications of this diminished role. Does it mean that EU values and standards may be diluted in global trade dialogues, or does it signal a global shift towards a more multipolar world where power is more evenly distributed among nations?

- The general feasibility of trade liberalisation:

Trade liberalisation is a complex and multifaceted issue. As one respondent pointed out, its feasibility cannot be captured in blanket statements. Context matters. For example, while trade liberalisation may be beneficial for technologically advanced countries seeking to explore new markets, it may pose challenges for emerging economies that need to protect their nascent industries. Moreover, the term "trade liberalisation" encompasses different aspects, from tariff reductions to the easing of non-tariff barriers, each with its own implications.

- Carbon Border Adjustment Mechanism (CBAM):

The mention of CBAM highlights the intersection of trade and environmental concerns. CBAM is essentially a tax on carbon emissions on imported goods that have not been taxed at source. While it is an innovative idea to level the playing field and encourage green practices, its implementation is fraught with challenges. How to measure carbon footprints accurately? How to ensure it does not become just another barrier to trade or a tool for protectionism? The concerns raised in the stakeholders comments point to these complexities.

- The importance of context in trade discussions:

Numbers and statistics, while essential, can sometimes oversimplify complex issues. One respondent's call for a more integrated approach underlines this view. Trade is not just about

numbers; it's about people, cultures, environments and economies. An integrated approach would take all these facets into account, ensuring that policies are holistic and inclusive.

- Creating a level playing field:

Trade liberalisation, as respondents point out, is a means to an end - the end being a level playing field where all nations, large or small, developed or developing, can compete fairly. This comment underlines the fundamental principle of fairness in world trade. However, achieving this fairness is a complex endeavour, especially when countries are at different stages of economic development and have different capacities and resources.

- Balancing multiple objectives in trade:

Trade policies do not operate in isolation. They intersect with economic, social and environmental objectives. As globalisation intensifies, the challenge of ensuring that trade benefits all is growing. How to ensure that trade does not lead to environmental degradation, or that it does not exacerbate social inequalities? The respondent's comment on promoting three objectives at the same time provides food for thought on this difficult balancing act.

- The impact of geopolitical tensions:

Geopolitical events, such as the pandemic and tensions with countries such as Russia, have an impact on trade. These events can disrupt supply chains, create uncertainty and sometimes even lead to the creation of new trade barriers. One comment highlights the fragility of global trading systems and the need for resilient policies.

- The danger of oversimplification:

It is easy to point the finger at existing structures when things do not go as planned. However, as one respondent suggests, this may be an oversimplification. Trade challenges arise from a confluence of factors and understanding these nuances is crucial for effective policymaking.

- Trade as a policy tool:

Traditionally viewed through an economic lens, trade is increasingly seen as a tool for political leverage. This shift has profound implications. When trade becomes a means to achieve political ends, it can lead to policies that are not necessarily in the best economic interests of nations.

- The controversy over subsidies:

Subsidies designed to support and protect local industries have always been a bone of contention in trade dialogues. While they can boost local economies, they can also distort global trade dynamics. The comment on the political sensitivity surrounding subsidies underlines their controversial nature.

6 Feeding survey results to a stakeholders and experts workshop

Following all surveys summarised in this note, a workshop of stakeholders and experts was organised to allow for a two-way active involvement of stakeholders to express their opinions on how to increase the realism and impact of TRADE4SD modelling efforts, and to provide policy relevant information to the project sponsor, i.e. the EC. The workshop focused on feedback on two tasks completed within the project – stakeholders' and general public surveys on trade and sustainability, and the output from a modelling exercise on the impact of trade agreements and environmental policies on CO2 emissions and GDP dynamics. Thirty-seven individuals attended the workshop representing a mix between agri-food stakeholders and experts from the project advisory committee. For the first time the project engaged in two-way interactions stakeholders from Ukraine.

6.1 Outcome of participatory approach

The project team from the University of Kent presented the results from the three rounds of stakeholders' survey and the general public survey. The presentation emphasised the importance of feedback by workshop participants to provide the modellers with relative values/ranking of different Pillars of sustainability, their important attributes, and the possibility of social support to policies for trade liberalisation and sustainability. The presentation focused on main points underlined in sections 5.1 and 5.2 above. Several issues and limitations were emphasised looking for reactions and comments by the workshop participants.

First, differently to the stakeholders' survey where there was a panel of respondents from Vietnam, one of the EU partner country included in the project, the general public survey asked stakeholders from an EU country to imagine what the priorities would be of a person who resides in a developing country. Thus, the answers from the point of view of a developing country were not based on a detailed knowledge of the context through life experience and, as an outcome, they mainly included slight adjustments in comparison with the answers for the EU country where the respondent resided.

Second, several interesting inconsistencies have been observed between the opinions of stakeholders and the general public. One example in this direction is that stakeholders from the EU put the highest relative value on the environment (although only in the first round of the stakeholders' survey) whilst the general public consistently valued most of all the economy. This signals that the social pressure on governments to fulfil their political promises for a net zero emission economy might decrease which would be embraced by some governments in the EU which struggle with the potential economic and social costs of their green agenda.

Third, there are two important results showing consistent views of stakeholders and general public: (i) water comes as the most precious environmental resource – its quality, access, loss prevention, and (ii) the increase in the relative importance of social sustainability under the conditions of the continuing war in Ukraine.

Forth, diametrically opposed were the views of stakeholders from EU and Vietnam on the effect of sustainability policy on agriculture. Whilst the prevailing opinion in the EU was that such policy would decrease the yields and employment in agriculture, the Vietnamese stakeholders expected a favourable impact, i.e. an increase in both. One way to rationalise the expectations in Vietnam is that the introduction of more sustainable farming practices may help achieve the requirements of trade agreement with the EU and agreements with other developed economies which would increase their exports and would help invest in techniques to increase yields.

The feedback from experts and stakeholders participating in the workshop provided important addition to the surveys data analysis. Below is a summary of feedback received during the discussion.

- Results of the stakeholders' and general public surveys where they indicated a prioritisation of sustainable water use in the environmental Pillar are significant for policy. They are relevant to current policy debate as the European Economic and Social Committee (EESC) will be holding a high-level conference in October 2023 calling for an EU Blue Deal.

- The general public survey was implemented with panels only in several EU countries. The impact for developing countries is often more important as they are more dependent on trade with Europe. It is recommendable to have a similar study in the trade partner countries where the sustainability issues are usually more exacerbated and often act as a barrier to trade.

- With respect to the differences found between the priorities of experts and general public, in particular concerning the environmental sustainability, experts might have been influenced by their general awareness of, and perhaps participation in, the previous policy debates around trade liberalisation, which have centred more around the sustainability of the environment, e.g. the EU Commission's proposal around external dimensions of the Green Deal and discussions around a deforestation-free supply chain. The public may not be as aware of these issues that may explain the low value they put on the environmental sustainability. On the other hand, the general public may look at the issues with wider lenses and in the longer term, e.g. the observed huge migration to Europe may put a larger strain on economic sustainability which makes it of a higher rank in views of the public. The experts may benefit from considering such broader impact when setting their priorities. This suggests that future similar studies should include some questions concerning the implications of major developments affecting Europe.

- The next comment also pointed out to a need for a more open approach to such surveys, enquiring whether stakeholders who responded to the survey mentioned other definitions of sustainability and if the stakeholders mentioned any policy instruments other than trade. In future work respondents should be prompted to give their understanding of what sustainability is and prioritise a list of policies they think that could enhance or constrain the drive to sustainable development.

- Since one of the objectives of the surveys was to help modellers improve their models, it was suggested that the modellers should take into account what stakeholders believe. The results from the stakeholders' survey presented in this workshop suggested a difference between viewpoints from the EU and Vietnam on sustainability impact on agriculture, and this should be accounted for in the modelling work. The modellers must try to consider whether Vietnam would be able to cope under the EU trading standards and whether these standards would benefit them. The modellers may consider introducing scale/learning effects in the CASE model.

- In the surveys, each Pillar of sustainability was treated on its own. However they are strongly interconnected. The discussion included the example of the wedding cake approach exemplifying interconnectedness of the three Pillars of sustainability. Economic growth may not provide prosperity without a fair society, and these cannot be obtained without respect for the ecological capacity of the ecosystems and environment. Therefore, more emphasis on interconnectivity is necessary.

- From the point of view of a practitioner, the technical director of Dole foods UK, argued that aside from tariffs and taxes there are other different drivers to sustainability. In reality, consumers and retailers are leading drivers. In the UK, most of the fresh produce is sold under the retailers own label, as such there is no branding which means the requirements are driven by trade liberalisation and market price. He expressed great support for trade liberalisation as sustainability is starting to be an expensive requirement in commerce, supported by the observation that small farms do not possess the necessary capital to invest into sustainable production techniques. One of the biggest issue to consider sustainability of the food supply is the lack of data to measure the carbon footprint of the produce the commerce purchase. Another problem is that the narrative of sustainability is not drawn from data and facts but instead the picture of sustainability is drawn from the media and marketing sectors. In order to uphold the labour standards, many risk assessments are necessary to ensure that the produce is being cultivated and traded in a way that does not compromise human rights. One important environmental problem that has contributed to the disappearance of small farms, particularly in the UK, is the improper water use. Appropriate water use requires better storage and collection of water.

The second presentation in the workshop was looking at feedback on technical modelling issues, in particular the setup of the baseline, the impact of thw EU free trade agreement with Vietnam and the partnership agreement with Ghana, and output of different scenarios of trade liberalisation accompanied by an introduction of CO2 tariffs and carbon output taxes. The implications of different scenarios were focused on the effects on output and emissions. Concerning trade liberalisation, the model included results of agri-food liberalisation only and liberalisation of all commodities, as well as unilateral trade liberalisation of EU towards the world and bilateral liberalisation. Additionally, the effect on some parameters of water pollution was modelled. The Shared Socioeconomic pathway 1 (the Green Road) was used as a baseline.

The presentation focused the discussion on the following points of model output.

First, both agreements increase the domestic emissions in trade partners of Vietnam and Ghana with a small impact on the world emissions.

Second, the effect of trade liberalisation on boosting economic activities is visible even when accompanied by an introduction of border tariffs. However, only when an output carbon tax is introduced there is a decrease in GDP.

Third, trade liberalisation *per se* leads to increase in emissions. This could be mitigated with the introduction of CO2 tariffs on all goods, not only agri-food.

Forth, concerning water pollution, the most effective policies are the unilateral or bilateral trade liberalisation of all goods accompanied by implementation of both CO2 tariff and output tax.

Fifth, before presenting the model at the workshop, the modelling team consulted stakeholders on the results of different policy scenarios. The feedback they received argued that the results were too general and it was necessary to identify winners and losers within the EU and outside of the two CO2 mitigation policies. Several political economy aspects of the modelled policies have been discussed, i.e. the most straightforward would be to introduce carbon tariffs as it does not require unanimity in the EU. But additional tariffs might complicate the existing WTO mechanisms. Political consensus on the carbon (consumption) tax would be more difficult to achieve. But, in any case, the major problem is pollution leakage. EU could not solve the pollution issue alone. It might put a cap on pollution but leakages would remain. This calls for global actions.

The comments received pointed out to some aspects of the presented model which require more thoughts/work.

- The results of the model presented by CASE were quite standard compared to the results of previous similar models. The baseline assumptions for the model seems to be too optimistic. Some stakeholders would assume that without policy intervention the environmental quality would decline in the future, since it is generally expected that environmental quality would be decreasing due to pollution, overuse of pesticides, climate change and threats to biodiversity. The implementation of policy instruments in the model today should lead to a more sustainable outcome in the long run in comparison with a situation of no current policy. In the model, due to the carbon tax, the pollution is going down. With the baseline, a dynamic analysis is performed, but the main issue is how do the modellers define the baseline? How is the productivity of different inputs changing over time? It is challenging thing to consider the baseline of this model, since in most models there is a static view between years but there is rarely a connection between the years. Once a dynamic model is considered, as in CASE model that connects actions today in order to prepare for an outcome in the next period, it becomes more complicated. With dynamic models it is much harder to perfect the baseline. This project may not be able to completely account and correct for this, but the modellers must be aware of it.

- Another comment corroborated with the previous one. The model produced by CASE should be more pessimistic with regards to their baseline projections, i.e. the assumption that production and yields will increase in the long-run baseline scenario. If higher trade standards were introduced they would have helped to mitigate negative trends and the results from the current CASE model would not have looked so adverse. The SSP1 scenario should not be considered as the "business as usual" scenario.

- As said in the discussion concerning the University of Kent presentation, the modellers may consider introducing scale/learning effects in the CASE model. When using a standard GTAP there are not any scale effects, and therefore, when production increases there are always higher costs. However, if the modellers introduce fixed effects, they will be able to learn from this that the average curve will initially decrease and then will start increasing. However, there should be a consideration of a minimum level of pollution in order to get a profitable system.

- When looking at leakage effects in GTAP model, is there a possibility of including technical or management mitigation techniques? For example, imposing a tax on CO2 will be immediately reflected in a reduction in output in the country that is imposing the tax. With this, in the current model, it would result as a high-end leakage estimate. If farmers have more possibilities to mitigate through changes in management, feeding regimes, fertilisation regimes, the modellers are likely to get lower estimates.

Additionally to this workshop, at the organised session 'International Agricultural Trade and Sustainability Challenges to Applied Trade Models' at the EAAE Congress in Rennes, aspects of model-based analysis of social sustainability were discussed. The TRADE4SD presentation focused on the relationship between economic development and social sustainability with implications for interregional and interpersonal income distribution and employment. The model-based analyses indicated that the overall economic development traces the decline of income and employment shares of agriculture in countries of the Global South. What became clear from the example of the analyses for Ghana was a shift in regional incomes in favour of urban regions. During the discussion, the scientific experts expressed views that in addition to the interactions between economic and social aspects of sustainability, which were modelled, it was necessary to model the interactions between social and ecological aspects. Within this area, the effects of climate change and the importance of climate protection policies should receive a special attention. This has underlined how participatory approach could help modellers think broader and include a fuller picture of important interactions.

6.2 Conclusions

The project workshop indicated how useful is a two-way interaction with stakeholders and experts. In 90 minutes the presented two pieces of research, conducted within TRADE4SD, received useful feedback on either how to improve the research or what to consider in future work. Two overall conclusions should be drawn from the stakeholders and experts comments. First, in surveys concerning the views on trade and sustainability a more open and flexible approach should be taken to allow the respondents to reveal their alternative views on the core

concept definitions and possible policy options. Second, modellers should put more considerations on their baseline assumptions.

7 Overall conclusions and policy implications

This policy note summarised the results from the one-way and two-way interactions with stakeholders. Four surveys were conducted – two led by the University of Kent team and two by CASE all in collaboration with Corvinus University of Budapest, Thünen Institute, Germany, and University of Economics Ho Chi Minh City, Vietnam. Two of the surveys were looking for the opinions of TRADE4SD stakeholders and two had a broader coverage, i.e.to study public opinion or to look for feedback on results from a different pool of agri-food stakeholders from Poland and Ukraine. One workshop with stakeholders and experts was organised to get feedback on results of two near to completion tasks - one in Workpackage 3 and one in Wokpackage 4.

The overall conclusion is that stakeholders participation was invaluable, and this is not an exaggeration. It, first, provided new unique information about the opinions on the nexus between trade and sustainability, and second, helped better interpret the results from the modelling scenarios on the effect of environmental policy on output dynamics and CO2 emissions. None of this could have been achieved without applying a participatory approach.

The main conclusions, which may inform the EU and the national Governments, are the following:

- The Governments have to carefully balance the pros and cons of the effects of trade on environment. Trade has potential to help environmental sustainability outcomes, i.e. it could introduce sustainability standards in the production of traded goods. However, the fact that economic interests are frequently prioritised over environmental objectives should not be ignored since trade policies may promote the production of goods that eventually lead to more GHG emissions and over-exploitation of natural resources. The issues of water quality and access, and biodiversity were two of the main concerns in respect of environmental sustainability, as increased agricultural trade may lead to increased production resulting in reduced land available for sustaining habitats for local wildlife, and water scarcity.
- Trade liberalisation *per se*, without additional mitigating policies (e.g. a border carbon tax or output tax), may increase CO2 emissions. It should be noted that the effects depend on the scope of liberalisation – whether only in agri-food sector or all commodities.
- Looking at a longer term, the EU policies should ensure structural changes in the agri-food sector that comply with sustainability objectives. Policies in developing countries should mainly address poverty and inequality.
- In the post-Covid environment and the trade shocks of the war in Ukraine, the most important Pillar of sustainability is the economic one. Within this Pillar the major policy focus should be on agricultural profitability, per capita income, and maintenance of economic growth. Due to the war in Ukraine the most vulnerable along the food chain are food consumers and if some support policies are introduced they have to target those food consumers who are most affected by the increased food and energy prices.

- It appears that the general public and commerce in the EU would lend their support for trade liberalisation – a fact that could be used by Governments to maintain this course of action without reverting to a new wave of protectionism. On the other hand, under the present domestic and international circumstances the general public does not value very highly environmental sustainability which may decrease the public pressure on Governments to remain on track with their green agenda.
- The research on the opinions of general public in Germany, Hungary and the UK led to important policy insights. However, the impact for developing countries is often more important as they are more dependent on trade with Europe. It is necessary to consult the EC for some additional resources to implement similar study in Ghana and Vietnam which will provide evidence on what people think about sustainability there and how to increase the effectiveness of the EU trade policy towards these countries to achieve sustainability objectives.
- In order to deal with the issue of pollution coordinated global policy is necessary. The EU alone cannot combat pollution irrespective on how stringent its policy is.

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10. Appendices

Appendix 1:
Questionnaires for Stakeholders' survey

Questionnaire of the 1st round of Delphi analysis in Trade4SD		
Question		Possible Answers
Your age: Choose one of the following answers Please choose only one of the following:		• < 35 years • 35 - 50 years • 51 - 65 years • > 65 years
Your gender: Please choose only one of the following:		• Female • Male
What is your area of work experience? Choose one of the following answers Please choose only one of the following:		• Researcher • Extension officer • Farmer • Trader • Food processing • Non-governmental organisation • Other
How many years of work experience do you have in the relevant field? Choose one of the following answers Please choose only one of the following:		• < 5 years • 5 - 10 years • 11 - 20 years • > 21 years
Does your work focus more on developing or industrialized country situations? Choose one of the following answers Please choose only one of the following:		• Developing country • Industrialized country
1	How do you value sustainability? Please rank the following pillars of sustainability in order of their importance to you.	• Economic sustainability • Social sustainability • Environmental sustainability
2	What are the most important issues about the effect that trade in goods may have on sustainability in:	• [The Economy] – Open Answer • [Society] – Open Answer • [The Environment] – Open answer
3	To what extent can trade policy help or hinder the sustainability of:	• [The Economy, Help] – Open Answer • [The Economy, Hinder] – Open Answer • [Society, Help] – Open Answer • [Society, Hinder] – Open Answer • [The Environment, Help] – Open Answer • [The Environment, Hinder] – open answer
4	Which aspect of sustainability would be most affected by liberalization in agri-food trade?	• The Economy • The Society • The Environment

Question		Possible Answers
5	What effect does a liberalization in agri-food trade have on greenhouse gas (GHG) emissions?	• Decrease In GHG Emissions • Increase In GHG Emissions • No effect on GHG emissions
6	What are the main concerns of citizens towards sustainability in the EU and in developing trade partner countries?	• Open answer
7	What are the main concerns of the policy community in the EU and in developing trade partner countries?	• Open answer
8	What environmental impact do you expect from liberalization in agri-food trade on different groups of countries? • [Developed countries] • [Developing countries (excl. Least Developed Countries)] • [Least Developed Countries]	• High • Medium • Low
9	What aspects of sustainability and agriculture trade do you think are currently overlooked and need more policy attention? In... • [a 3 years (short-term) horizon] • [a 10 years (long-term) horizon]	• Open answer
10	In your opinion, how might more stringent environmental, economic and social sustainability standards affect the following actors: • [Farmers] [in the EU] • [Farmers] [in developing trade partner countries] • [Traders] [in the EU] • [Traders] [in developing trade partner countries] • [Processsors] [in the EU] • [Processors] [in developing trade partner countries] • [Consumers] [in the EU] • [Consumers] [in developing trade partner countries]	• Open answer
11	In your opinion, and thinking about the wider economy, what are the main relationships between sustainability and economic development?	• Open answer
12	In your opinion, and thinking now only of agriculture, what are the main relationships between sustainability and: • [Yields] • [Prices] • [Farm profit] • [Farm jobs]	• Increase • Same • Decrease
13	Do you think that policies designed to improve sustainability using trade in agricultural goods: • [will receive public support?] • [are feasible?]	• Yes • Uncertain • No
14a	What group will provide support or will oppose these different policies? Policies designed to increase trade in agricultural goods • [Farmers' union] • [Processors' interest groups]	(1 opposition, 3 indifferent, 5 support) • 1 • 2 • 3 • 4

	• [Traders' interest groups] • [Environmental organizations] • [Workers' unions] • [Policy makers] • [Consumer interest groups]	• 5
14b	What group will provide support or will oppose these different policies? Policies designed to strengthen sustainable agricultural development • [Farmers' union] • [Processors' interest groups] • [Traders' interest groups] • [Environmental organizations] • [Workers' unions] • [Policy makers] • [Consumer interest groups]	(1 opposition, 3 indifferent, 5 support) • 1 • 2 • 3 • 4 • 5

Questionnaire of the 2nd round of Delphi analysis in Trade4SD		
Question		Possible Answers
1	How do you value sustainability? Please rank the following pillars of sustainability in order of their importance to you.	• Economic sustainability • Social sustainability • Environmental sustainability
2a	Could you please rate the following aspects under the pillar of economic sustainability: • [Agricultural profitability] • [Factor intensity in agriculture] • [Level of protection of the agri-food sector] • [Per capita income] • [Maintain economic growth] • [International development aid] • [Dependency on food imports]	(1) lowest importance, ..., (5) highest importance • 1 • 2 • 3 • 4 • 5
2b	Could you please rate the following aspects under the pillar of social sustainability: • [Societal stability] • [Level of employment in the agri-food sector] • [Income distribution] • [Food consumption per capita] • [Targetedness of social aids] • [Fair tax-burden-sharing of social groups] • [Share of calories from cereals and rice]	(1) lowest importance, ..., (5) highest importance • 1 • 2 • 3 • 4 • 5

2c	Could you please rate the following aspects under the pillar of environmental sustainability: • [Water quality and access] • [Biodiversity] • [Intensity of agro-chemical use] • [Land use for agriculture] • [Food loss and waste] • [Share of renewables in total energy production] • [GHG emissions]	(1) lowest importance, ..., (5) highest importance • 1 • 2 • 3 • 4 • 5
3a	Your ranking concerning the three pillars of sustainability from Question 1 was: 1. {Q1_1.shown} 2. {Q1_2.shown} 3. {Q1_3.shown} In your view is the most important aspect of your second ranked pillar {Q1_2.shown} as important as the: • [3rd rated aspect of {Q1_1.shown}] • [4th rated aspect of {Q1_1.shown}] • [5th rated aspect of {Q1_1.shown}] • [None of these aspects are similarly significant as those from the highest rated pillar {Q1_1.shown}]	• Yes • Uncertain • No
3b	Your ranking concerning the three pillars of sustainability from Question 1 was: 1. {Q1_1.shown} 2. {Q1_2.shown} 3. {Q1_3.shown} In your view is the most important aspect of your third ranked pillar {Q1_3.shown} as important as the: • 3rd rated aspect of {Q1_2.shown} • 4th rated aspect of {Q1_2.shown} • 5th rated aspect of {Q1_2.shown} • None of these aspects are similarly significant as those from the second rated pillar {Q1_2.shown}	• Yes • Uncertain • No

Questionnaire of the 3rd round of Delphi analysis in Trade4SD			
Question		Possible Answers	
1	How do you value sustainability? Please rank the following pillars of sustainability in order of their importance to you.	• Economic sustainability • Social sustainability • Environmental sustainability	
2a	Please rank the SDGs that you think are most affected by the war in Ukraine: • (Box of 17 SDGs, permit to rank just 5)	• SDG 1: No Poverty • SDG 2: Zero Hunger • SDG 3: Good Health and Well-being • SDG 4: Quality Education • SDG 5: Gender Equality • SDG 6: Clean Water and Sanitation • SDG 7: Affordable and Clean Energy • SDG 8: Decent Work and Economic Growth • SDG 9: Industry, Innovation and Infrastructure • SDG 10: Reduced Inequality • SDG 11: Sustainable Cities and Communities • SDG 12: Responsible Consumption and Production • SDG 13: Climate Action • SDG 14: Life Below Water • SDG 15: Life on Land • SDG 16: Peace and Justice Strong Institutions • SDG 17: Partnerships to achieve the Goal	
2b	• Attainment of which SDGs you selected will be most negatively or positively affected by the war: • {Q2a_1.shown} • {Q2a_2.shown} • {Q2a_3.shown} • {Q2a_4.shown} • {Q2a_5.shown}	• Positive • Neutral • Negative	• Short- Term • Medium- Term • Long-Term
3a	• Could you please rank the following aspects under the pillar of economic sustainability which you expect to be negatively or positively affected by the war: • [General economic growth] • [Security of food supply chains] • [Productive capital stock in agriculture] • [Financial health of food processors] • [Agricultural profitability]	• Positive • Neutral • Negative	• Short- Term • Medium- Term • Long-Term
3b	Could you please rank the following aspects under the pillar of social sustainability which you expect to be negatively or positively affected by the war: • [Societal stability]	• Positive • Neutral • Negative	• Short- Term • Medium- Term • Long-Term

	• [Levels of employment] • [Provision of public services, health, and education] • [Social safety nets for the poor] • [Income distribution]		
3c	Could you please rank the following aspects under the pillar of environmental sustainability which you expect to be negatively or positively affected by the war: • [Climate] • [Natural capital stock] • [Water quality and access] • [Biodiversity] • [Air Quality (excl. climate gasses)]	• Positive • Neutral • Negative	• Short- Term • Medium- Term • Long-Term
4	Rank the risks emanating from the war globally. Please select three out of the seven items listed below: • [Production risk] • [Price risk] • [Food security risk] • [Trade risk] • [Migration risk] • [Logistics risk] • [GDP growth risk]	• Rank 1 • Rank 2 • Rank 3	
5a	How do you think the war's effects will be felt by the following agents in the European countries: • [Agricultural Producers] • [Domestic Traders Of Agri-Food Products] • [Agri-Food Exporters] • [Agri-Food Importers] • [Input Suppliers For Agriculture] • [Food Consumers]	Please rate each effect from 1 marginal to 5 strong • 1 • 2 • 3 • 4 • 5	
5b	How do you think the war's effects will be felt by the following agents in developing trade partner countries: • [Agricultural Producers] • [Domestic Traders Of Agri-Food Products] • [Agri-Food Exporters] • [Agri-Food Importers] • [Input Suppliers For Agriculture] • [Food Consumers]	Please rate each effect from 1 marginal to 5 strong • 1 • 2 • 3 • 4 • 5	
6	What impact do you think the war will have on the following... • [Agricultural Trade] • [Domestic Political Concensus] • [International Political Concensus] • [Creation Of Trade Agreements]	Please rate each effect from 1 marginal to 5 strong • 1 • 2 • 3 • 4 • 5	

	• [Compromise Of Trade Agreements] • [Increasing Food Aid Requirements] • [Forced Changes In Dietary Composition] • [Social Unrest]	

Appendix 2:
Questionnaire for General Public Survey

Question	Possible Answers
Your age: Please choose only one of the following:	• < 30 years • 31 - 45 years • 46 - 65 years • > 65 years
Your gender: Please choose only one of the following:	• Female • Male • Non-Binary • Prefer not to say
Employment status	• Employed with job security • Employed with short-term or hourly contract • Self-Employed • Unemployed • Neither working, unemployed or retired • Retired
What is your area of work experience? Please choose only one of the following that best describes the sector or job in which the majority of your working experience was gained:	• Research/Information/Media • Trade/Commerce (buying or selling in any sector other than Food or Finance) • Agriculture or food production • Other manufacturing/Energy • Finance • Other private sector services • Education • Police/Armed Forces/Justice • Local/regional or national government employee • Non-governmental organisation/charity • Other
How many years of work experience do you have in the above field? Choose one of the following answers Please choose only one of the following:	• < 5 years • 5 - 10 years • 11 - 20 years • > 21 years

	Do you **work** in rural or urban area? Please choose only one of the following:	• Rural (open countryside, low population density, small settlements –mainly villages) • Urban
	Do you **live** in rural or urban area? Please choose only one of the following:	• Rural (open countryside, low population density, small settlements –mainly villages) • Urban
	Do you own your own home?	• Home owner with Mortgage • Home owner without Mortgage • Renter • Living in family or friends' home • Other (Please specify)
1	How do you value sustainability? Please rank the following pillars of sustainability in order of their importance to you.	• Economic sustainability • Social sustainability • Environmental sustainability
2	Could you please rate the following aspects under the pillar of Economic Sustainability from your point of view: [Sustain per capita economic growth] [Achieve productive employment and decent work for all] [Decrease inequality] [Reduce poverty] [Halve per capita food waste] [Reduce food losses along production and supply chains, including post-harvest losses]	(1) highest importance, …, (3) lowest importance • 1 • 2 • 3
3	Could you please rate the following aspects under the Pillar of Social Sustainability from your point of view: [Improve food security] [Improve human nutrition] [Eradicate hunger] [Reforms to give women equal rights to economic resources] [Support trade, social and environmental links between urban and rural areas] [Promote and enforce non-discriminatory laws and policies for sustainable development]	(1) highest importance, …, (3) lowest importance • 1 • 2 • 3
4	Could you please rate the following aspects under the Pillar of Environmental Sustainability from your own point of view Improve/Protect Water Quality Reduce water waste Increase share of renewable energy Greater adoption of environmentally friendly technologies in agriculture Protect soils from erosion	(1) highest importance, …, (3) lowest importance • 1 • 2 • 3

	Protect Nature		
5	Which Pilar of sustainability do you expect would be most affected by liberalization in agri-food trade in your own country? Please number each box in order of preference from 1 to 3 with 1 as the highest importance. Please also indicate whether, in your view, that affect would be positive or negative by adding either a + or - sign.	• the economy (+ / -) • the society (+ / -) • the environment (+ / -)	
6i	What group or groups would you expect will provide support or opposition to the following policies in your own country? i)Policies designed to increase trade in agricultural goods your own country [Farmers' union] [Environmental organizations] [Workers' unions] [Policy makers] [Consumer interest groups]	• 1 support • 2 indifferent • 3 opposition	
6ii	What group or groups would you expect will provide support or opposition to the following policies in your own country? ii) Policies designed to strengthen sustainable agricultural development in your own country [Farmers' union] [Environmental organizations] [Workers' unions] [Policy makers] [Consumer interest groups]	• 1 support • 2 indifferent • 3 opposition	
7	Please rank the following pillars of sustainability in the order in which you expect the impact of the war to be in your country : strongest (1), neutral (2) to weakest (3)	• Economic sustainability • Social sustainability • Environmental sustainability	
8	In 2015 193 Member States of the United Nations adopted 17 Sustainable Development Goals (SDGs) aiming to achieve the three Pillars of sustainability in the next 15 years. Please rank the five SDGs that you think are most likely to be affected by the war in Ukraine: in your own country. (Box of 17 SDGs, permit to rank just 5) Please rank these SDGs from 1 to 5. (1 is the most affected). Please select at most 5 answers. For the SDGs you selected do you believe the war will impact it positively, neutrally, or negatively? • SDG 1: No Poverty • SDG 2: Zero Hunger	Select SDG: • Rank 1 • Rank 2 • Rank 3 • Rank 4 • Rank 5	• Positive • Neutral • Negative

	• SDG 3: Good Health and Well-being • SDG 4: Quality Education • SDG 5: Gender Equality • SDG 6: Clean Water and Sanitation • SDG 7: Affordable and Clean Energy • SDG 8: Decent Work and Economic Growth • SDG 9: Industry, Innovation and Infrastructure • SDG 10: Reduced Inequality • SDG 11: Sustainable Cities and Communities • SDG 12: Responsible Consumption and Production • SDG 13: Climate Action • SDG 14: Life Below Water • SDG 15: Life on Land • SDG 16: Peace and Justice Strong Institutions • SDG 17: Partnerships to achieve the Goal		
9	What impact do you think the war will have on the following... - please rate each effect from 1 (strong impact) to 3 (low impact) • [Agricultural trade] • [Domestic political consensus] • [International political consensus] • [Creation of trade agreements] • [Implementation of trade agreements] • [Increasing food aid requirements] • [Forced changes in dietary composition] • [Social unrest]	• 1 Strong Impact • 2 • 3 Low Impact	
10	Please rank the following pillars of sustainability according to your opinion of their importance to society in a Developing Country	• Economic sustainability • Social sustainability • Environmental sustainability	
11	Please rank the following pillars of sustainability according to your opinion of their importance to society in a Developing Country: • [Sustain per capita economic growth] • [Achieve productive employment and decent work for all] • [Decrease inequality] • [Reduce poverty] • [Halve per capita food waste]	(1) highest importance, …, (3) lowest importance • 1 • 2 • 3	

	• [Reduce food losses along production and supply chains, including post-harvest losses]	
12	Could you please rate the following aspects under the Pillar of Social Sustainability from what you believe would important to people in a Developing Country: • [Improve food security] • [Improve human nutrition] • [Eradicate hunger] • [Reforms to give women equal rights to economic resources] • [Support trade, social and environmental links between urban and rural areas] • [Promote and enforce non-discriminatory laws and policies for sustainable development]	(1) highest importance, …, (3) lowest importance • 1 • 2 • 3
13	• Could you please rate the following aspects under the pillar of Economic Sustainability from what you believe important to people in a Developing Country: • Improve/Protect Water Quality • Reduce water waste • Increase share of renewable energy • Greater adoption of environmentally friendly technologies in agriculture • Protect soils from erosion • Protect Nature	(1) highest importance, …, (3) lowest importance • 1 • 2 • 3
14	Which aspect of sustainability would be most affected by liberalization in agri-food trade in a Developing Country? Please number each box in order of preference from 1 to 3 with 1 as the highest importance. Please also indicate whether, in your view, that affect would be positive or negative by adding either a + or - sign.	• the economy (+ / -) • the society (+ / -) • the environment (+ / -)
15i	What group or groups do you expect would provide support or opposition the following policies in a Developing Country? i) Policies designed to increase trade in agricultural goods in a Developing Country (1 support, 2 indifferent, 3 opposition) • [Farmers' union] • [Environmental organizations] • [Workers' unions] • [Policy makers]	• 1 support • 2 indifferent • 3 opposition

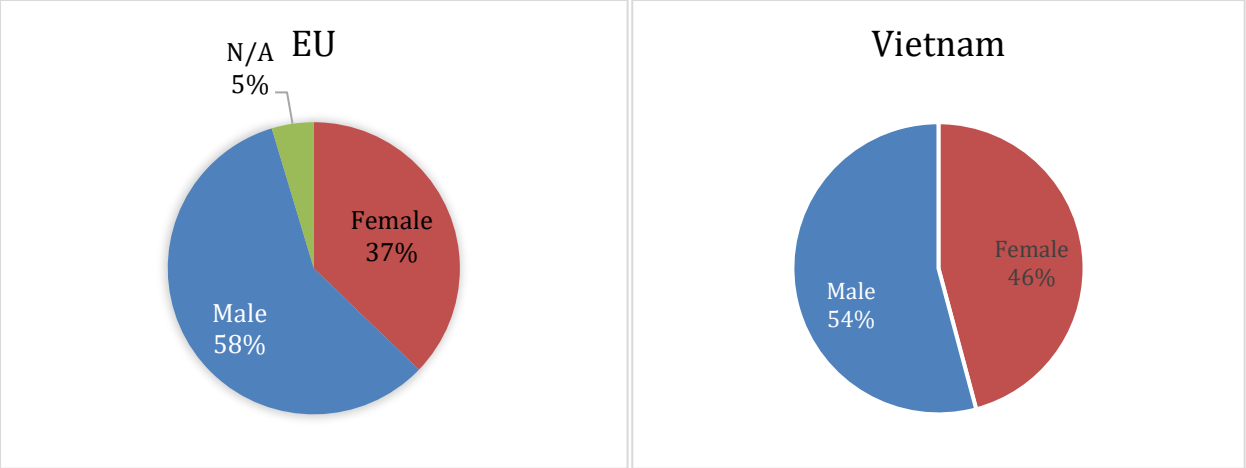
	• [Consumer interest groups]		
15ii	What group or groups do you expect would provide support or opposition the following policies in a Developing Country? ii) Policies designed to strengthen sustainable agricultural development in a Developing Country • [Farmers' union] • [Environmental organizations] • [Workers' unions] • [Policy makers] • [Consumer interest groups]	• 1 support • 2 indifferent • 3 opposition	
16	Please rank the following pillars of sustainability in the order in which you expect the impact of the war to be strongest (1), neutral (2) to weakest (3) in a developing country	• Economic sustainability • Social sustainability • Environmental sustainability	
17	Please rank the five SDGs that you think are most likely to be affected by the war in Ukraine: in a Developing Country. (Box of 17 SDGs, permit to rank just 5) Please rank these SDGs from 1 to 5. (1 is the most affected). Please select at most 5 answers. For the SDGs you selected do you believe the war will impact it positively, neutrally, or negatively? • SDG 1: No Poverty • SDG 2: Zero Hunger • SDG 3: Good Health and Well-being • SDG 4: Quality Education • SDG 5: Gender Equality • SDG 6: Clean Water and Sanitation • SDG 7: Affordable and Clean Energy • SDG 8: Decent Work and Economic Growth • SDG 9: Industry, Innovation and Infrastructure • SDG 10: Reduced Inequality • SDG 11: Sustainable Cities and Communities • SDG 12: Responsible Consumption and Production • SDG 13: Climate Action • SDG 14: Life Below Water • SDG 15: Life on Land • SDG 16: Peace and Justice Strong Institutions	Select SDG: • Rank 1 • Rank 2 • Rank 3 • Rank 4 • Rank 5	• Positive • Neutral • Negative

	• SDG 17: Partnerships to achieve the Goal		
18	In your opinion, what effect does the liberalization in agri-food trade have on global greenhouse gas (GHG) emissions?	• Decrease in GHG Emissions • Increase in GHG Emissions • No Effect on GHG Emissions	
19	In your opinion, what impact do you believe an increase in international trade in agri-food will have on local environmental outcomes (i.e. not including GHGs) in the following types of countries? • [High Income Countries] • [Middle Income Countries] • [Low Income Countries]	• 1 High Impact (+ / -) • 2 Medium Impact (+ / -) • 3 Low Impact (+ / -)	
20	In your opinion, how might the application of more stringent environmental, economic, and social sustainability standards by food importing nations affect the following actors: • [Agricultural producers] • [Food processors] • [Consumers]	• 1 High Impact (+ / -) • 2 Medium Impact (+ / -) • 3 Low Impact (+ / -)	
21	Could you please rank the following aspects of each of the pillars of Economic Sustainability based on your expectation of how the war will affect them globally. In doing so, please also indicate whether you think that this effect will be felt in short-term, medium-term, or long-term: • [General economic growth] • [Security of food supply chains] • [Income level agricultural producers] • [Vulnerable employment] • [Agricultural productivity]	• Positive • Neutral • Negative	• Short Term • Medium Term • Long Term
22	: Could you please rank the following aspects of each of the pillars of Social Sustainability based on your expectation of how the war will affect them globally. In doing so, please also indicate whether you think that this effect will be felt in short-term, medium-term, or long-term: • [Societal stability] • [Levels of employment] • [Provision of public services, health and education] • [Social safety nets for the poor] • [Income distribution]	• Positive • Neutral • Negative	• Short Term • Medium Term • Long Term

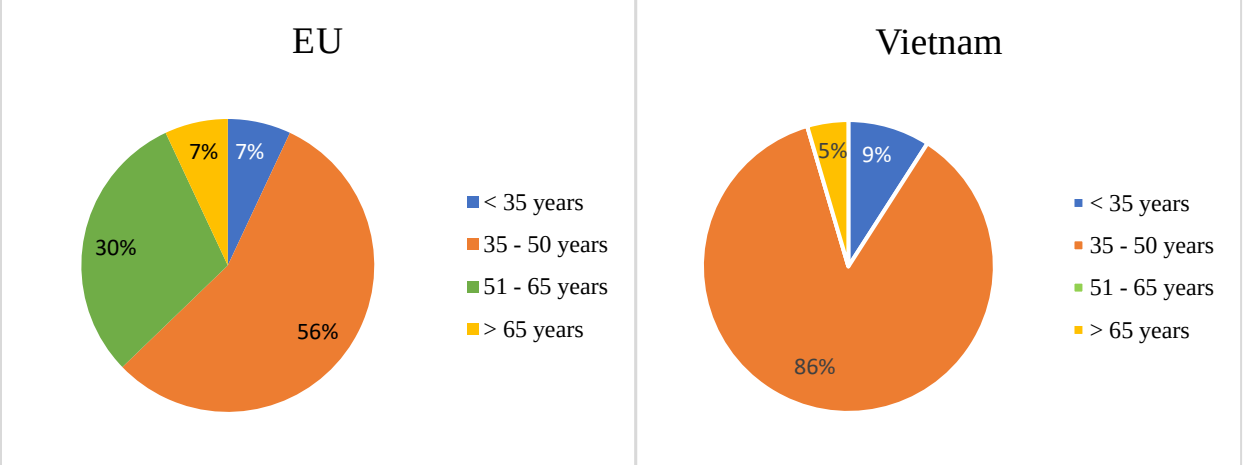
23	Could you please rank the following aspects of each of the pillars of Environmental Sustainability based on your expectation of how the war will affect them globally. In doing so, please also indicate whether you think that this effect will be felt in short-term, medium-term, or long-term: • [Climate] • [Natural capital stock] • [Water quality and access] • [Biodiversity] • [Air Quality]	• Positive • Neutral • Negative	• Short Term • Medium Term • Long Term
24	Rank the following areas of potential globally felt risks emanating from the war in Ukraine. Please select three out of the seven items listed below: Please select at most 3 answers Please number your answers in order of preference from 1 to 3 with 1 for strongest impact • [Food production risk] • [Price risk] • [Food security risk] • [Trade risk] • [Migration risk] • [Logistics risk] • [GDP growth risk]	• 1 strongest impact • 2 • 3 weakest impact	

Appendix 3:
Graphical representation of answers to the stakeholders' survey

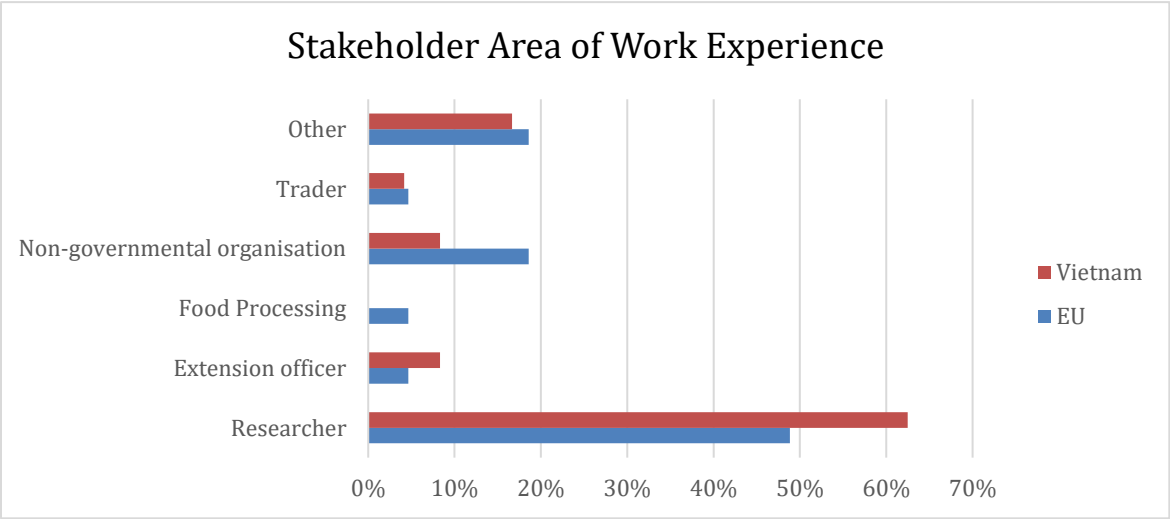
Gender of Stakeholders in Round 1



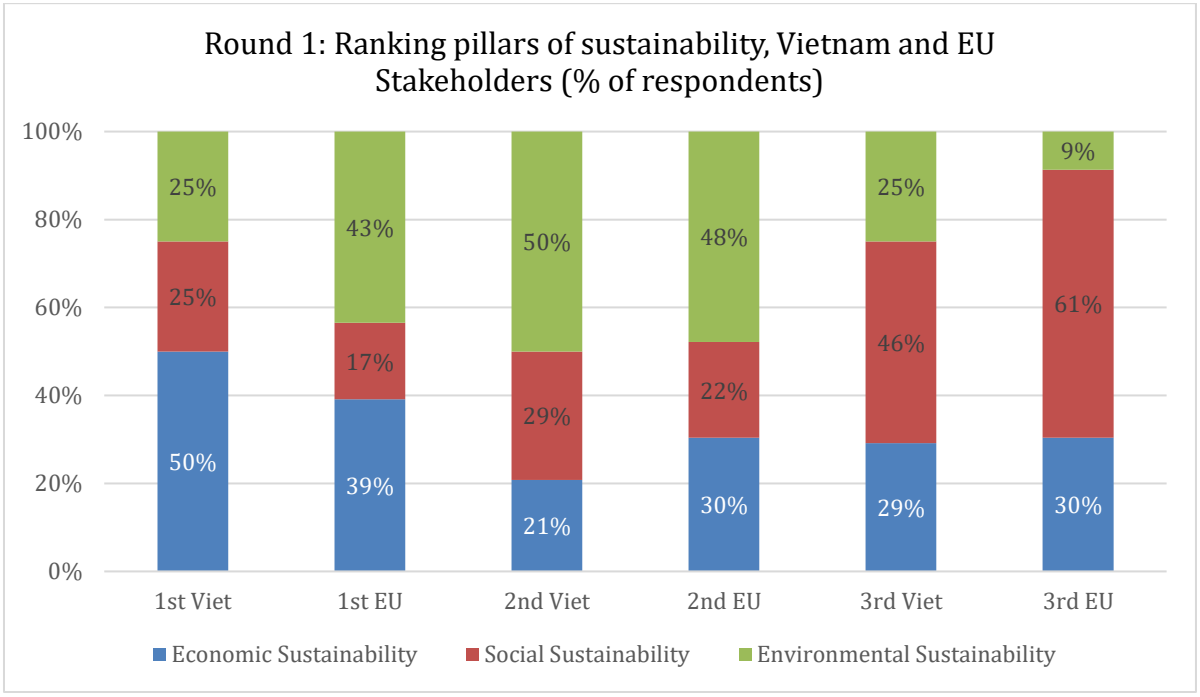
Age of Stakeholders in Round 1



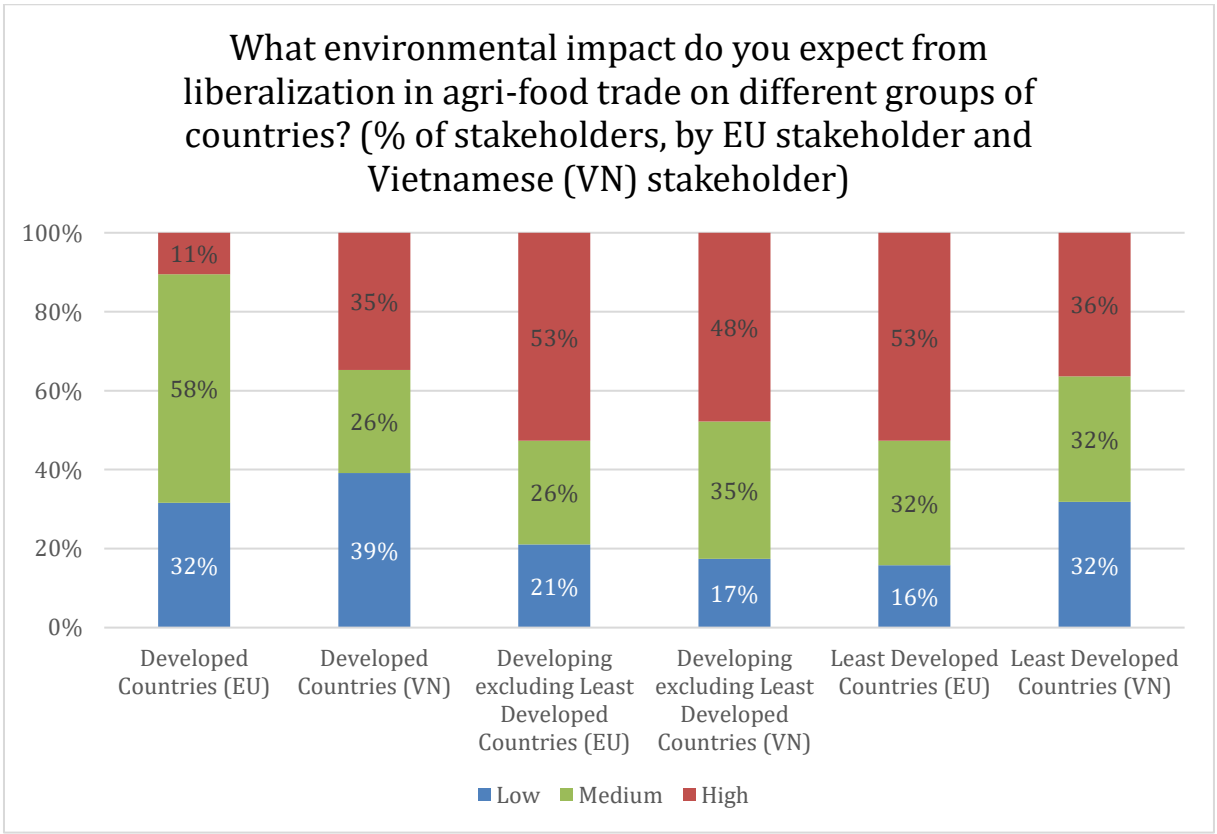
Area of Work Experience for Stakeholders in Round 1



Ranking Pillars of Sustainability by Stakeholders in Round 1

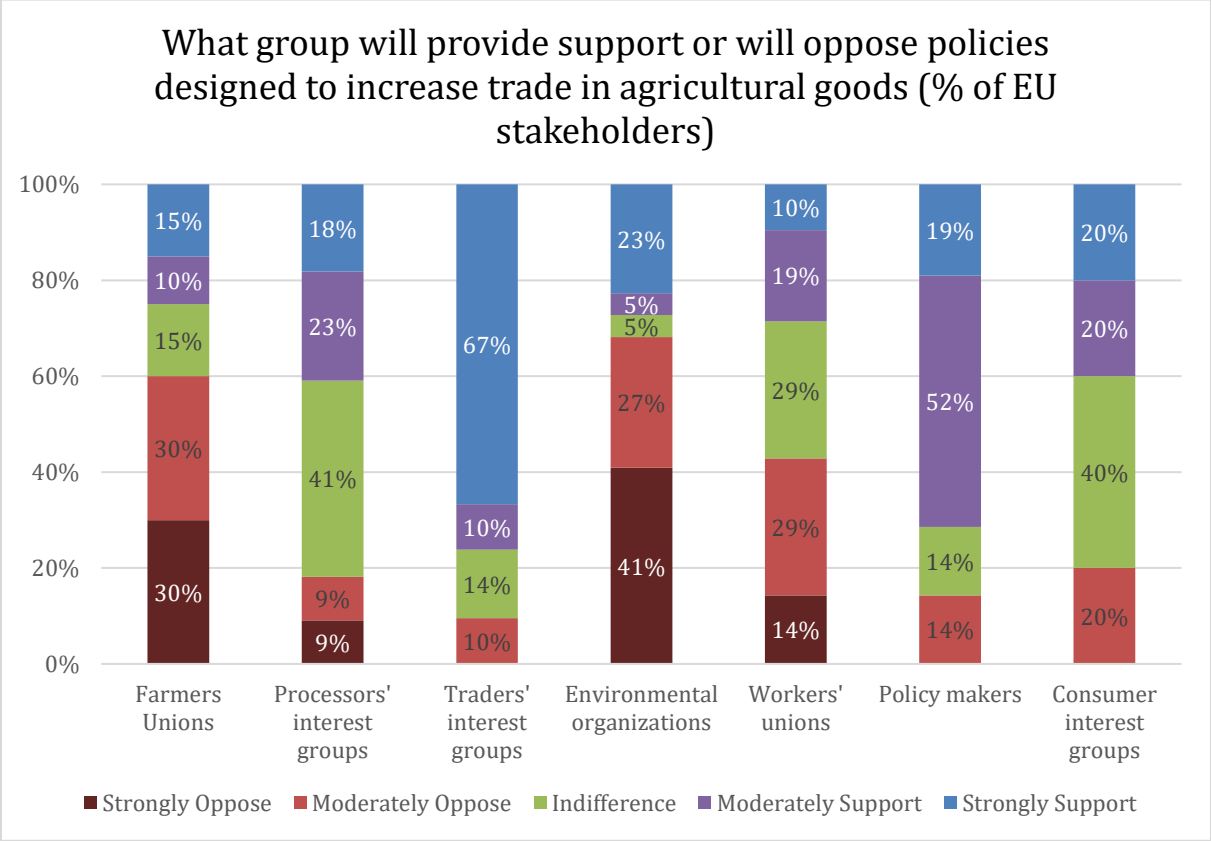


Perceived Environmental Impact from Agri-food Trade Liberalisation on Different Countries by Stakeholders in Round 1

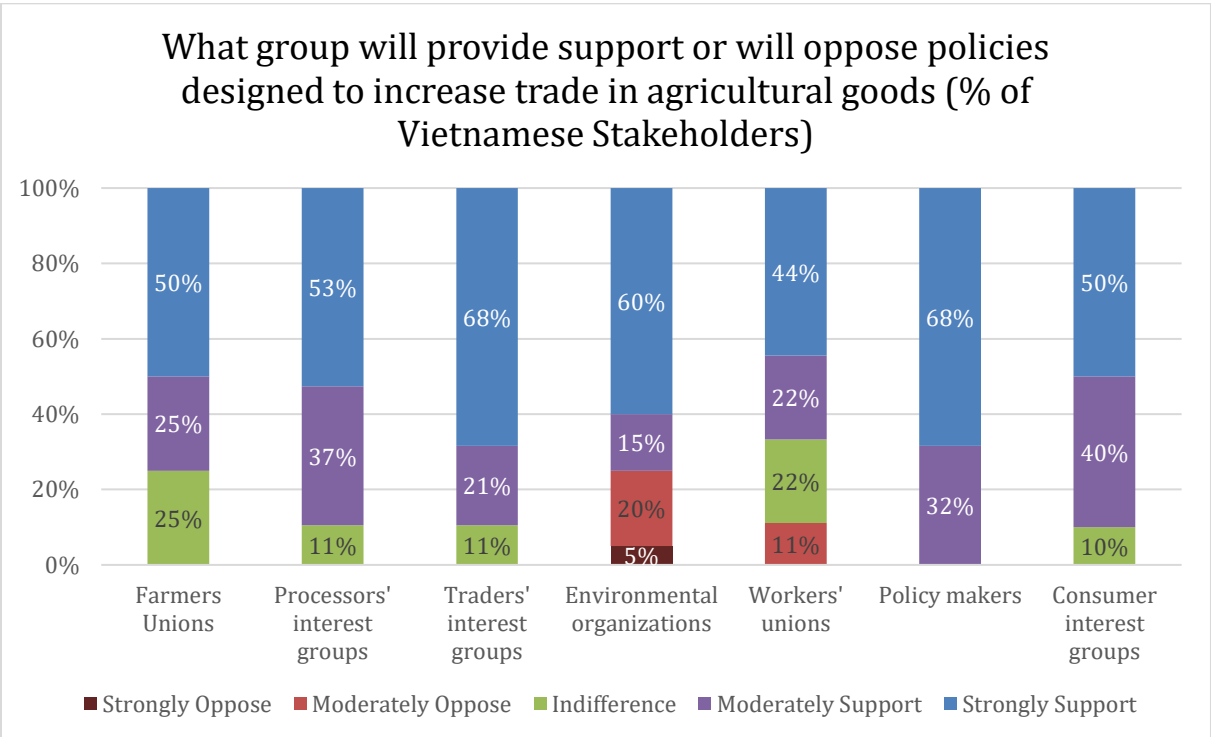


Round 1: What Group Stakeholders believe would oppose or support policies designed to increase agri-food trade

EU Stakeholders

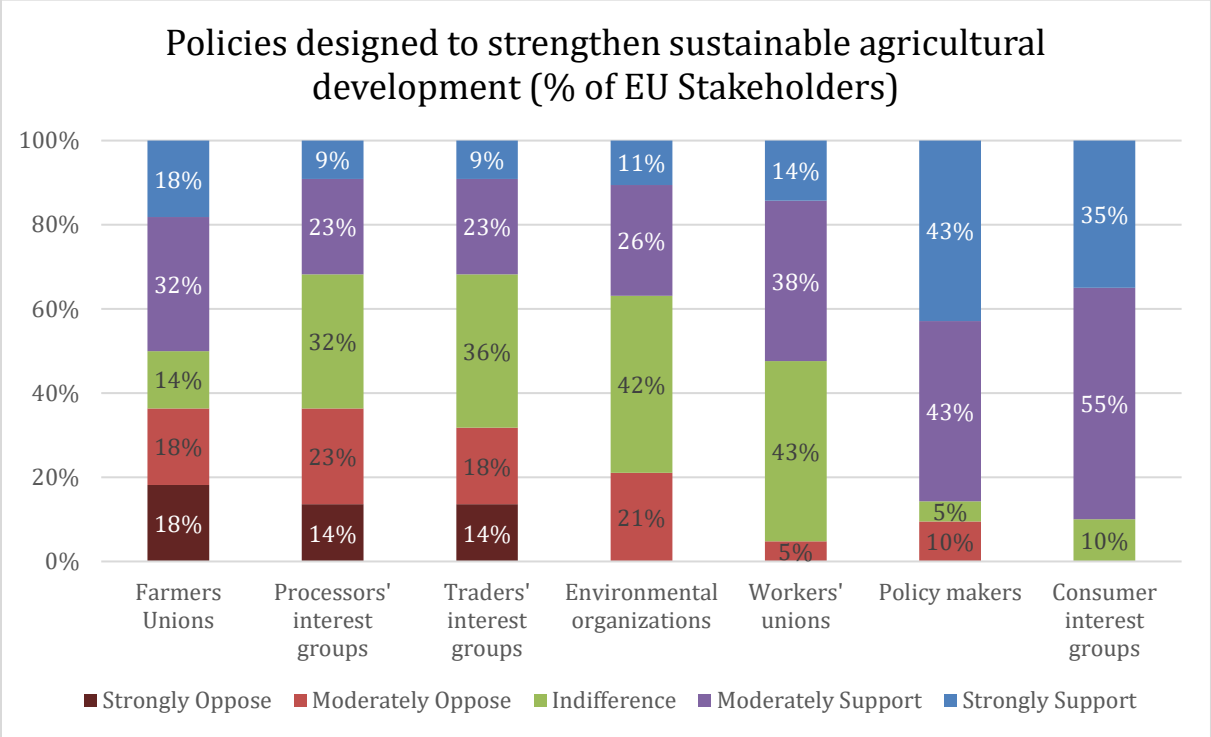


Vietnamese Stakeholders

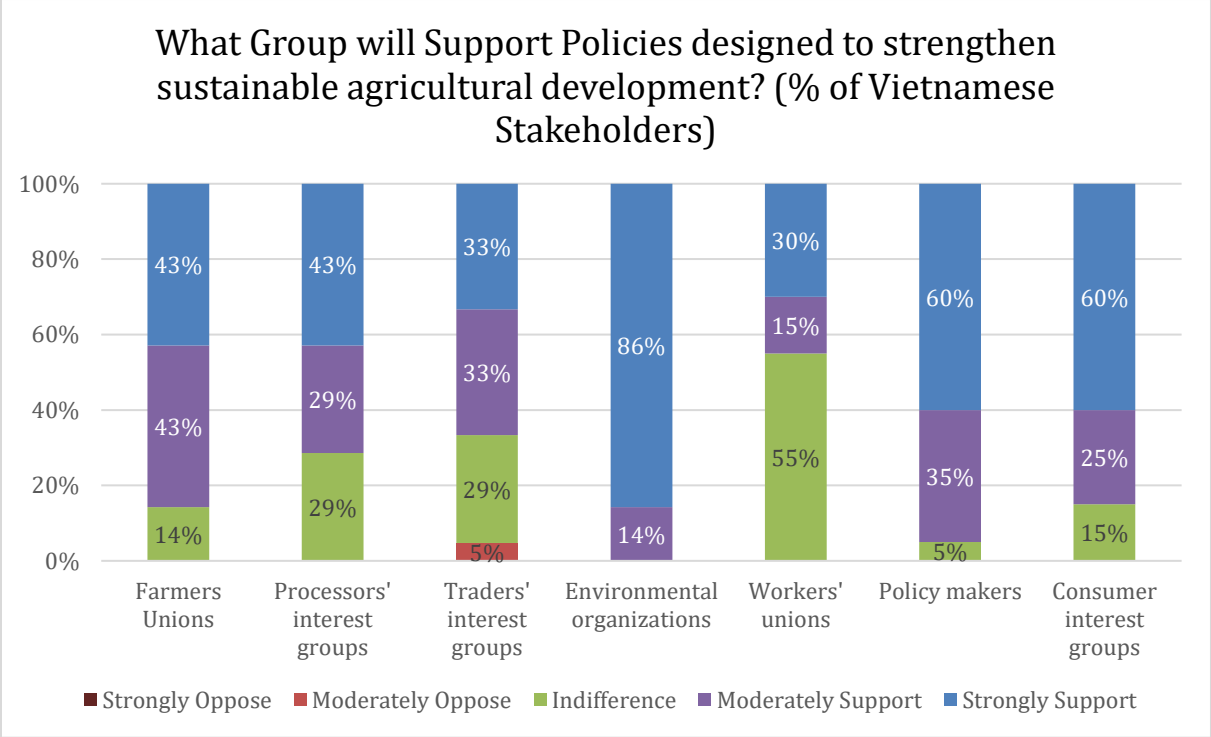


Round 1: What group Stakeholders believe would oppose or support polices designed to strengthen agricultural development

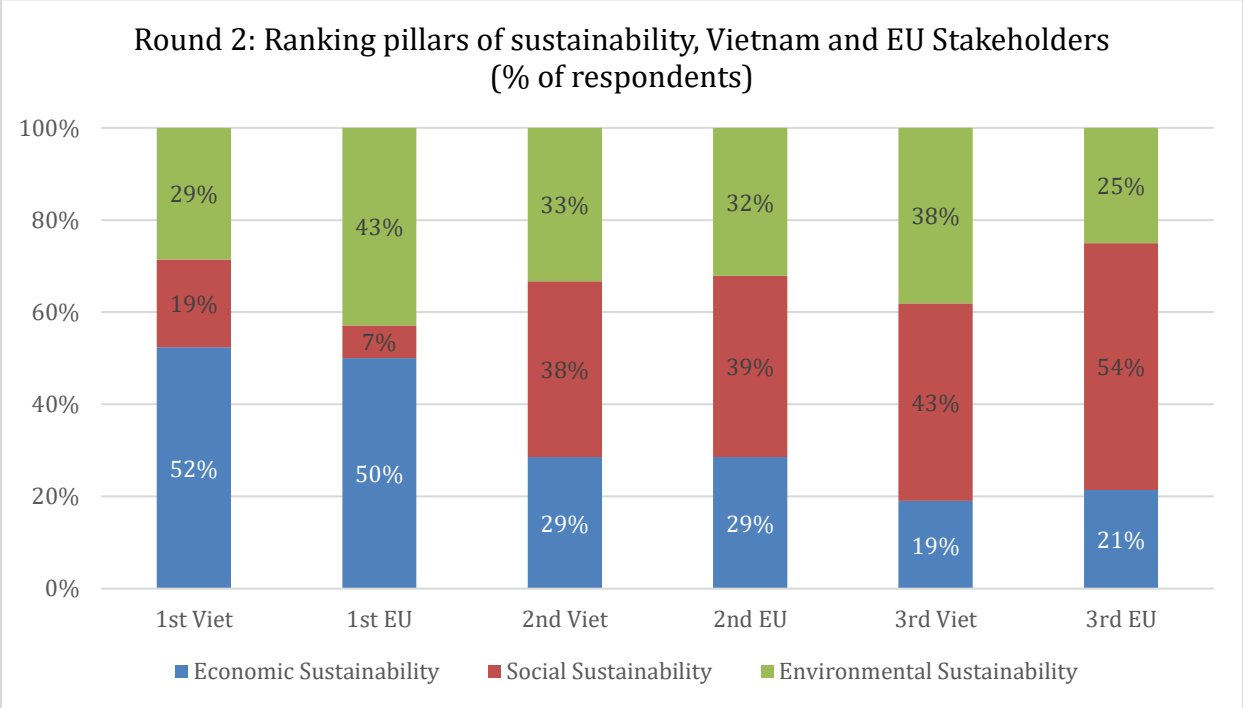
EU Stakeholders

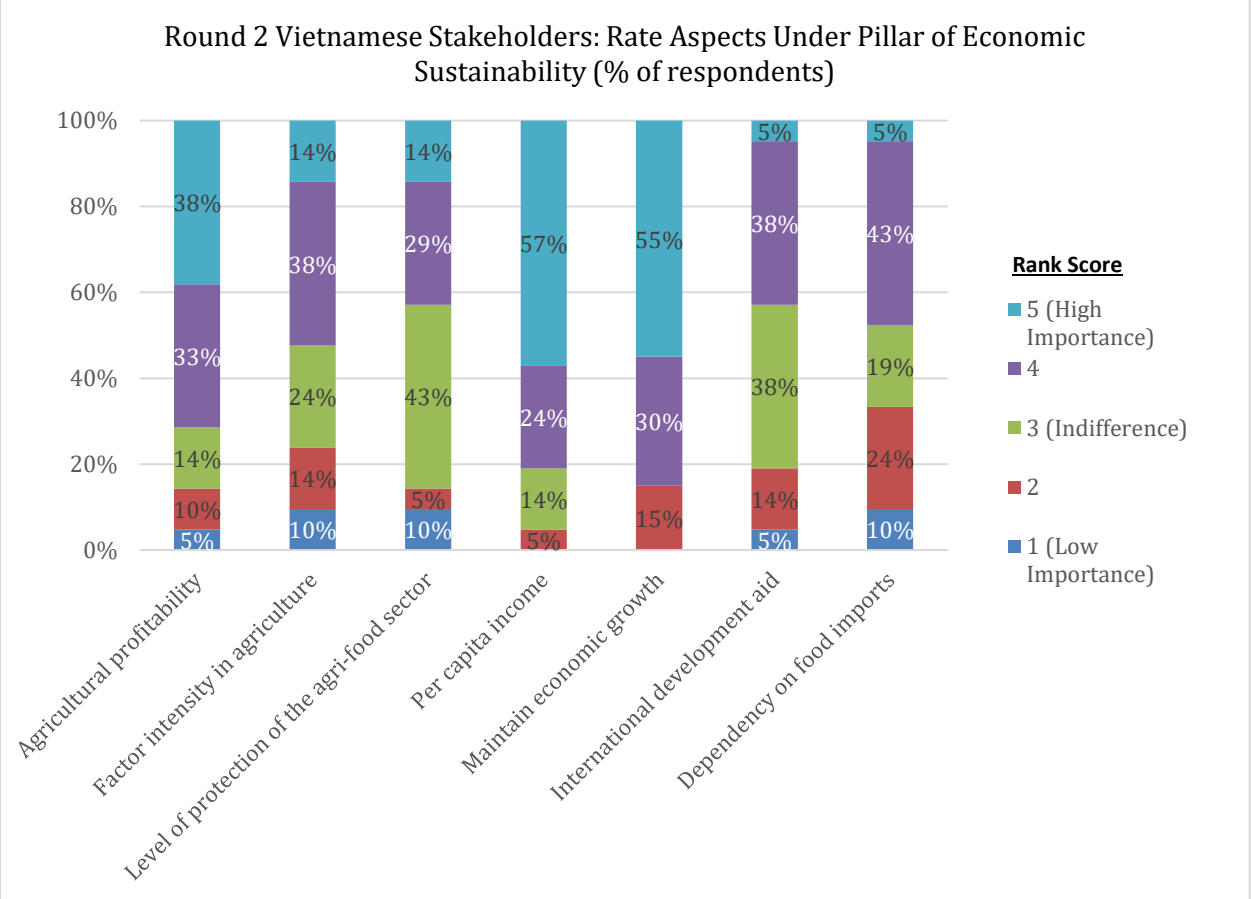


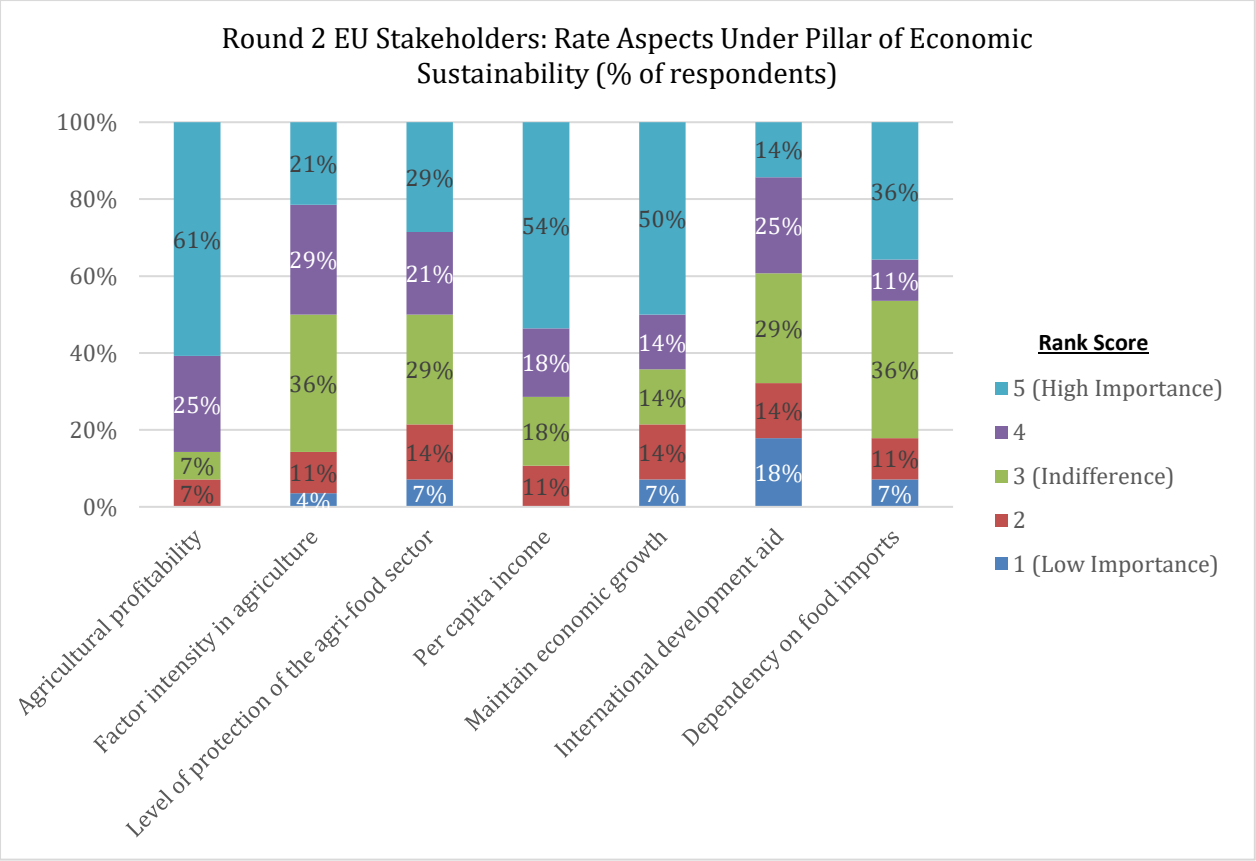
Vietnamese Stakeholders

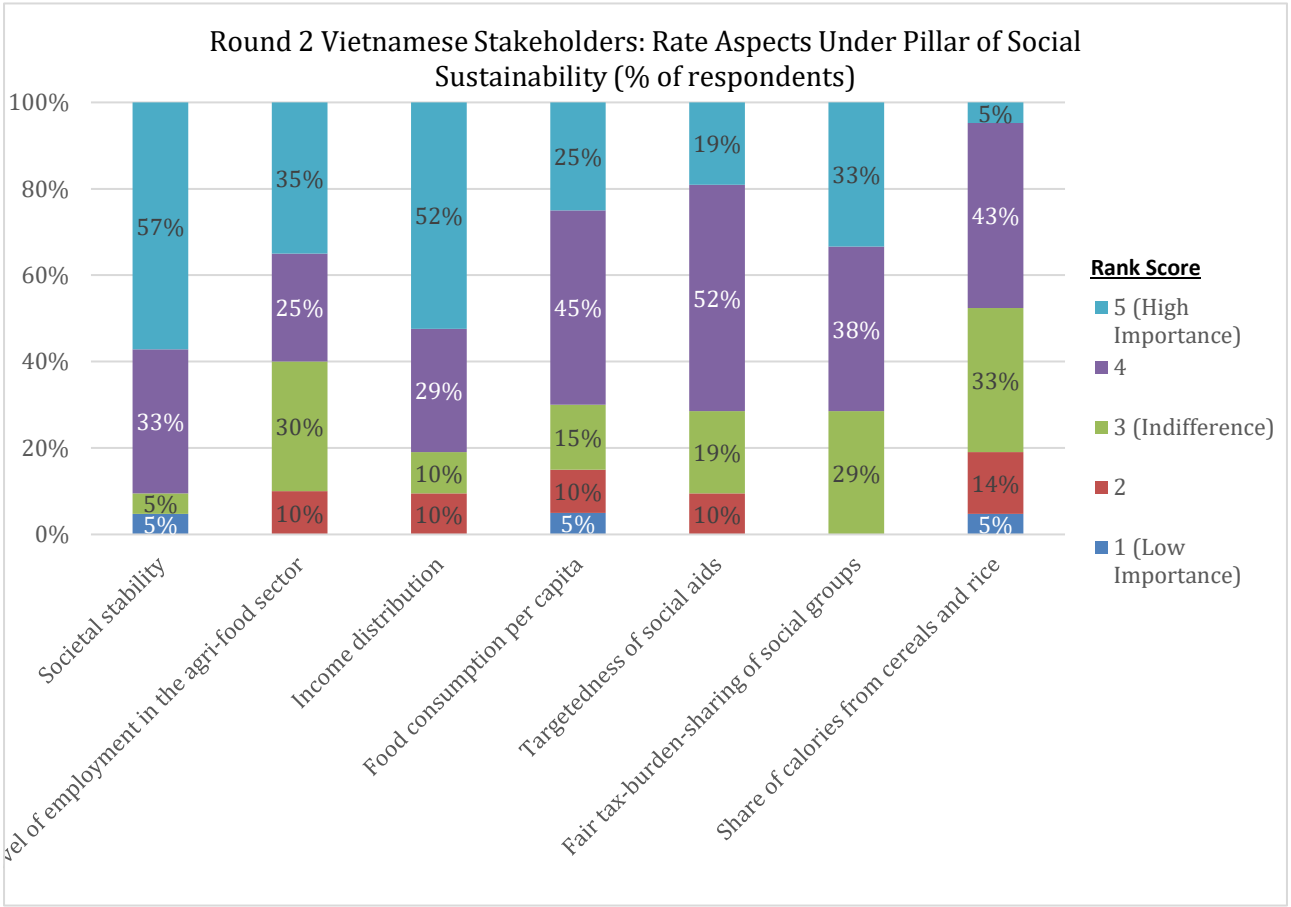


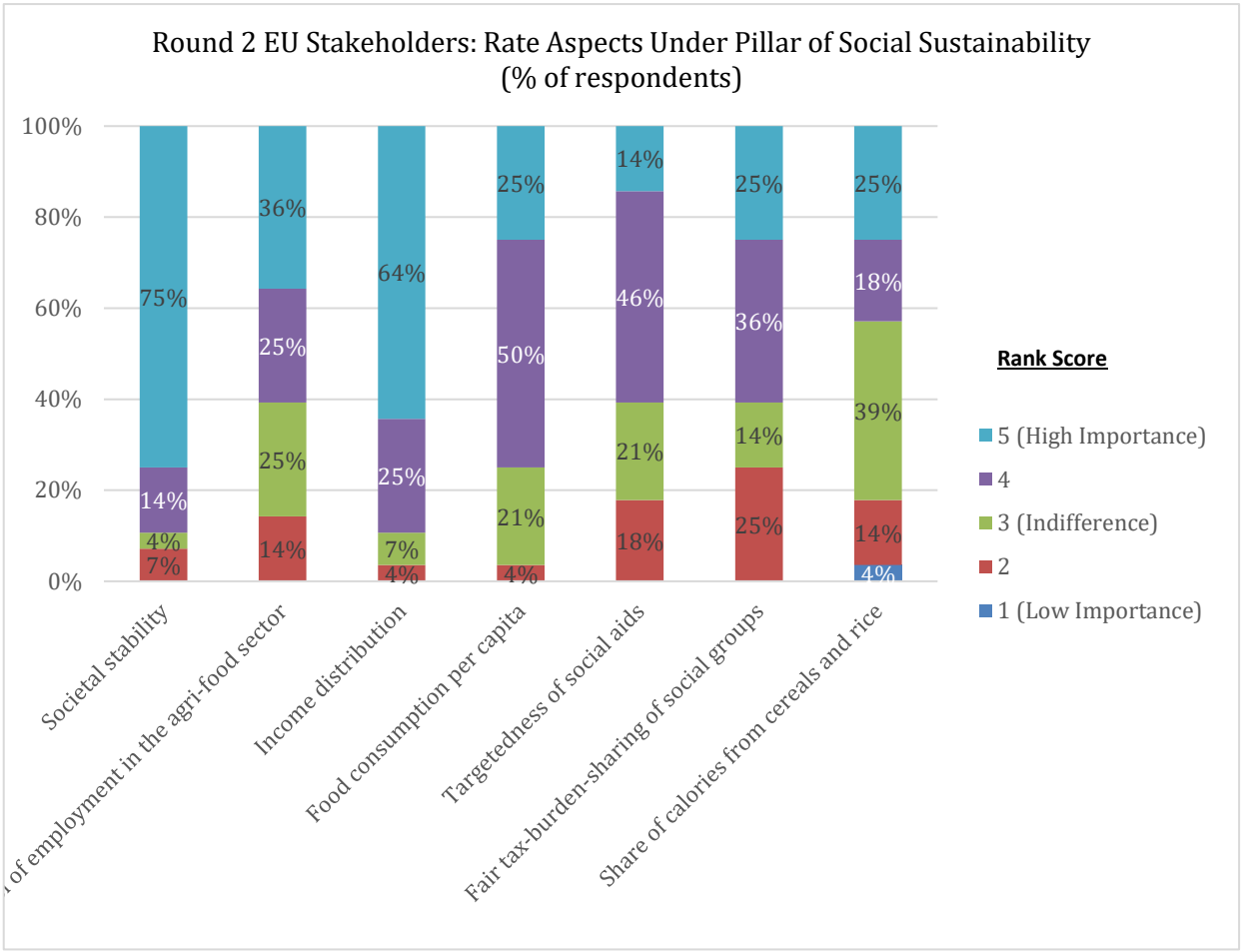
Round 2

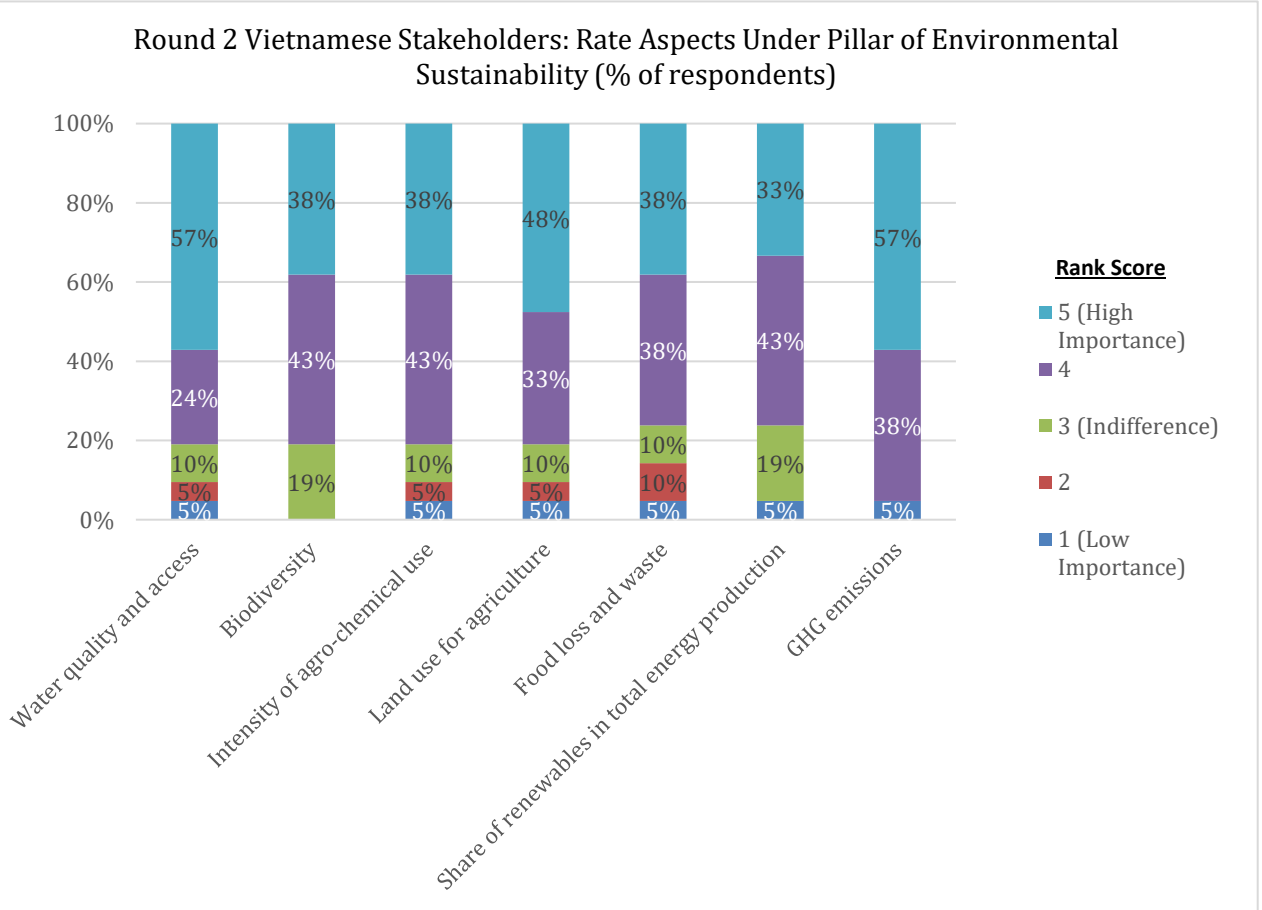

Round 2: Ranking pillars of sustainability, Vietnam and EU Stakeholders (% of respondents)
100%
80%
60%
40%
20%
0%
29%
19%
52%
43%
7%
50%
33%
38%
29%
32%
39%
29%
38%
43%
19%
25%
54%
21%
1st Viet
1st EU
2nd Viet
2nd EU
3rd Viet
3rd EU
Economic Sustainability
Social Sustainability
Environmental Sustainability

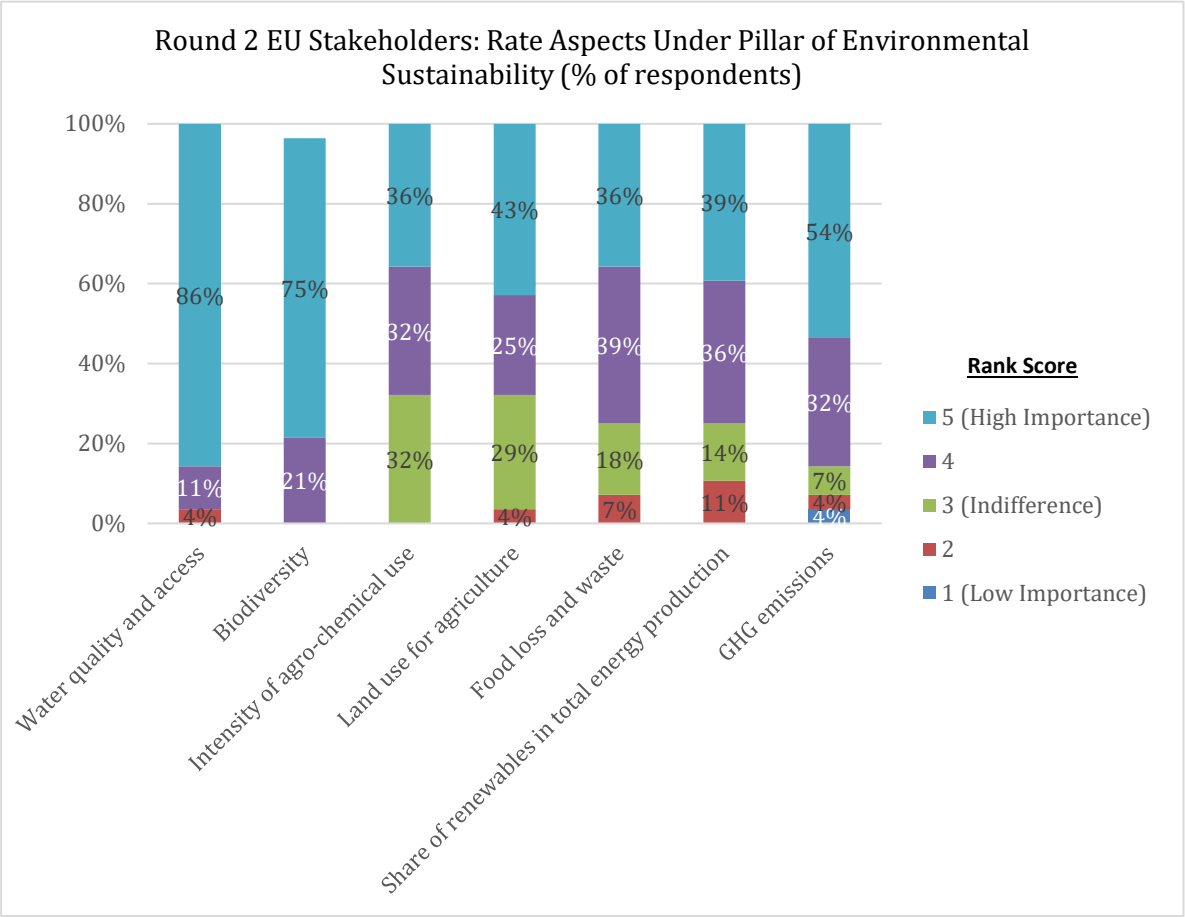

Round 2 Vietnamese Stakeholders: Rate Aspects Under Pillar of Economic Sustainability (% of respondents)
100%
80%
60%
40%
20%
0%
38%
33%
14%
10%
5%
14%
38%
24%
14%
10%
14%
29%
43%
5%
10%
57%
24%
14%
5%
55%
30%
15%
5%
38%
38%
14%
5%
5%
43%
19%
24%
10%
Agricultural profitability
Factor intensity in agriculture
Level of protection of the agri-food sector
Per capita income
Maintain economic growth
International development aid
Dependency on food imports
Rank Score
5 (High Importance)
4
3 (Indifference)
2
1 (Low Importance)


Round 2 EU Stakeholders: Rate Aspects Under Pillar of Economic Sustainability (% of respondents)
100%
80%
60%
40%
20%
0%
61%
25%
7%
7%
21%
29%
36%
11%
4%
29%
21%
29%
14%
7%
54%
18%
18%
11%
50%
14%
14%
7%
14%
25%
29%
14%
18%
36%
11%
36%
11%
7%
Agricultural profitability
Factor intensity in agriculture
Level of protection of the agri-food sector
Per capita income
Maintain economic growth
International development aid
Dependency on food imports
Rank Score
5 (High Importance)
4
3 (Indifference)
2
1 (Low Importance)

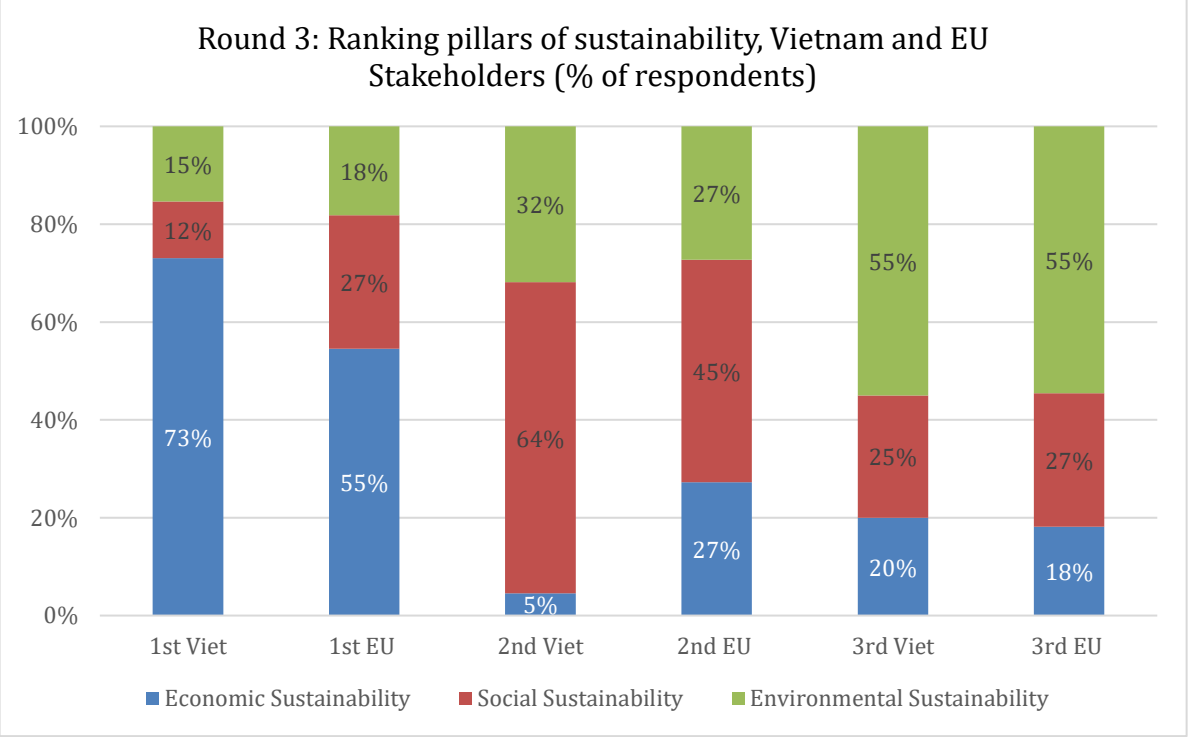

Round 2 Vietnamese Stakeholders: Rate Aspects Under Pillar of Social Sustainability (% of respondents)
100%
80%
60%
40%
20%
0%
57%
33%
5%
5%
35%
25%
30%
10%
52%
29%
10%
10%
25%
45%
15%
10%
5%
19%
52%
19%
10%
33%
38%
29%
5%
43%
33%
14%
5%
Societal stability
vel of employment in the agri-food sector
Income distribution
Food consumption per capita
Targetedness of social aids
Fair tax-burden-sharing of social groups
Share of calories from cereals and rice
Rank Score
5 (High Importance)
4
3 (Indifference)
2
1 (Low Importance)

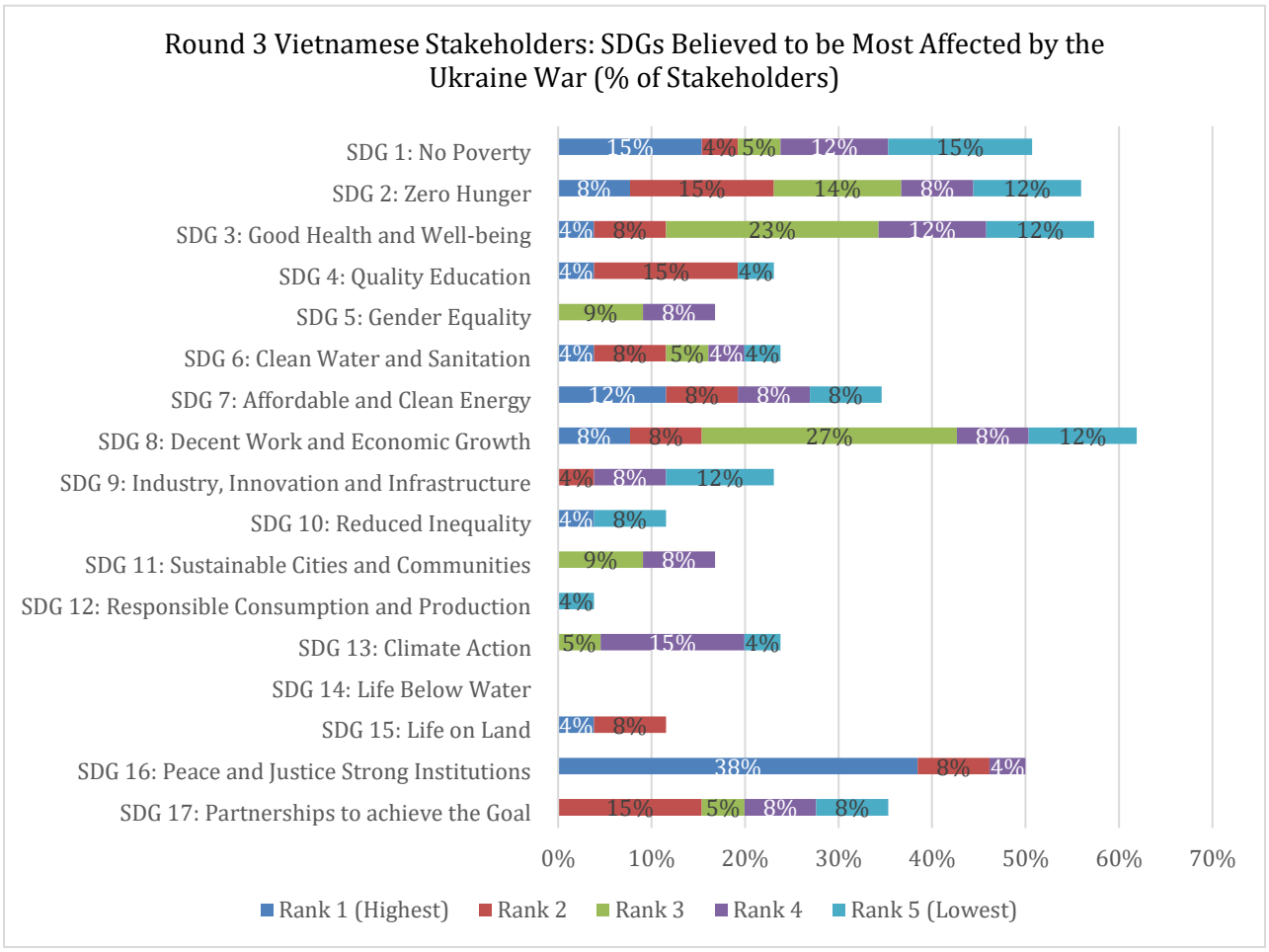

Round 2 EU Stakeholders: Rate Aspects Under Pillar of Social Sustainability (% of respondents)
100%
80%
60%
40%
20%
0%
75%
14%
4%
7%
36%
25%
25%
14%
64%
25%
7%
4%
25%
50%
21%
4%
14%
46%
21%
18%
25%
36%
14%
25%
25%
18%
39%
14%
4%
Societal stability
of employment in the agri-food sector
Income distribution
Food consumption per capita
Targetedness of social aids
Fair tax-burden-sharing of social groups
Share of calories from cereals and rice
Rank Score
5 (High Importance)
4
3 (Indifference)
2
1 (Low Importance)

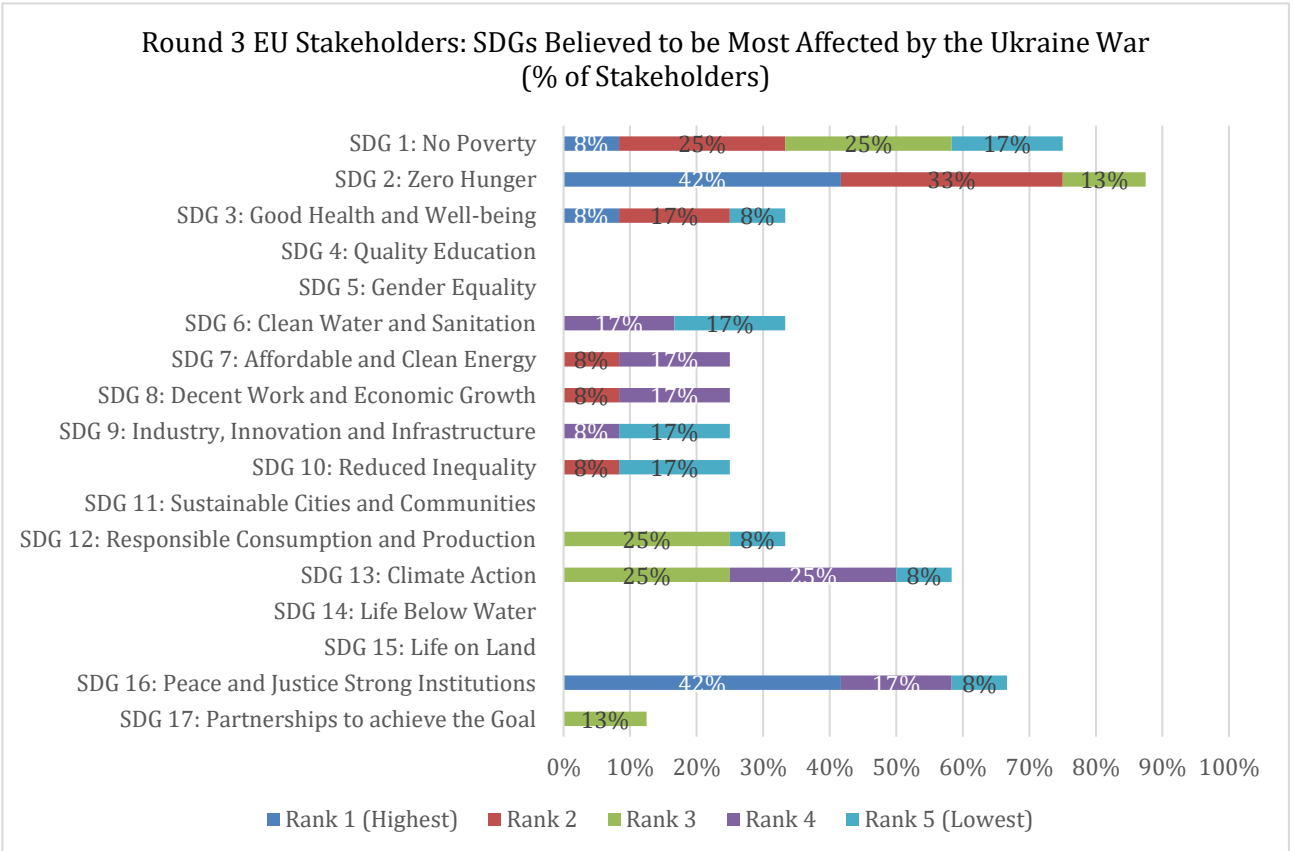

Round 2 Vietnamese Stakeholders: Rate Aspects Under Pillar of Environmental Sustainability (% of respondents)
100%
80%
60%
40%
20%
0%
57%
24%
10%
5%
5%
38%
43%
19%
38%
43%
10%
5%
5%
48%
33%
10%
5%
5%
38%
38%
10%
10%
5%
33%
43%
19%
5%
57%
38%
5%
Water quality and access
Biodiversity
Intensity of agro-chemical use
Land use for agriculture
Food loss and waste
Share of renewables in total energy production
GHG emissions
Rank Score
5 (High Importance)
4
3 (Indifference)
2
1 (Low Importance)

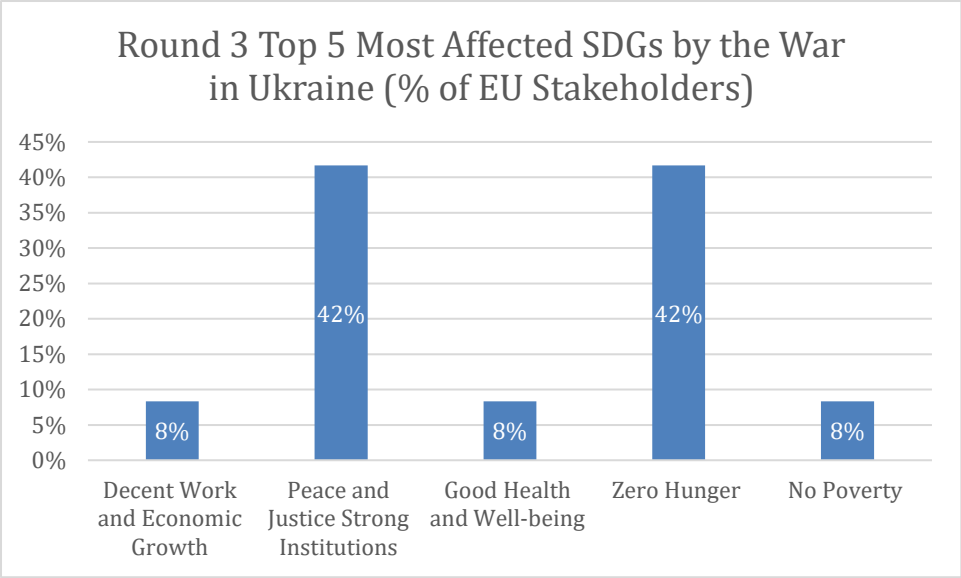

Round 2 EU Stakeholders: Rate Aspects Under Pillar of Environmental Sustainability (% of respondents)
100%
80%
60%
40%
20%
0%
86%
11%
4%
75%
21%
36%
32%
32%
43%
25%
29%
4%
36%
39%
18%
7%
39%
36%
14%
11%
54%
32%
7%
4%
4%
Water quality and access
Biodiversity
Intensity of agro-chemical use
Land use for agriculture
Food loss and waste
Share of renewables in total energy production
GHG emissions
Rank Score
5 (High Importance)
4
3 (Indifference)
2
1 (Low Importance)

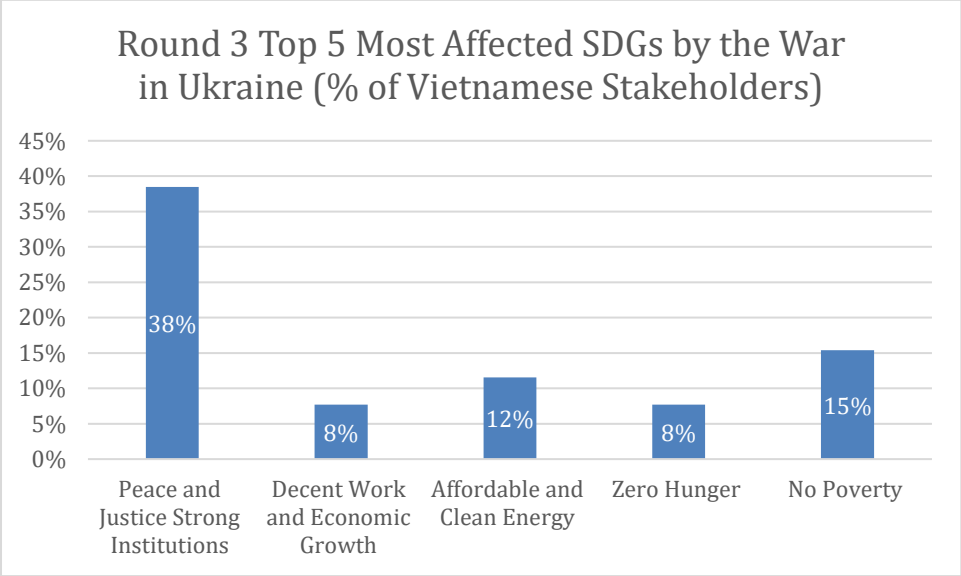
Round 3

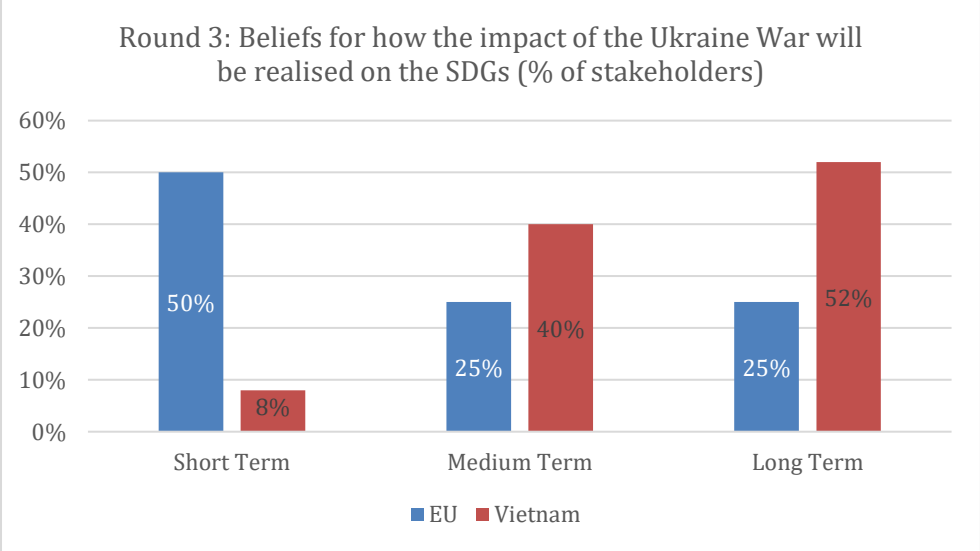

Round 3: Ranking pillars of sustainability, Vietnam and EU Stakeholders (% of respondents)
100%
80%
60%
40%
20%
0%
15%
12%
73%
18%
27%
55%
32%
64%
5%
27%
45%
27%
55%
25%
20%
55%
27%
18%
1st Viet
1st EU
2nd Viet
2nd EU
3rd Viet
3rd EU
Economic Sustainability
Social Sustainability
Environmental Sustainability

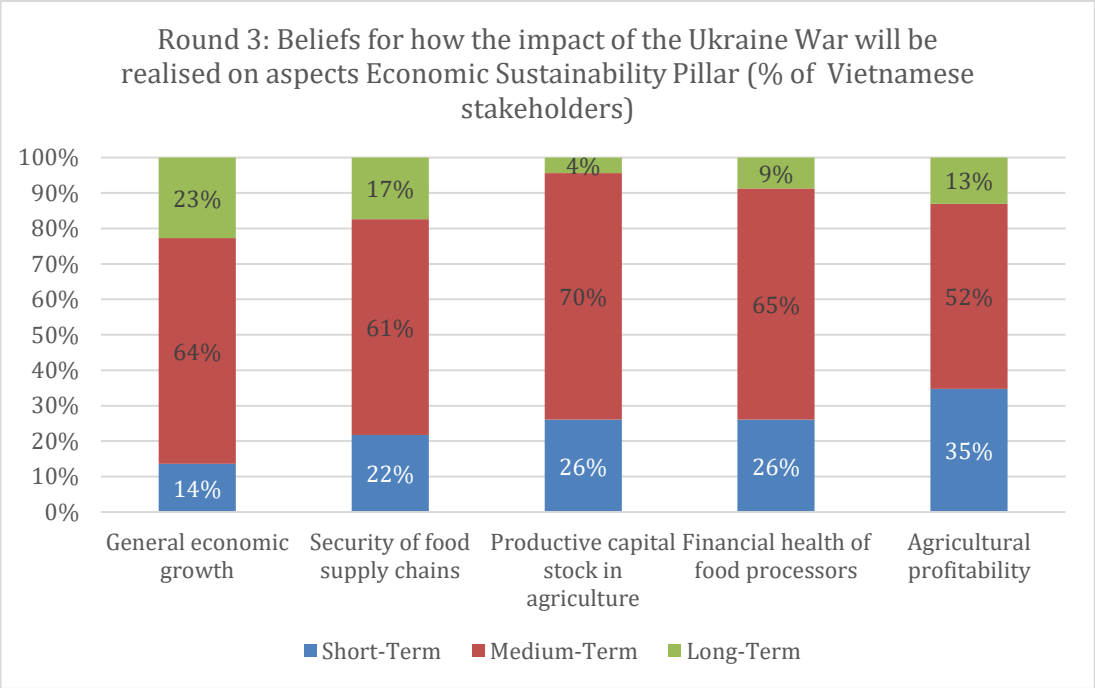

Round 3 Vietnamese Stakeholders: SDGs Believed to be Most Affected by the Ukraine War (% of Stakeholders)
SDG 1: No Poverty
SDG 2: Zero Hunger
SDG 3: Good Health and Well-being
SDG 4: Quality Education
SDG 5: Gender Equality
SDG 6: Clean Water and Sanitation
SDG 7: Affordable and Clean Energy
SDG 8: Decent Work and Economic Growth
SDG 9: Industry, Innovation and Infrastructure
SDG 10: Reduced Inequality
SDG 11: Sustainable Cities and Communities
SDG 12: Responsible Consumption and Production
SDG 13: Climate Action
SDG 14: Life Below Water
SDG 15: Life on Land
SDG 16: Peace and Justice Strong Institutions
SDG 17: Partnerships to achieve the Goal
0% 10% 20% 30% 40% 50% 60% 70%
Rank 1 (Highest) Rank 2 Rank 3 Rank 4 Rank 5 (Lowest)

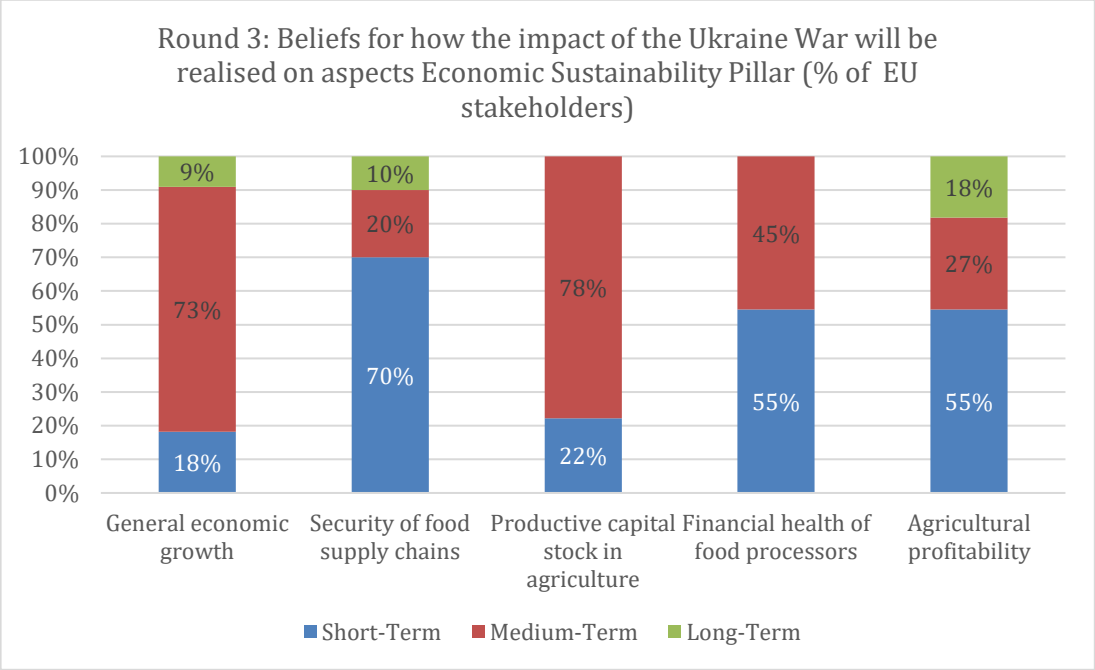

Round 3 EU Stakeholders: SDGs Believed to be Most Affected by the Ukraine War (% of Stakeholders)
SDG 1: No Poverty
SDG 2: Zero Hunger
SDG 3: Good Health and Well-being
SDG 4: Quality Education
SDG 5: Gender Equality
SDG 6: Clean Water and Sanitation
SDG 7: Affordable and Clean Energy
SDG 8: Decent Work and Economic Growth
SDG 9: Industry, Innovation and Infrastructure
SDG 10: Reduced Inequality
SDG 11: Sustainable Cities and Communities
SDG 12: Responsible Consumption and Production
SDG 13: Climate Action
SDG 14: Life Below Water
SDG 15: Life on Land
SDG 16: Peace and Justice Strong Institutions
SDG 17: Partnerships to achieve the Goal
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Rank 1 (Highest) Rank 2 Rank 3 Rank 4 Rank 5 (Lowest)

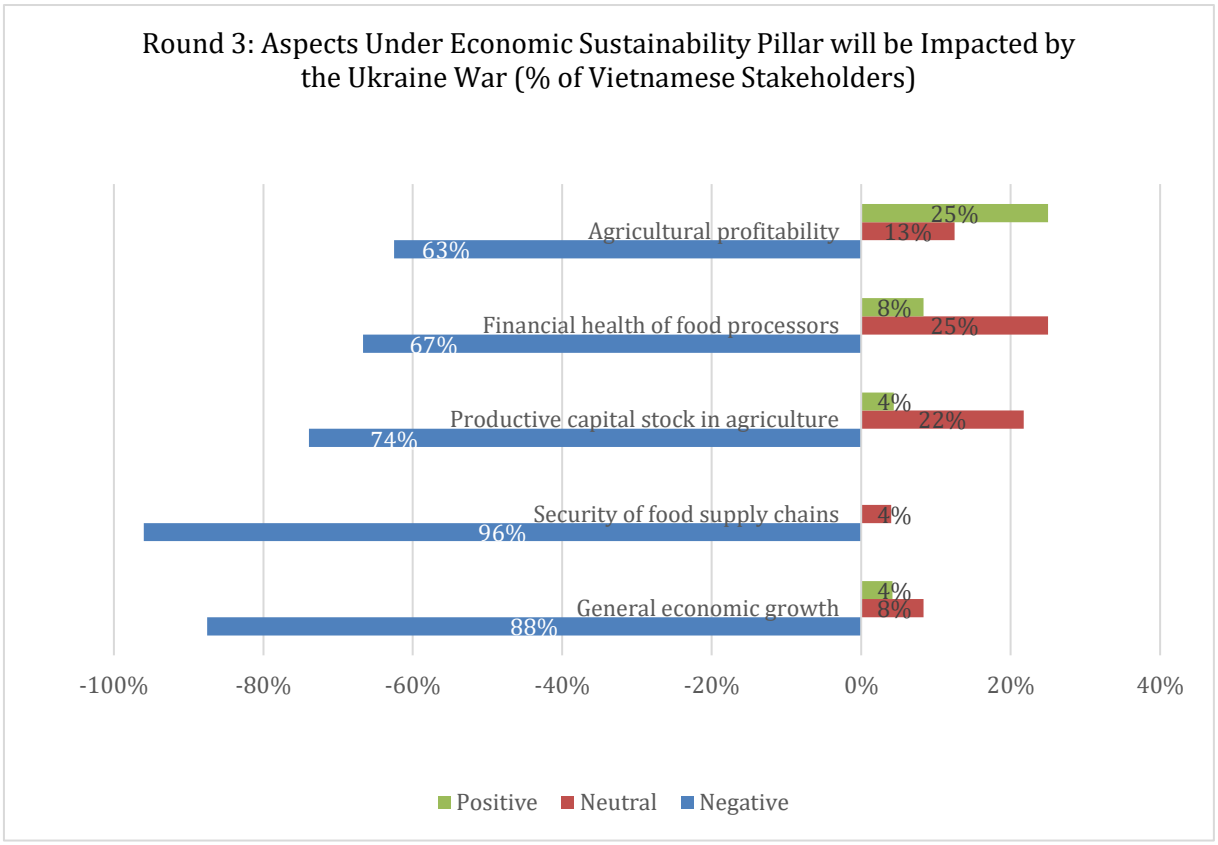

Round 3 Top 5 Most Affected SDGs by the War in Ukraine (% of EU Stakeholders)
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
8%
42%
8%
42%
8%
Decent Work and Economic Growth
Peace and Justice Strong Institutions
Good Health and Well-being
Zero Hunger
No Poverty

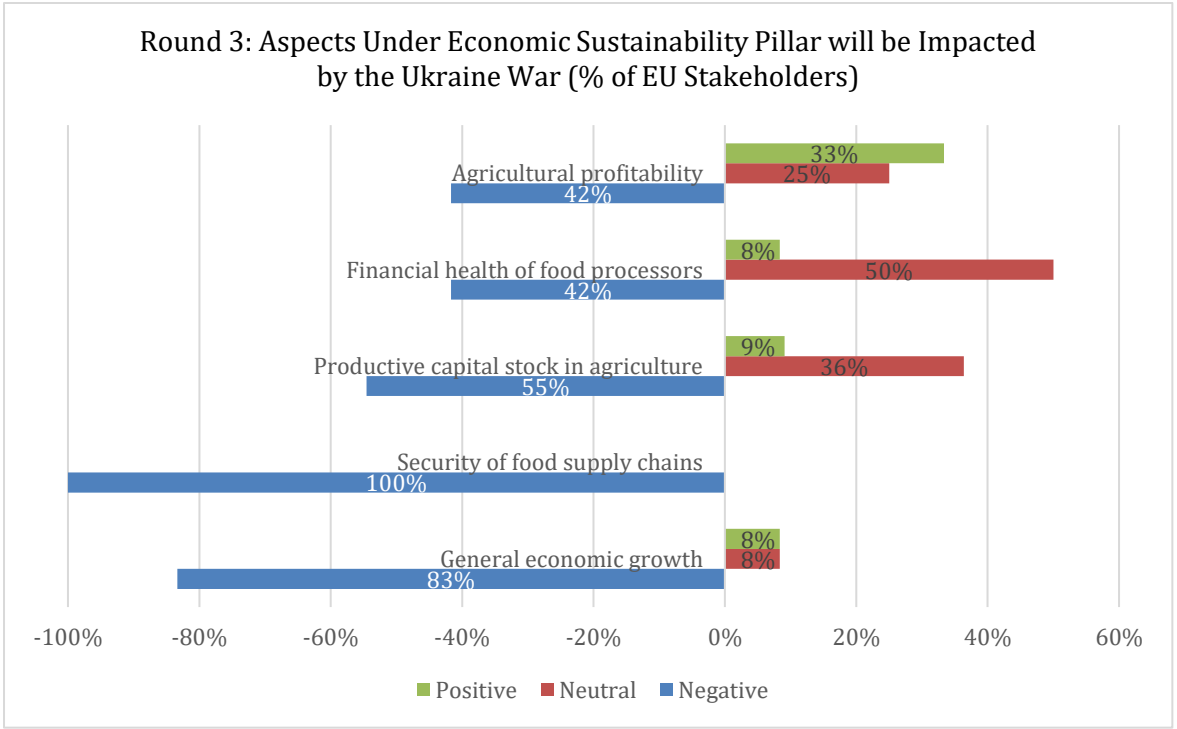

Round 3 Top 5 Most Affected SDGs by the War in Ukraine (% of Vietnamese Stakeholders)
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
38%
8%
12%
8%
15%
Peace and Justice Strong Institutions
Decent Work and Economic Growth
Affordable and Clean Energy
Zero Hunger
No Poverty

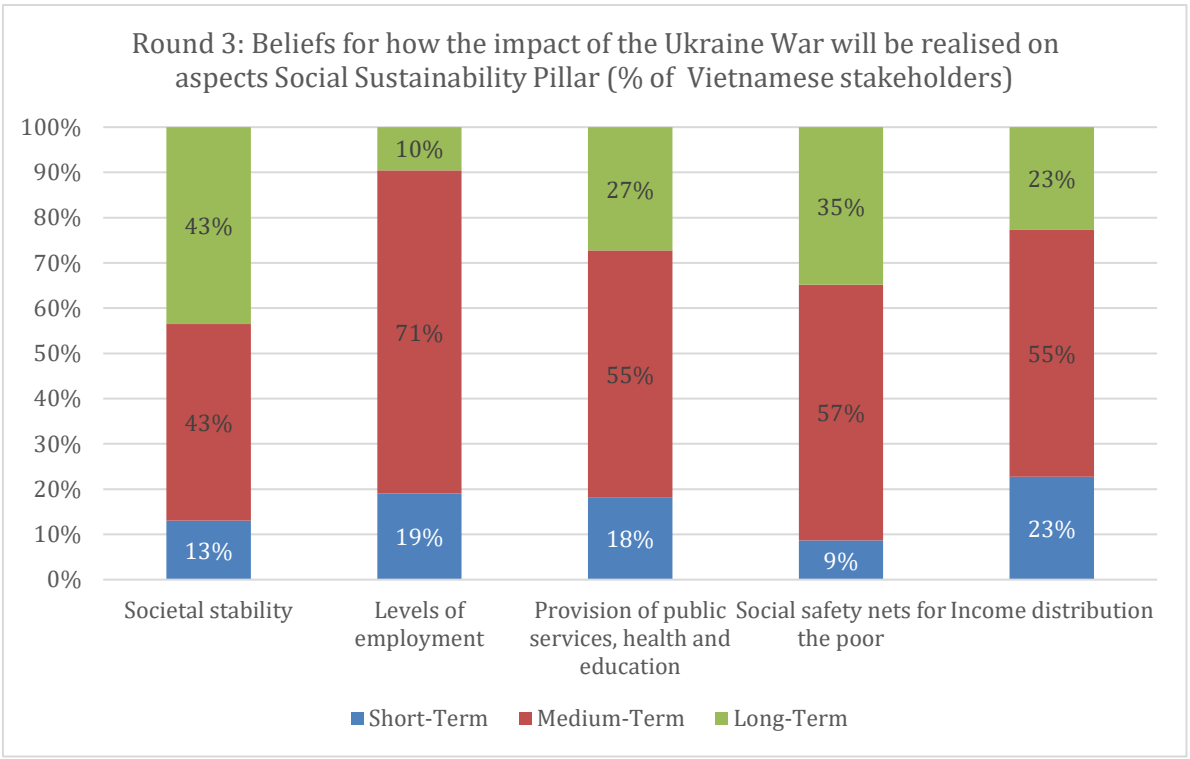

Round 3: Beliefs for how the impact of the Ukraine War will be realised on the SDGs (% of stakeholders)
60%
50%
40%
30%
20%
10%
0%
50%
8%
25%
40%
25%
52%
Short Term
Medium Term
Long Term
EU
Vietnam

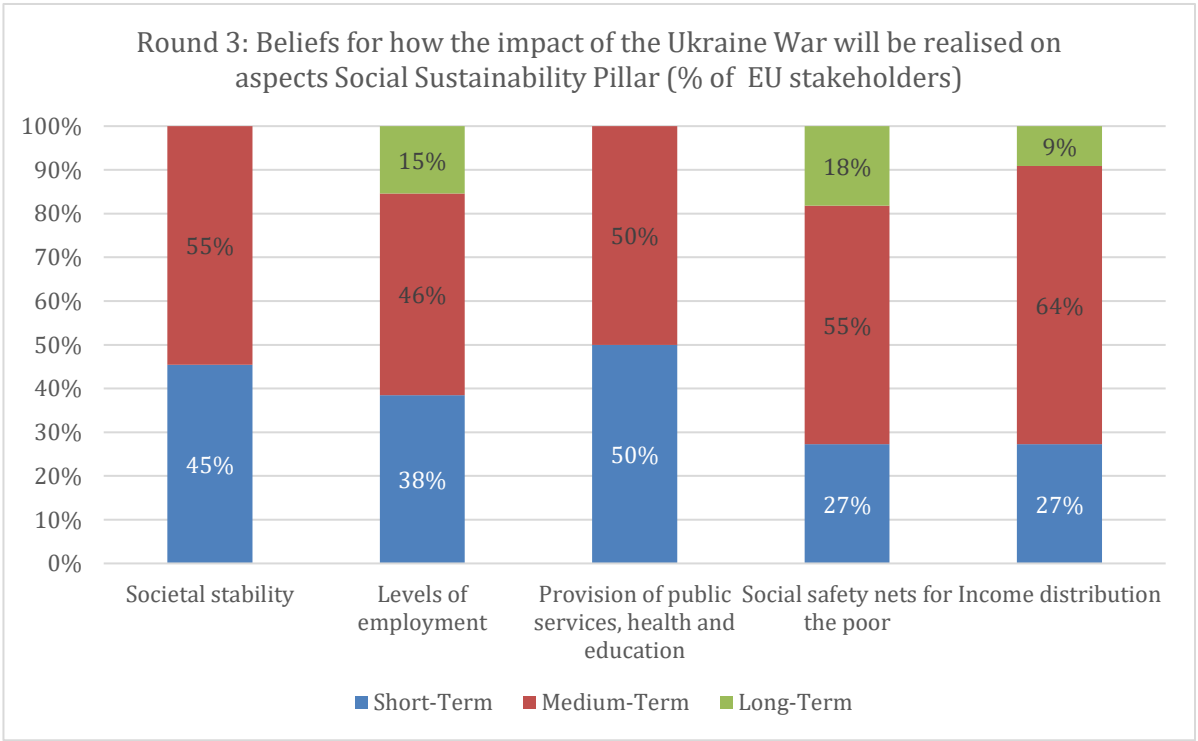

Round 3: Beliefs for how the impact of the Ukraine War will be realised on aspects Economic Sustainability Pillar (% of Vietnamese stakeholders)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
23%
64%
14%
17%
61%
22%
4%
70%
26%
9%
65%
26%
13%
52%
35%
General economic growth
Security of food supply chains
Productive capital stock in agriculture
Financial health of food processors
Agricultural profitability
Short-Term
Medium-Term
Long-Term

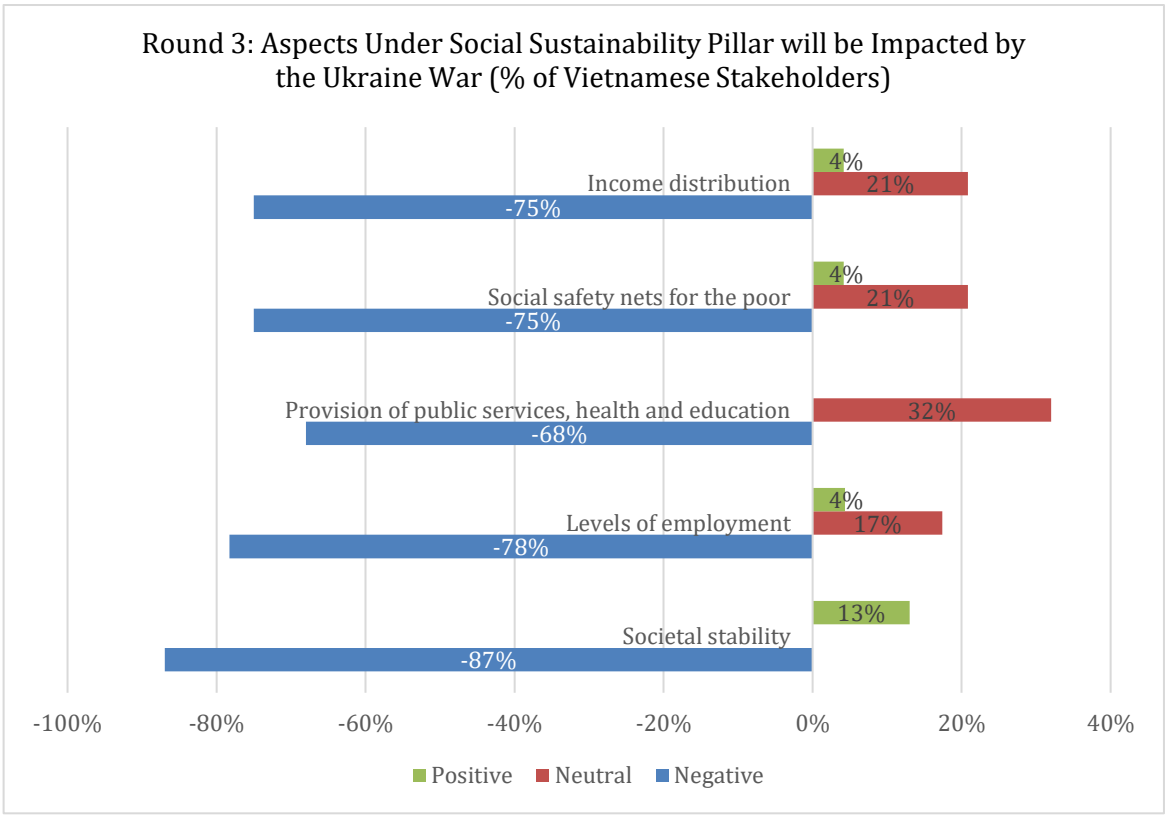

Round 3: Beliefs for how the impact of the Ukraine War will be realised on aspects Economic Sustainability Pillar (% of EU stakeholders)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
9%
73%
18%
10%
20%
70%
78%
22%
45%
55%
18%
27%
55%
General economic growth
Security of food supply chains
Productive capital stock in agriculture
Financial health of food processors
Agricultural profitability
Short-Term
Medium-Term
Long-Term

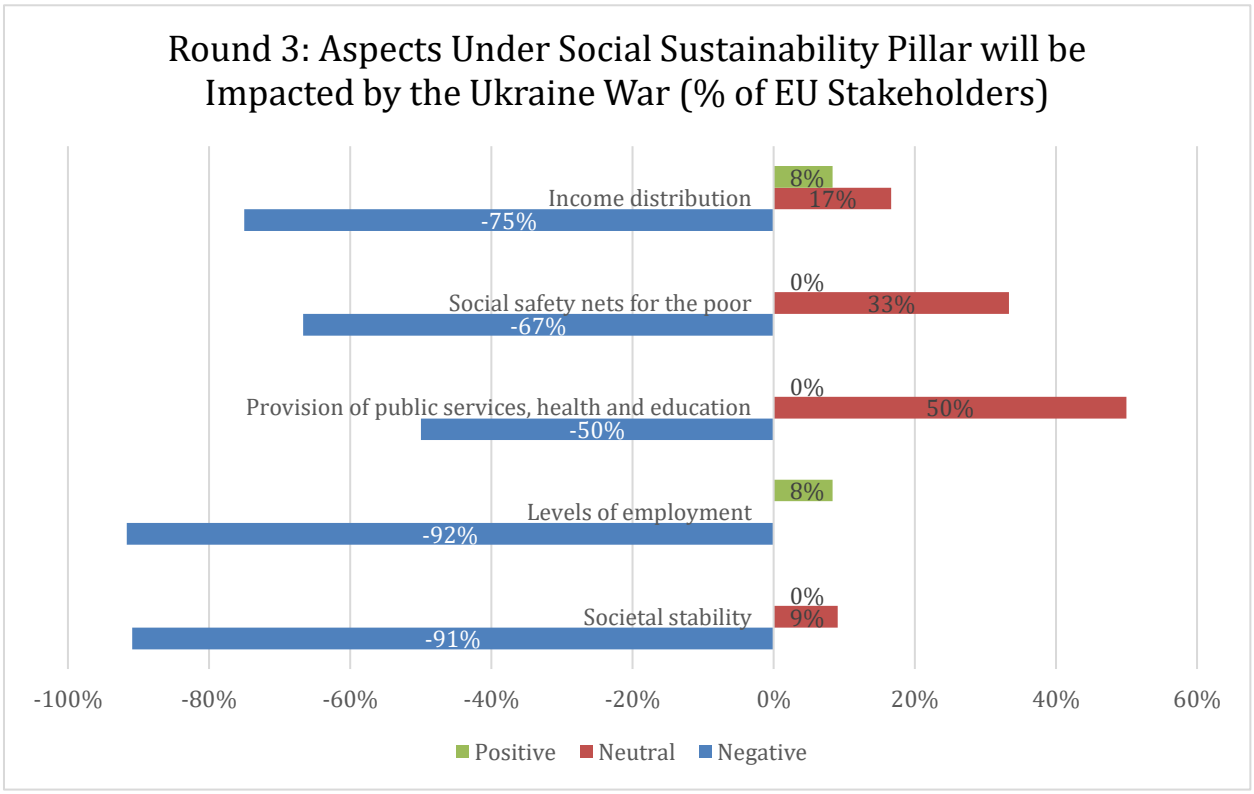

Round 3: Aspects Under Economic Sustainability Pillar will be Impacted by the Ukraine War (% of Vietnamese Stakeholders)
Agricultural profitability
25%
13%
63%
Financial health of food processors
8%
25%
67%
Productive capital stock in agriculture
4%
22%
74%
Security of food supply chains
4%
96%
General economic growth
4%
8%
88%
-100%
-80%
-60%
-40%
-20%
0%
20%
40%
Positive
Neutral
Negative

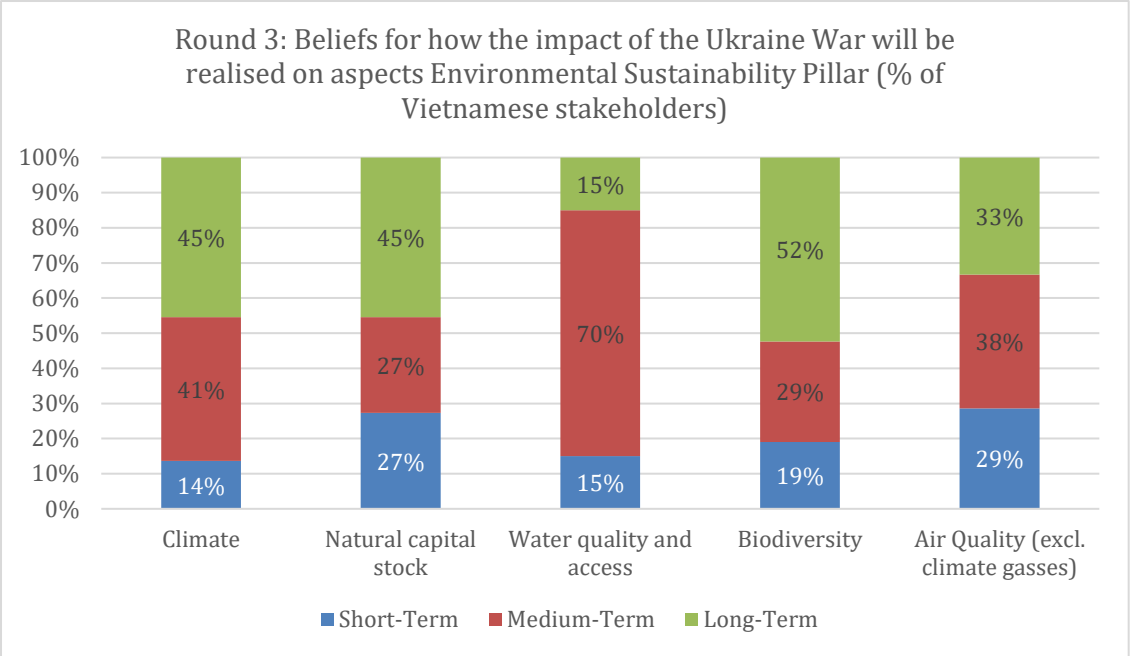

Round 3: Aspects Under Economic Sustainability Pillar will be Impacted by the Ukraine War (% of EU Stakeholders)
Agricultural profitability
33%
25%
42%
Financial health of food processors
8%
50%
42%
Productive capital stock in agriculture
9%
36%
55%
Security of food supply chains
100%
General economic growth
8%
8%
83%
-100%
-80%
-60%
-40%
-20%
0%
20%
40%
60%
Positive
Neutral
Negative

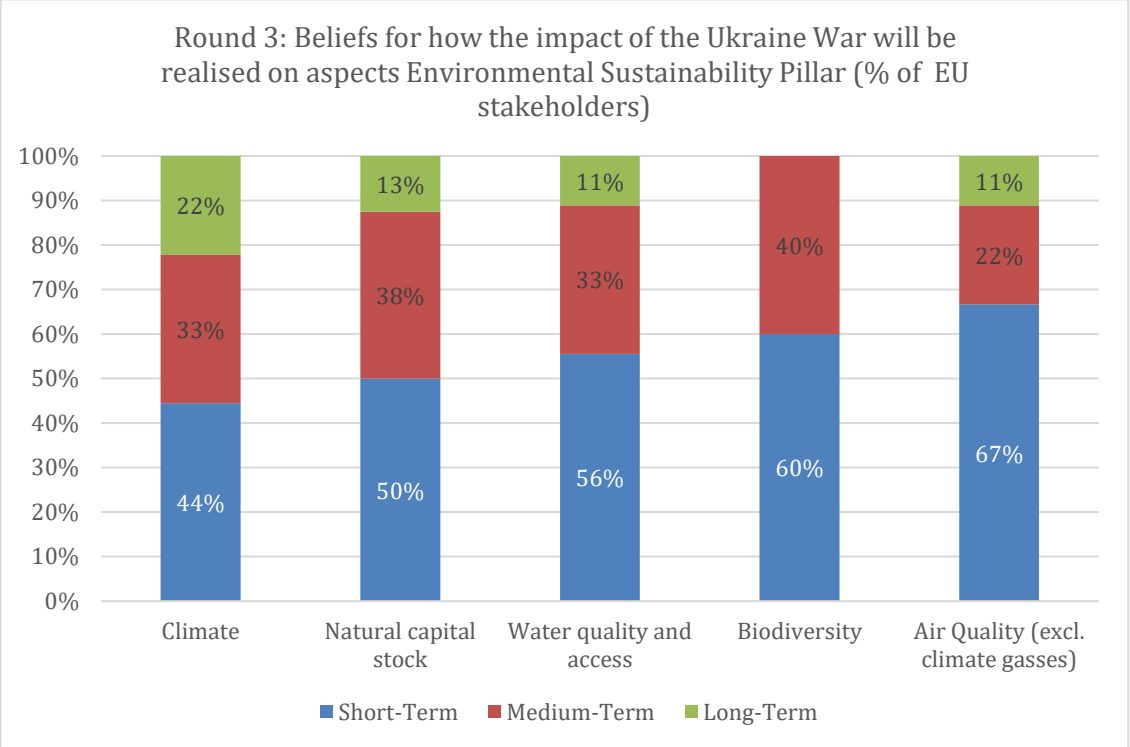

Round 3: Beliefs for how the impact of the Ukraine War will be realised on aspects Social Sustainability Pillar (% of Vietnamese stakeholders)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
43%
43%
13%
10%
71%
19%
27%
55%
18%
35%
57%
9%
23%
55%
23%
Societal stability
Levels of employment
Provision of public services, health and education
Social safety nets for the poor
Income distribution
Short-Term
Medium-Term
Long-Term

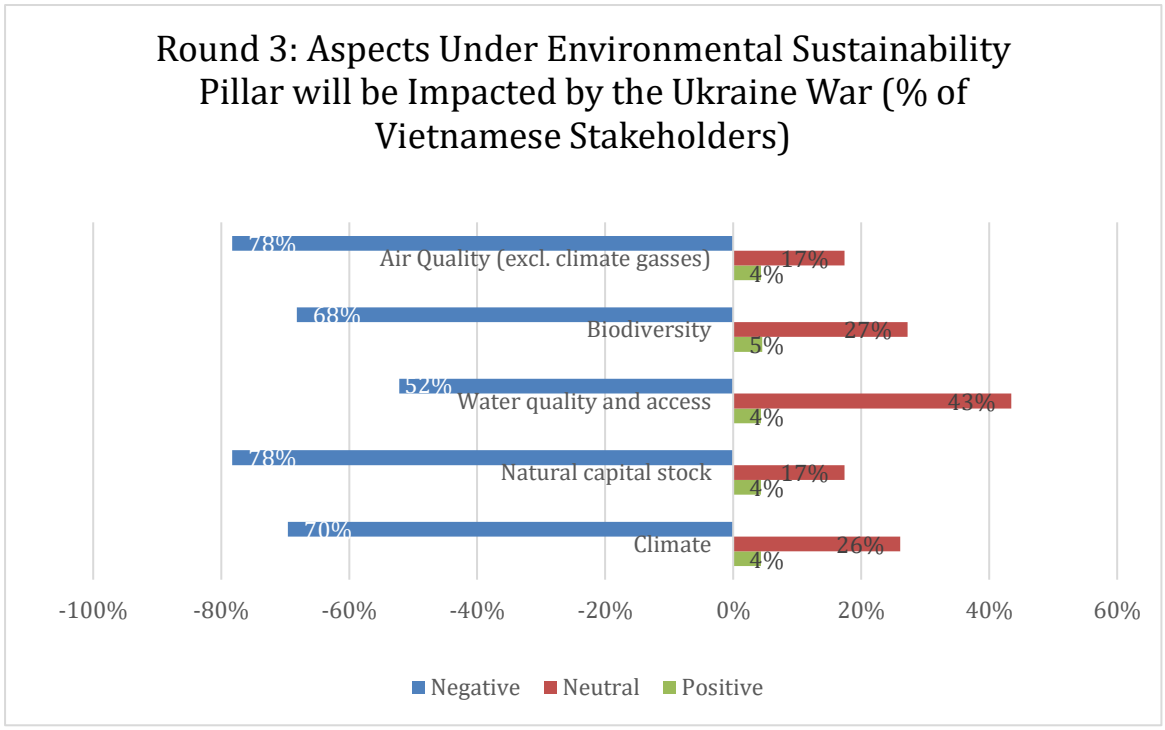

Round 3: Beliefs for how the impact of the Ukraine War will be realised on aspects Social Sustainability Pillar (% of EU stakeholders)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
55%
45%
15%
46%
38%
50%
50%
18%
55%
27%
9%
64%
27%
Societal stability
Levels of employment
Provision of public services, health and education
Social safety nets for the poor
Income distribution
Short-Term
Medium-Term
Long-Term

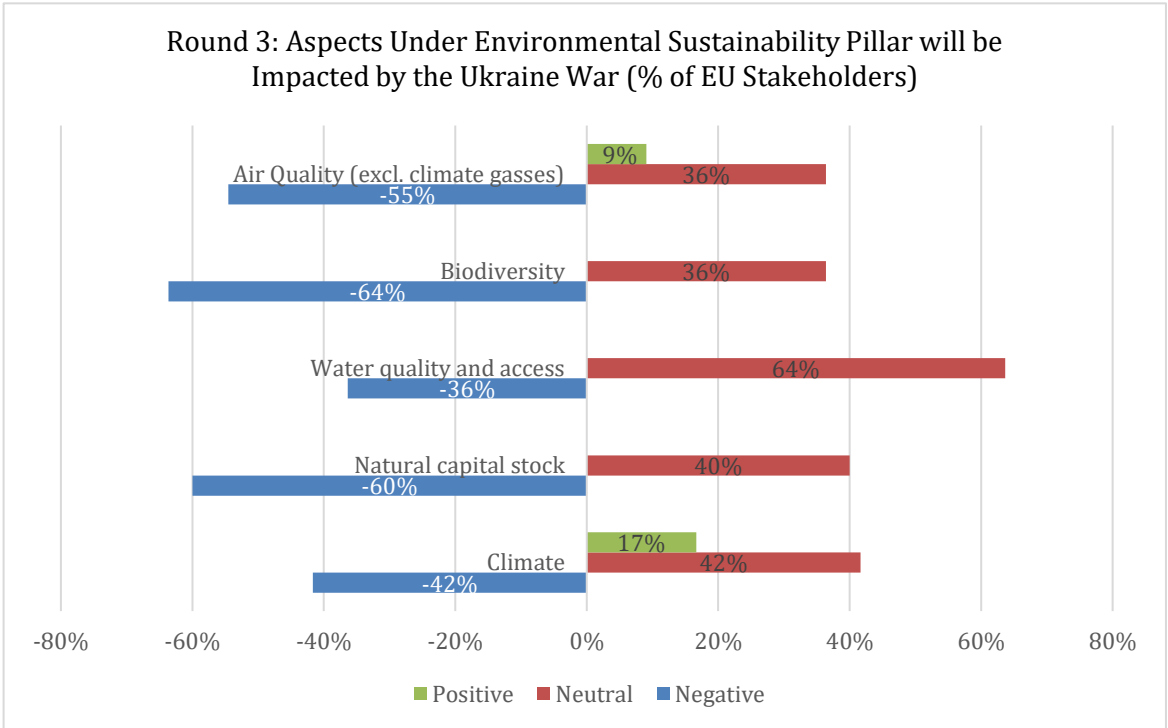

Round 3: Aspects Under Social Sustainability Pillar will be Impacted by the Ukraine War (% of Vietnamese Stakeholders)
Income distribution
4%
21%
-75%
Social safety nets for the poor
4%
21%
-75%
Provision of public services, health and education
32%
-68%
Levels of employment
4%
17%
-78%
Societal stability
13%
-87%
-100%
-80%
-60%
-40%
-20%
0%
20%
40%
Positive
Neutral
Negative

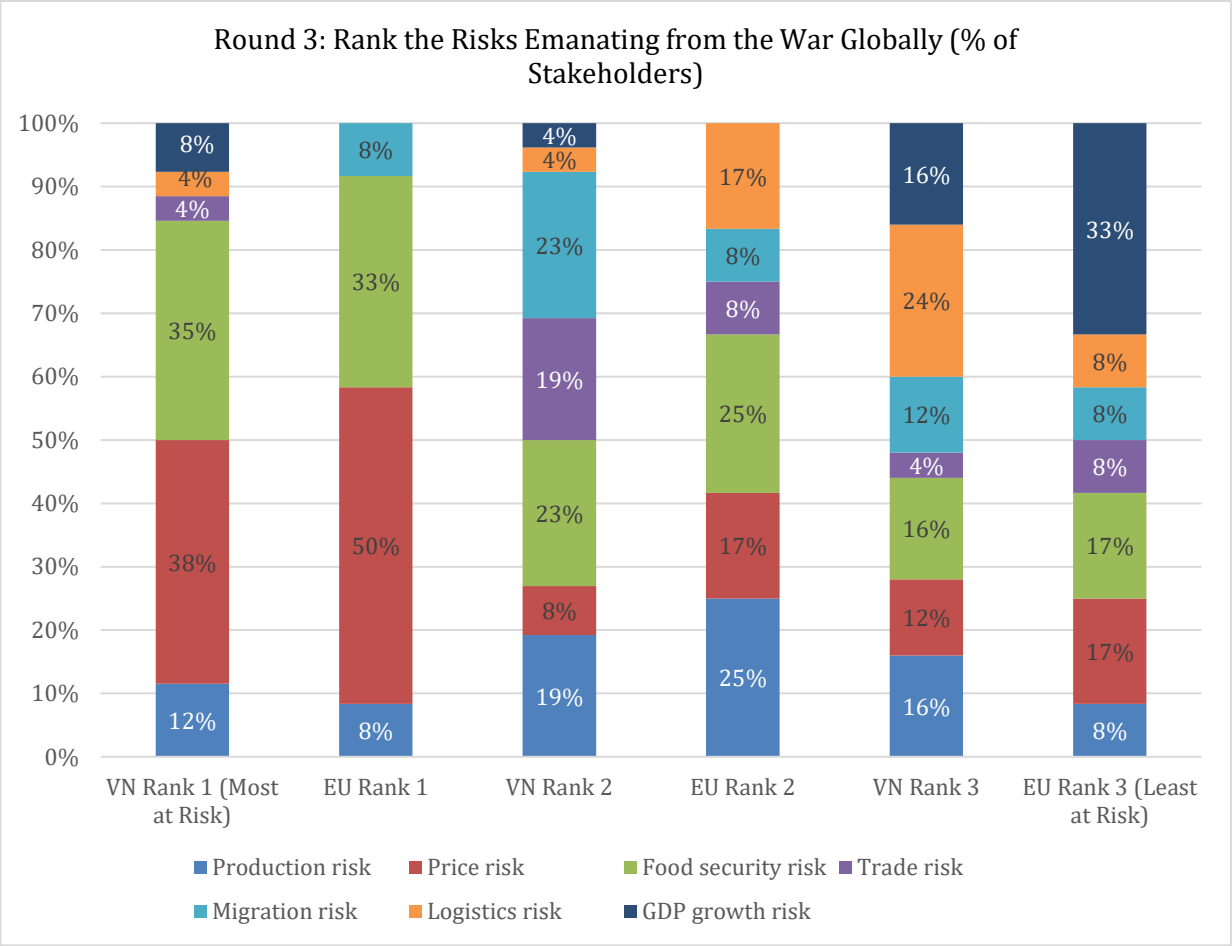

Round 3: Aspects Under Social Sustainability Pillar will be Impacted by the Ukraine War (% of EU Stakeholders)
Income distribution
8%
17%
-75%
Social safety nets for the poor
0%
33%
-67%
Provision of public services, health and education
0%
50%
-50%
Levels of employment
8%
-92%
Societal stability
0%
9%
-91%
-100%
-80%
-60%
-40%
-20%
0%
20%
40%
60%
Positive
Neutral
Negative

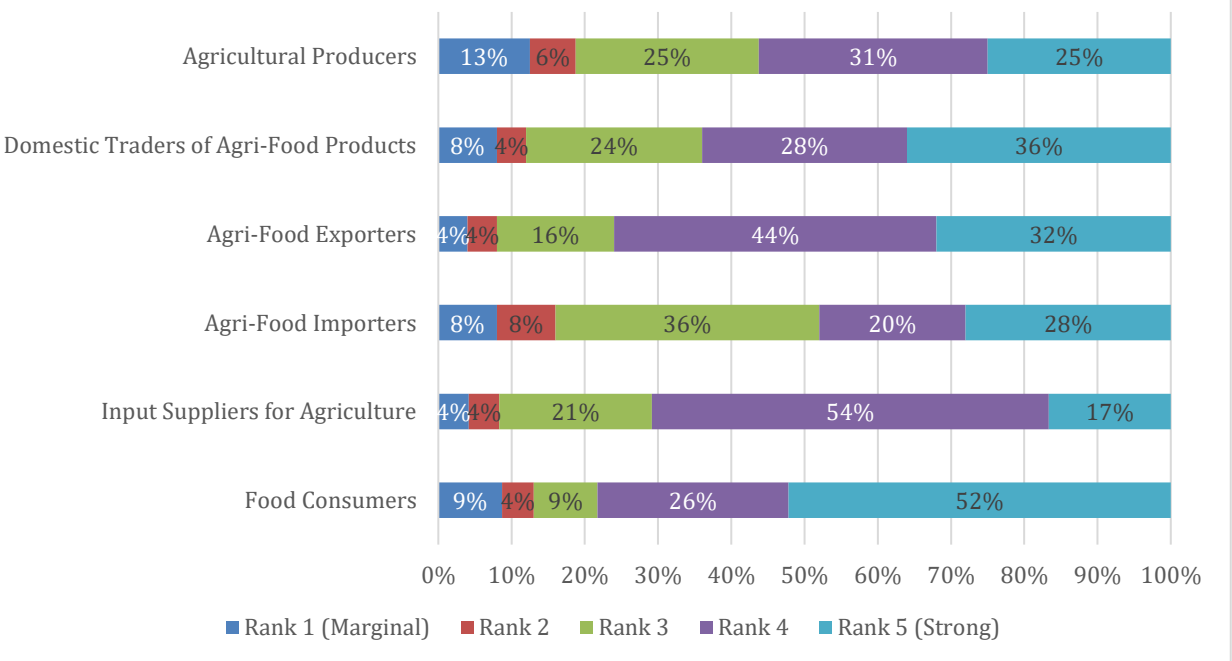

Round 3: Beliefs for how the impact of the Ukraine War will be realised on aspects Environmental Sustainability Pillar (% of Vietnamese stakeholders)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
45%
41%
14%
45%
27%
27%
15%
70%
15%
52%
29%
19%
33%
38%
29%
Climate
Natural capital stock
Water quality and access
Biodiversity
Air Quality (excl. climate gasses)
Short-Term
Medium-Term
Long-Term


Round 3: Beliefs for how the impact of the Ukraine War will be realised on aspects Environmental Sustainability Pillar (% of EU stakeholders)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
22%
33%
44%
13%
38%
50%
11%
33%
56%
40%
60%
11%
22%
67%
Climate
Natural capital stock
Water quality and access
Biodiversity
Air Quality (excl. climate gasses)
Short-Term
Medium-Term
Long-Term

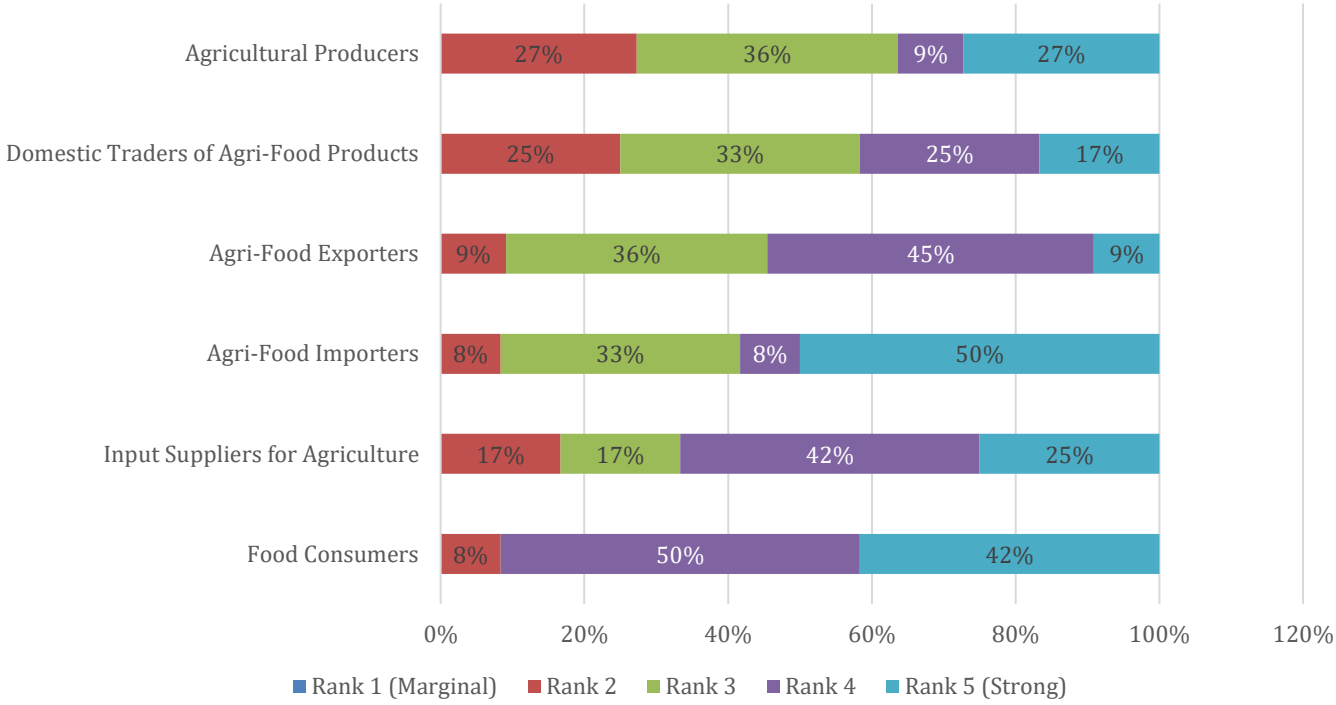

Round 3: Aspects Under Environmental Sustainability Pillar will be Impacted by the Ukraine War (% of Vietnamese Stakeholders)
Air Quality (excl. climate gasses)
78%
17%
4%
Biodiversity
68%
27%
5%
Water quality and access
52%
43%
4%
Natural capital stock
78%
17%
4%
Climate
70%
26%
4%
-100%
-80%
-60%
-40%
-20%
0%
20%
40%
60%
Negative
Neutral
Positive


Round 3: Aspects Under Environmental Sustainability Pillar will be Impacted by the Ukraine War (% of EU Stakeholders)
Air Quality (excl. climate gasses)
9%
36%
-55%
Biodiversity
36%
-64%
Water quality and access
64%
-36%
Natural capital stock
40%
-60%
Climate
17%
42%
-42%
-80%
-60%
-40%
-20%
0%
20%
40%
60%
80%
Positive
Neutral
Negative

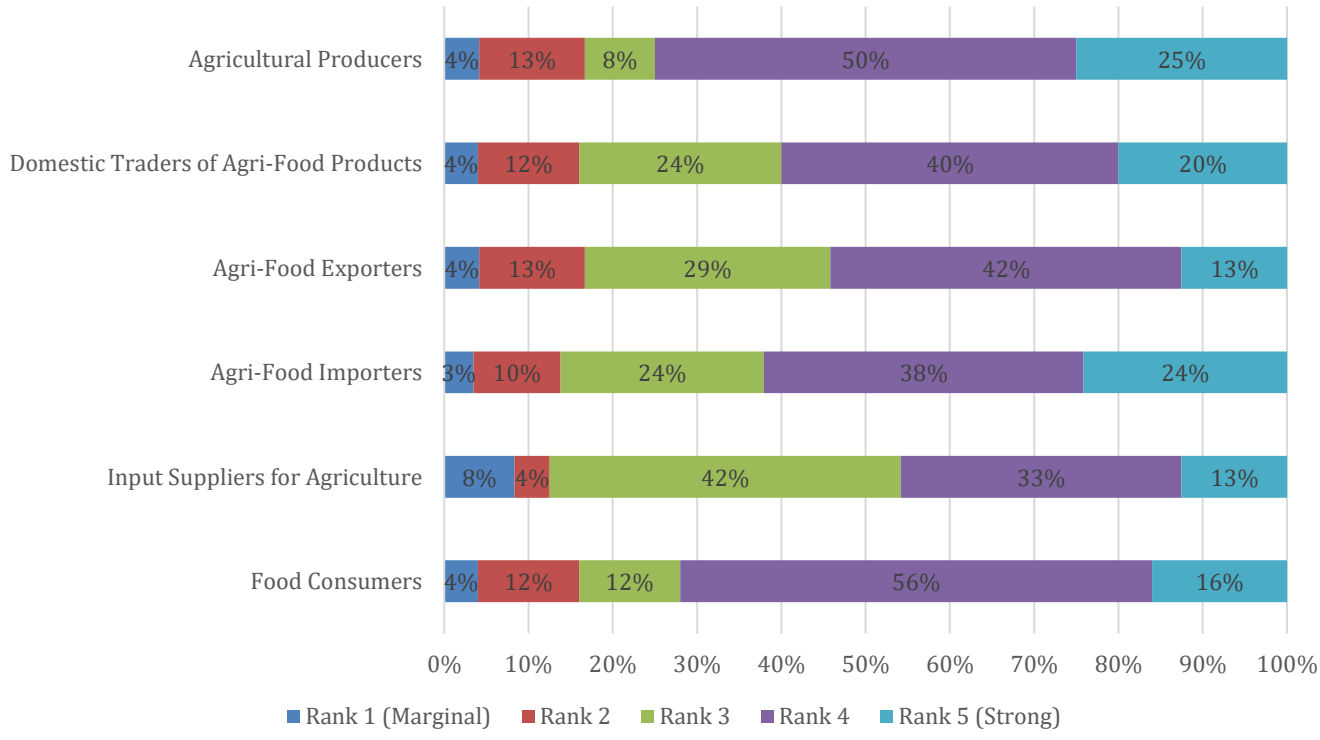

Round 3: Rank the Risks Emanating from the War Globally (% of Stakeholders)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
8%
4%
4%
35%
38%
12%
8%
33%
50%
8%
4%
4%
23%
19%
23%
8%
19%
17%
8%
8%
25%
17%
25%
16%
24%
12%
4%
16%
12%
16%
33%
8%
8%
8%
17%
17%
8%
VN Rank 1 (Most at Risk)
EU Rank 1
VN Rank 2
EU Rank 2
VN Rank 3
EU Rank 3 (Least at Risk)
Production risk
Price risk
Food security risk
Trade risk
Migration risk
Logistics risk
GDP growth risk

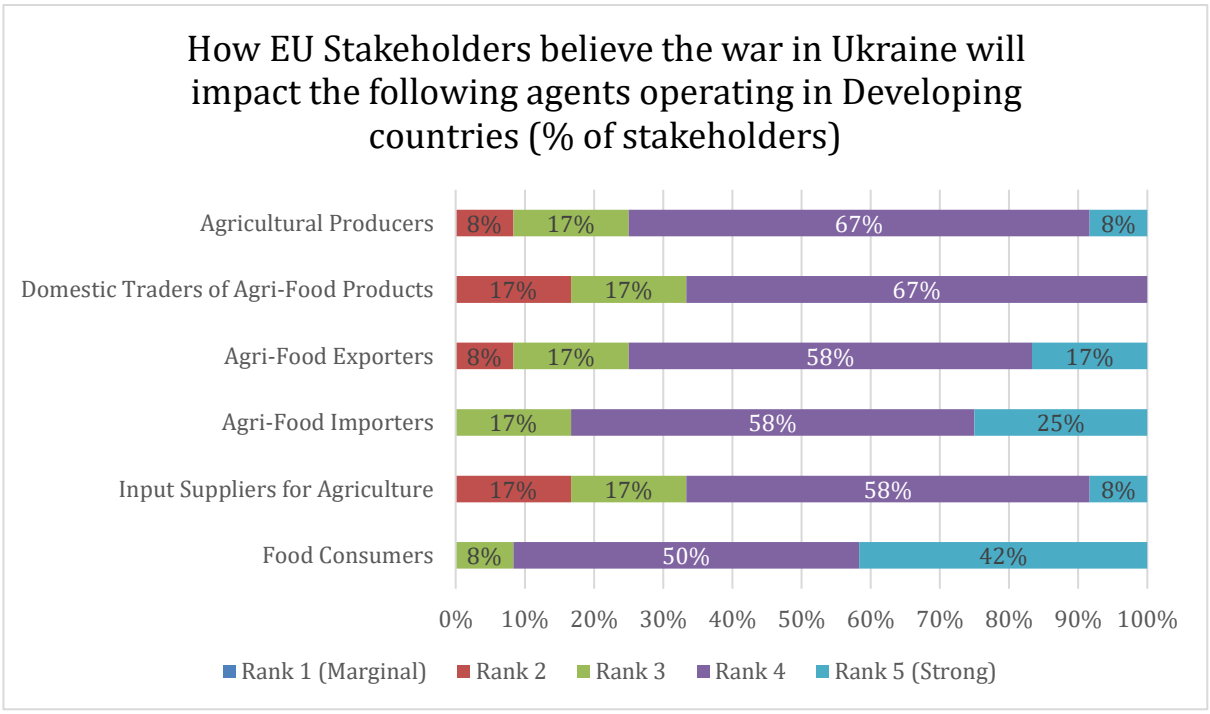

How Vietnamese Stakeholders believe the war in Ukraine will impact the following agents operating in European countries (% of stakeholders)
Agricultural Producers
13%
6%
25%
31%
25%
Domestic Traders of Agri-Food Products
8%
4%
24%
28%
36%
Agri-Food Exporters
4%
4%
16%
44%
32%
Agri-Food Importers
8%
8%
36%
20%
28%
Input Suppliers for Agriculture
4%
4%
21%
54%
17%
Food Consumers
9%
4%
9%
26%
52%
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Rank 1 (Marginal)
Rank 2
Rank 3
Rank 4
Rank 5 (Strong)

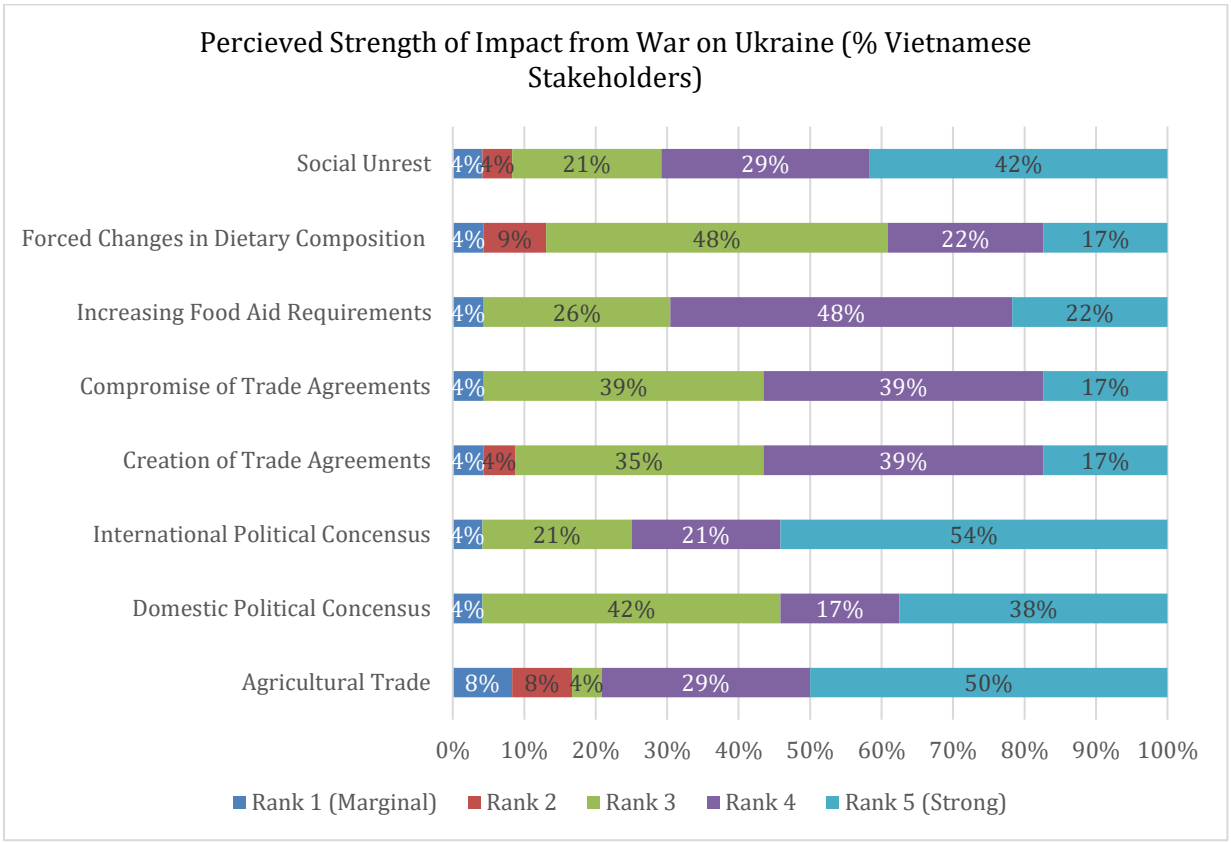
How EU Stakeholders believe the war in Ukraine will impact the following agents operating in European countries (% of stakeholders)

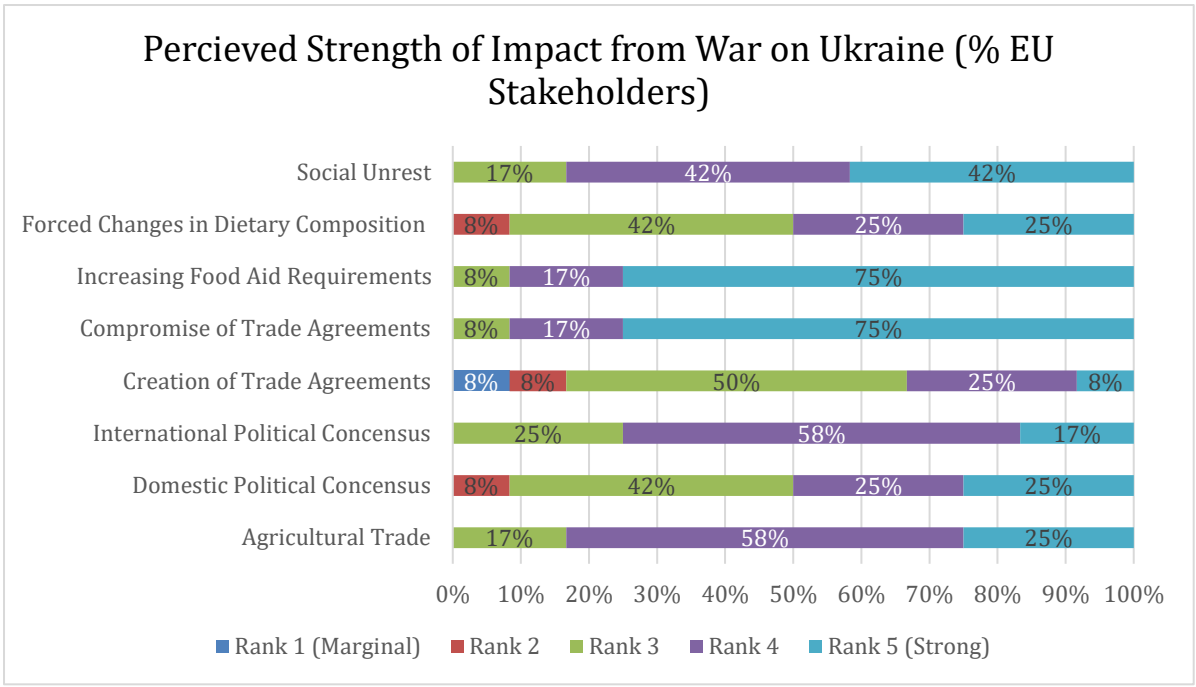


How Vietnamese Stakeholders believe the war in Ukraine will impact the following agents operating in Developing countries (% of stakeholders)




How EU Stakeholders believe the war in Ukraine will impact the following agents operating in Developing countries (% of stakeholders)
Agricultural Producers
Domestic Traders of Agri-Food Products
Agri-Food Exporters
Agri-Food Importers
Input Suppliers for Agriculture
Food Consumers
8% 17% 67% 8%
17% 17% 67%
8% 17% 58% 17%
17% 58% 25%
17% 17% 58% 8%
8% 50% 42%
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Rank 1 (Marginal)
Rank 2
Rank 3
Rank 4
Rank 5 (Strong)


Percieved Strength of Impact from War on Ukraine (% Vietnamese Stakeholders)
Social Unrest
Forced Changes in Dietary Composition
Increasing Food Aid Requirements
Compromise of Trade Agreements
Creation of Trade Agreements
International Political Concensus
Domestic Political Concensus
Agricultural Trade
4% 4% 21% 29% 42%
4% 9% 48% 22% 17%
4% 26% 48% 22%
4% 39% 39% 17%
4% 4% 35% 39% 17%
4% 21% 21% 54%
4% 42% 17% 38%
8% 8% 4% 29% 50%
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Rank 1 (Marginal)
Rank 2
Rank 3
Rank 4
Rank 5 (Strong)

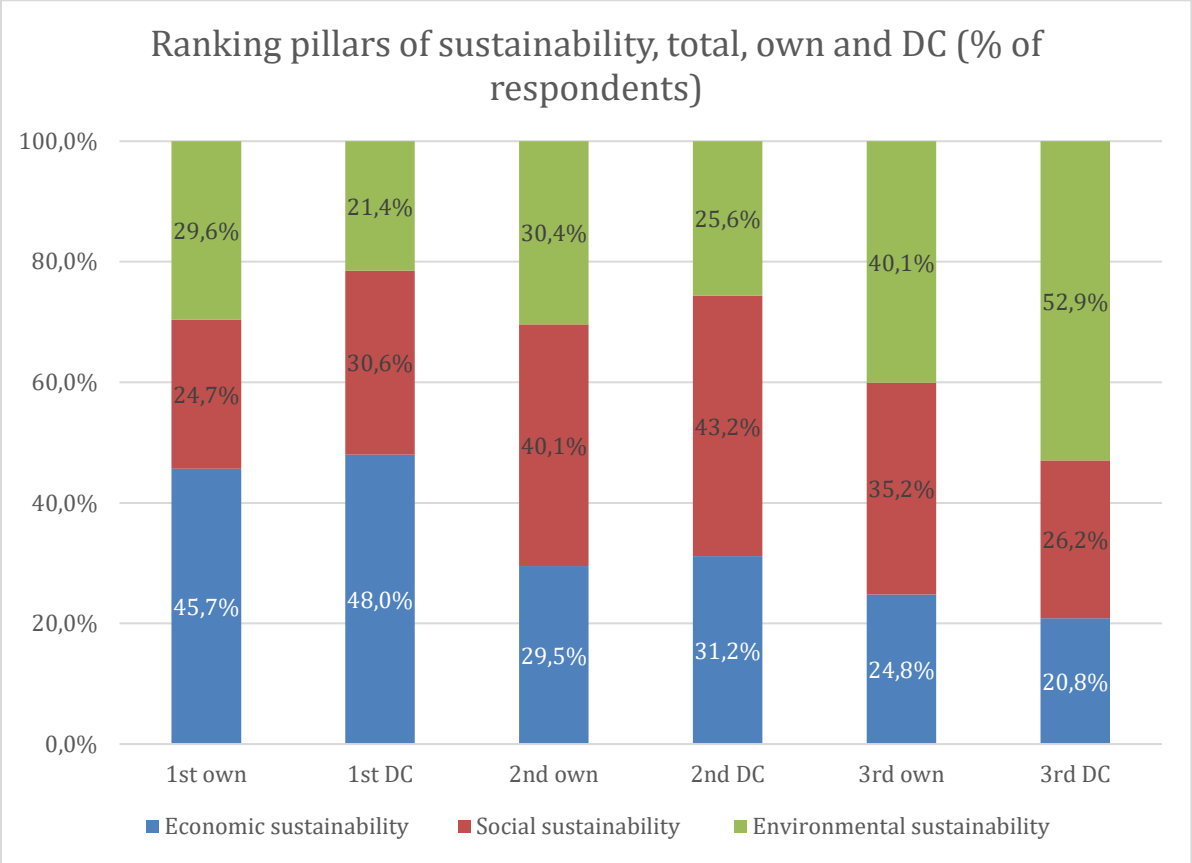

Percieved Strength of Impact from War on Ukraine (% EU Stakeholders)
Social Unrest
Forced Changes in Dietary Composition
Increasing Food Aid Requirements
Compromise of Trade Agreements
Creation of Trade Agreements
International Political Concensus
Domestic Political Concensus
Agricultural Trade
17%
42%
42%
8%
42%
25%
25%
8%
17%
75%
8%
17%
75%
8%
8%
50%
25%
8%
25%
58%
17%
8%
42%
25%
25%
17%
58%
25%
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Rank 1 (Marginal)
Rank 2
Rank 3
Rank 4
Rank 5 (Strong)

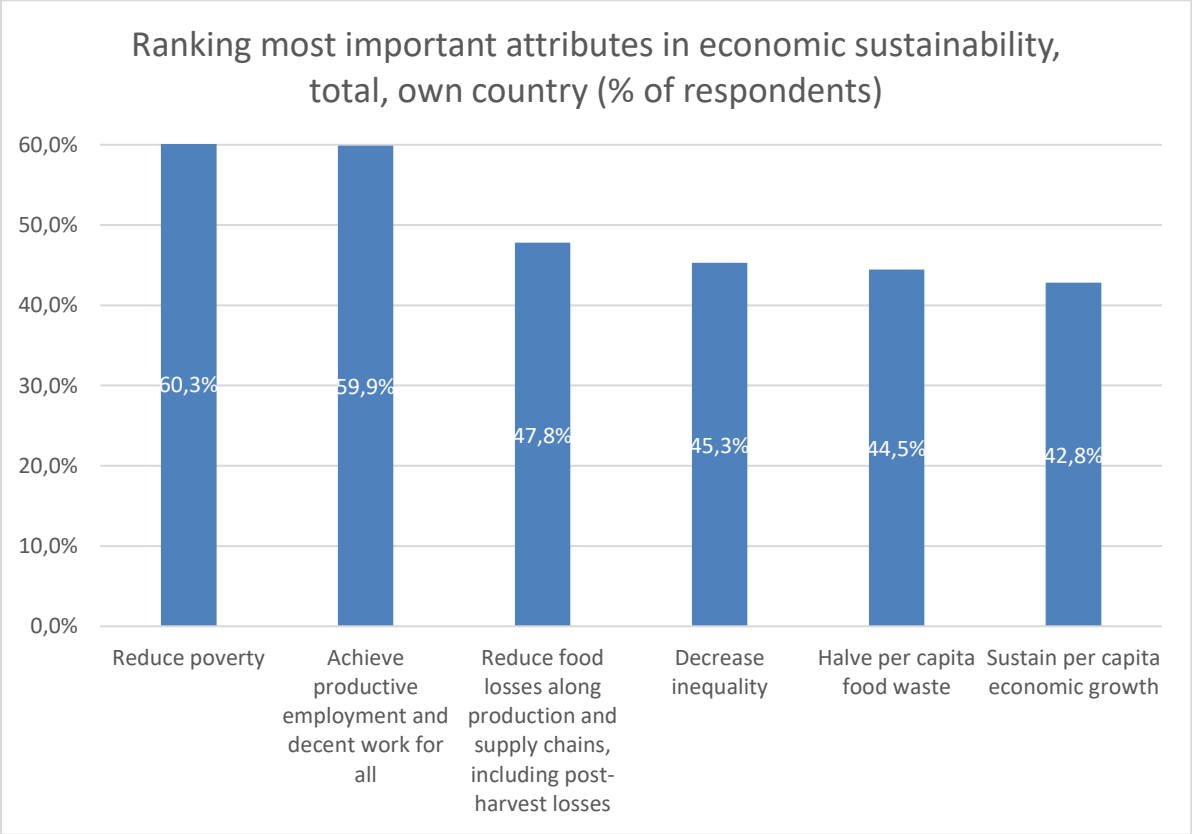
Appendix 4: Sample of general public survey

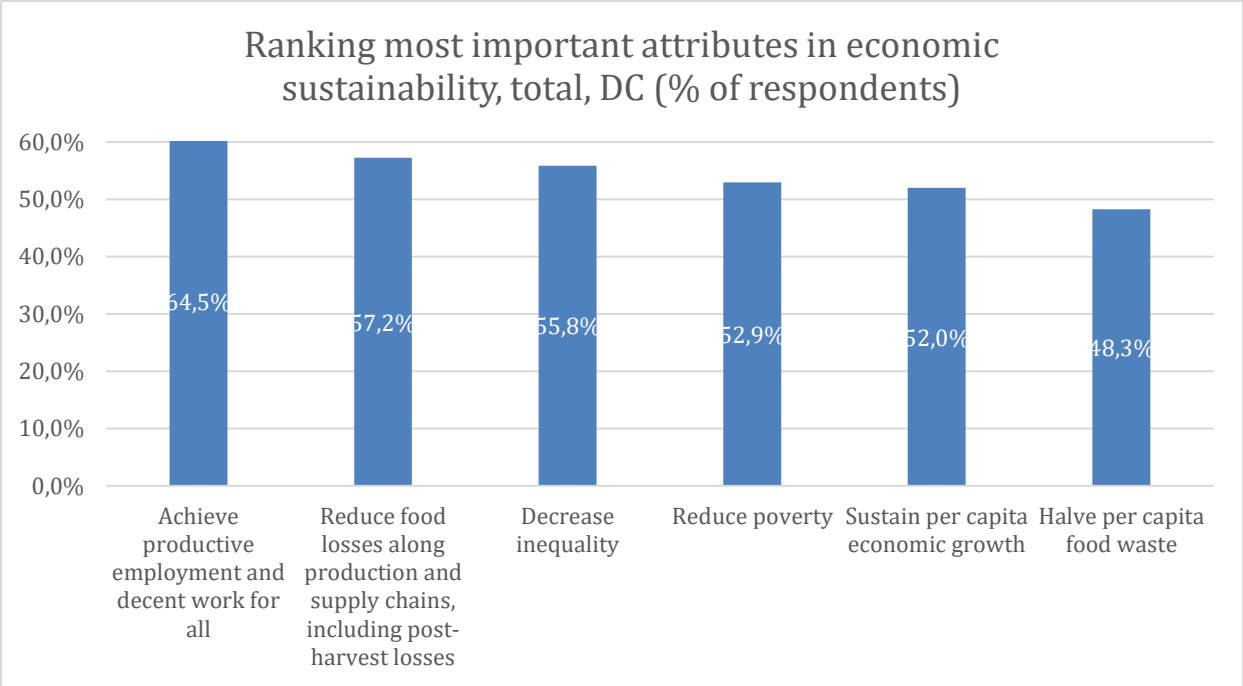
	Hungarian sample (*n*=1 001)	**English sample (*n*=1 001)**	**German sample (*n*=1 001)**
Gender (%)			
Female	51.85	50.95	50.95
Male	47.95	48.75	48.75
Non-binary	0.1	0.3	0.2
No answer	0.1	0	0.1
Age category (%)			
18–24	11.99	12.99	10.29
25–34	19.98	21.98	20.78
35–44	24.98	21.58	19.48
45–54	22.98	23.98	24.38
55–64	20.08	19.48	25.08
Employment status (%)			
Employed with job security	55.64	64.34	61.04
Employed with short-term or hourly contract	12.59	8.79	9.69
Self-Employed	5.69	5.89	5.1
Unemployed	7.29	11.19	8.59
Neither working. unemployed or retired	12.79	6.19	6.49
Retired	5.99	3.6	9.09
Work experience (%)			
Research/Information/Media	3.3	5.29	3.6
Trade/Commerce (buying or selling in any sector other than Food or Finance)	12.39	5.09	10.89
Agriculture or food production	4.3	1.7	2.7
Other manufacturing/Energy	10.59	5	7.89
Finance	5.89	6.69	7.39
Other private sector services	8.59	12.09	10.09
Education	8.59	9.59	4.4
Police/Armed Forces/Justice	4.1	1.2	1.4
Local/regional or national government employee	7.19	4.2	3.3
Non-governmental organisation/charity	2.4	4.6	1.7
Other	32.67	44.56	46.65
Highest level of education (%)			
Elementary school	2.9	10.39	4.5

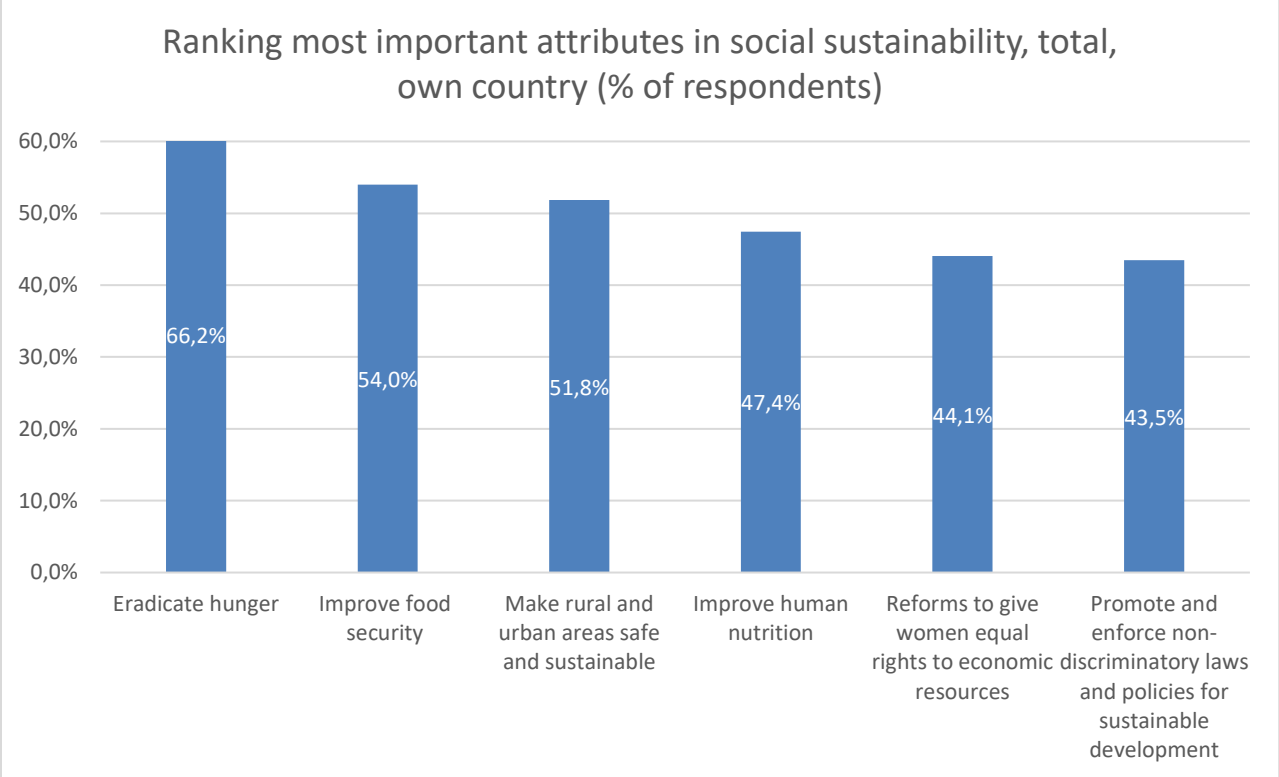
Vocational school	14.89	23.78	49.45
Graduation	48.65	35.17	22.18
Advanced degree	33.57	30.67	23.88
Years of work experience (%)			
< 5 years	27.67	27.77	22.58
5–10 years	26.37	29.37	29.17
11–20 years	18.38	19.68	22.68
> 21 years	27.57	23.18	25.57
Residence (%)			
Rural (open countryside. low population density. small settlements –mainly villages)	24.38	29.47	35.66
Urban	75.62	70.53	64.34
Type of your home (%)			
Home owner with Mortgage	16.08	30.07	14.29
Home owner without Mortgage	40.86	28.77	22.98
Renter	15.29	31.47	54.45
Living in family or friends' home	24.28	8.79	5.69
Other	3.5	0.9	2.6

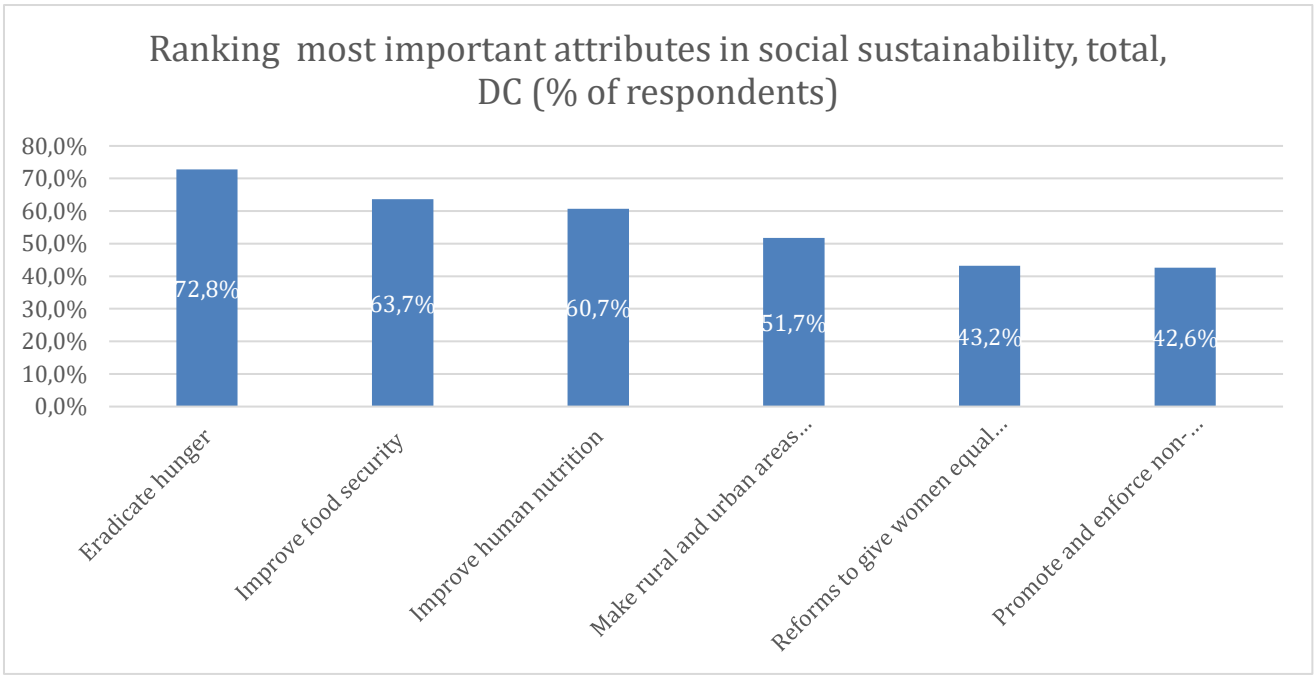
Appendix 5: Graphical representation of answers to the general public survey

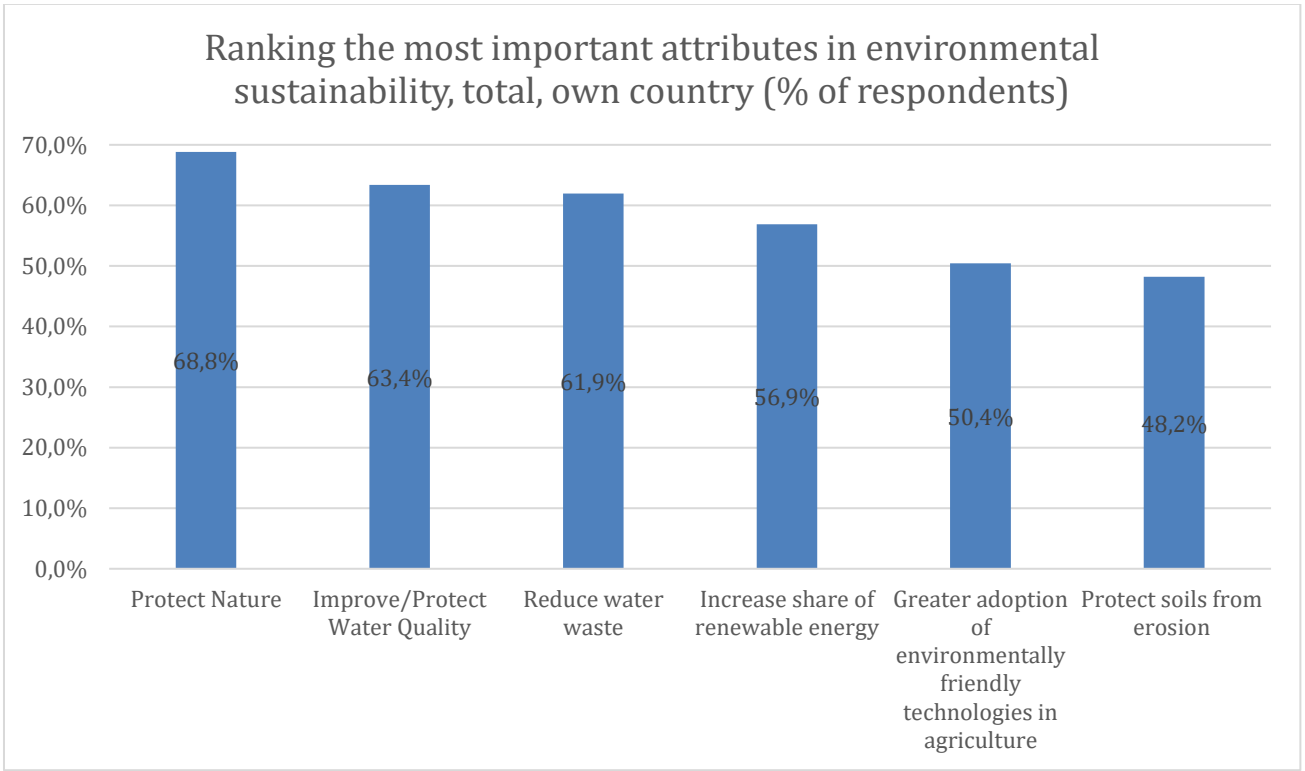


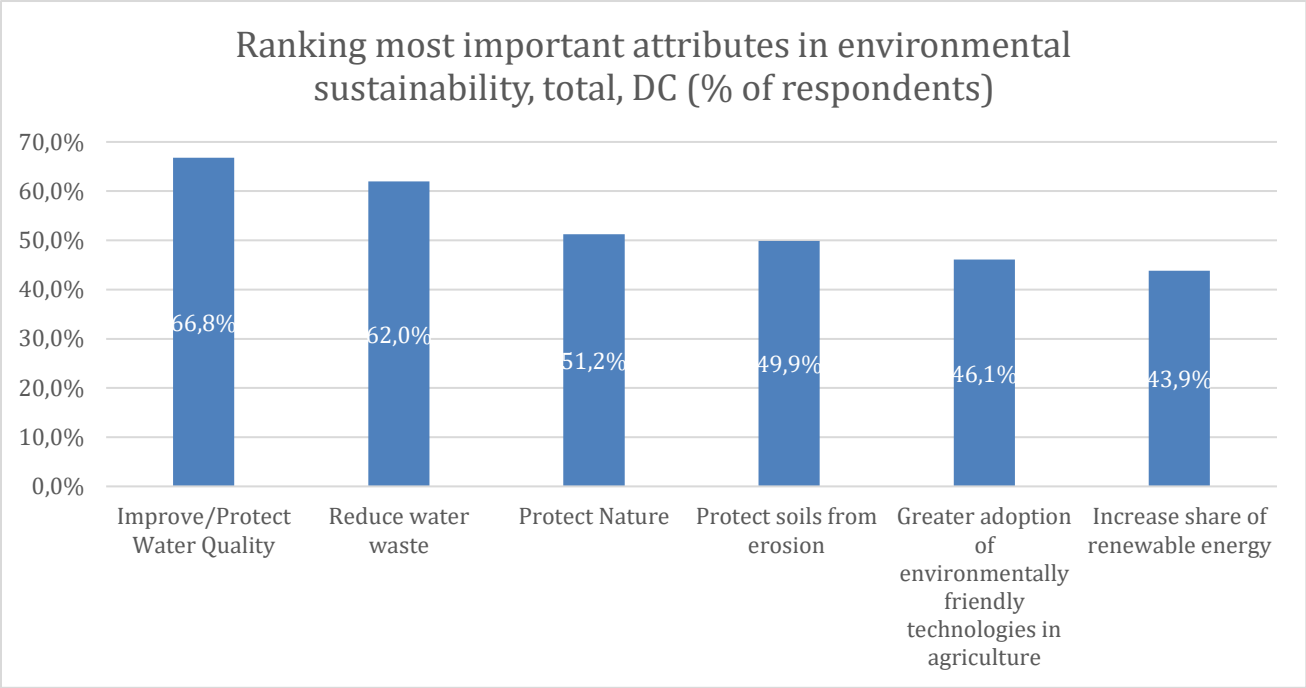


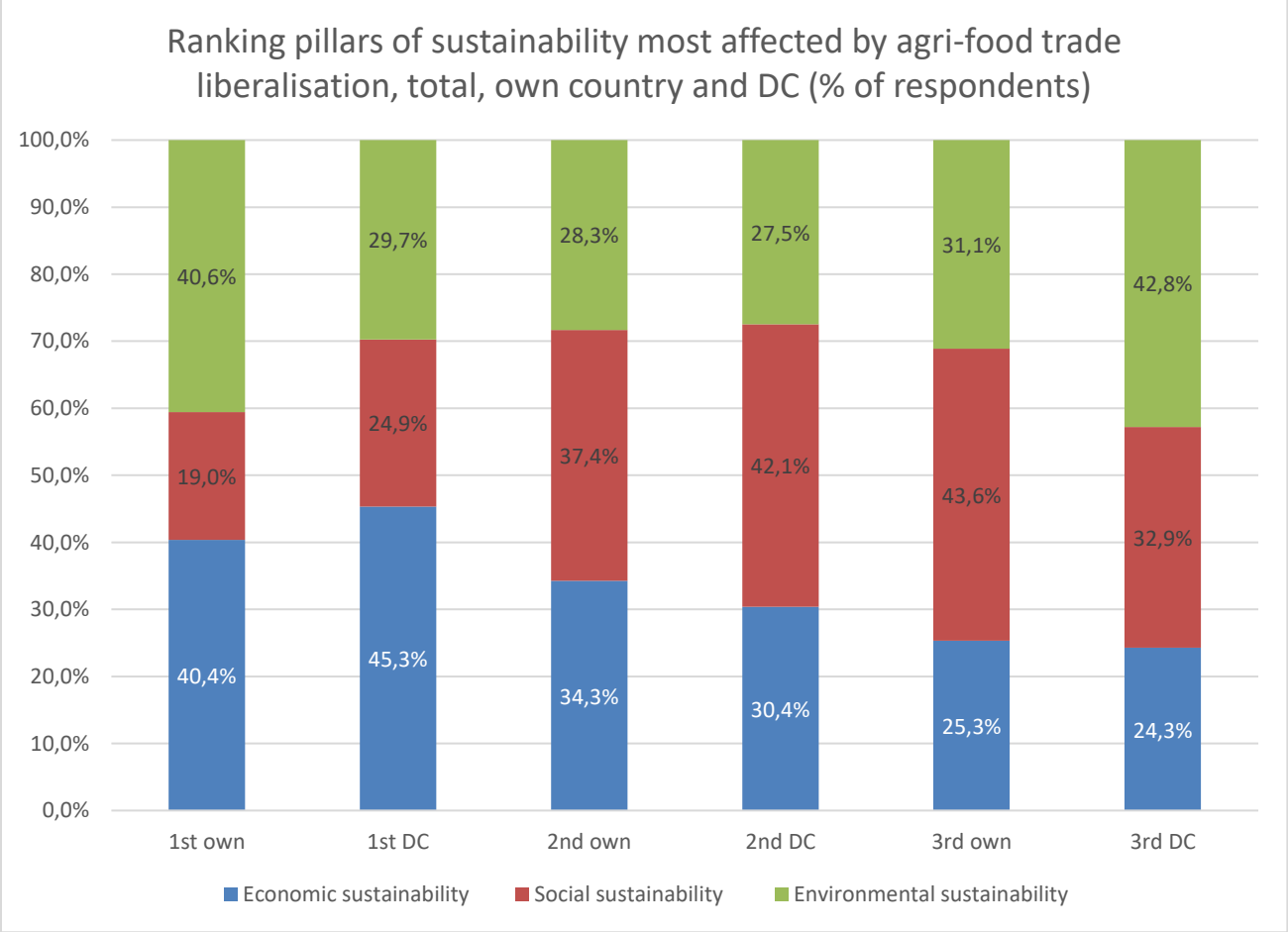

Ranking most important attributes in economic sustainability, total, DC (% of respondents)
60,0%
50,0%
40,0%
30,0%
20,0%
10,0%
0,0%
64,5%
57,2%
55,8%
52,9%
52,0%
48,3%
Achieve productive employment and decent work for all
Reduce food losses along production and supply chains, including post-harvest losses
Decrease inequality
Reduce poverty
Sustain per capita economic growth
Halve per capita food waste

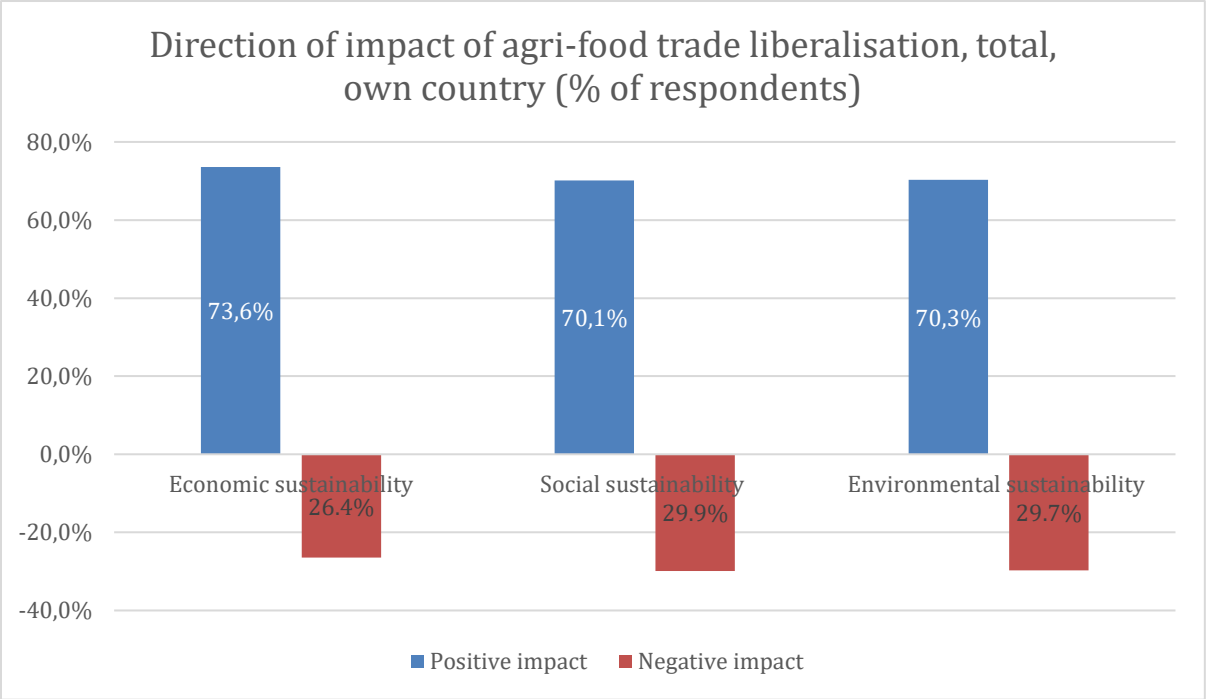

Ranking most important attributes in social sustainability, total, own country (% of respondents)
60,0%
50,0%
40,0%
30,0%
20,0%
10,0%
0,0%
66,2%
54,0%
51,8%
47,4%
44,1%
43,5%
Eradicate hunger
Improve food security
Make rural and urban areas safe and sustainable
Improve human nutrition
Reforms to give women equal rights to economic resources
Promote and enforce non-discriminatory laws and policies for sustainable development

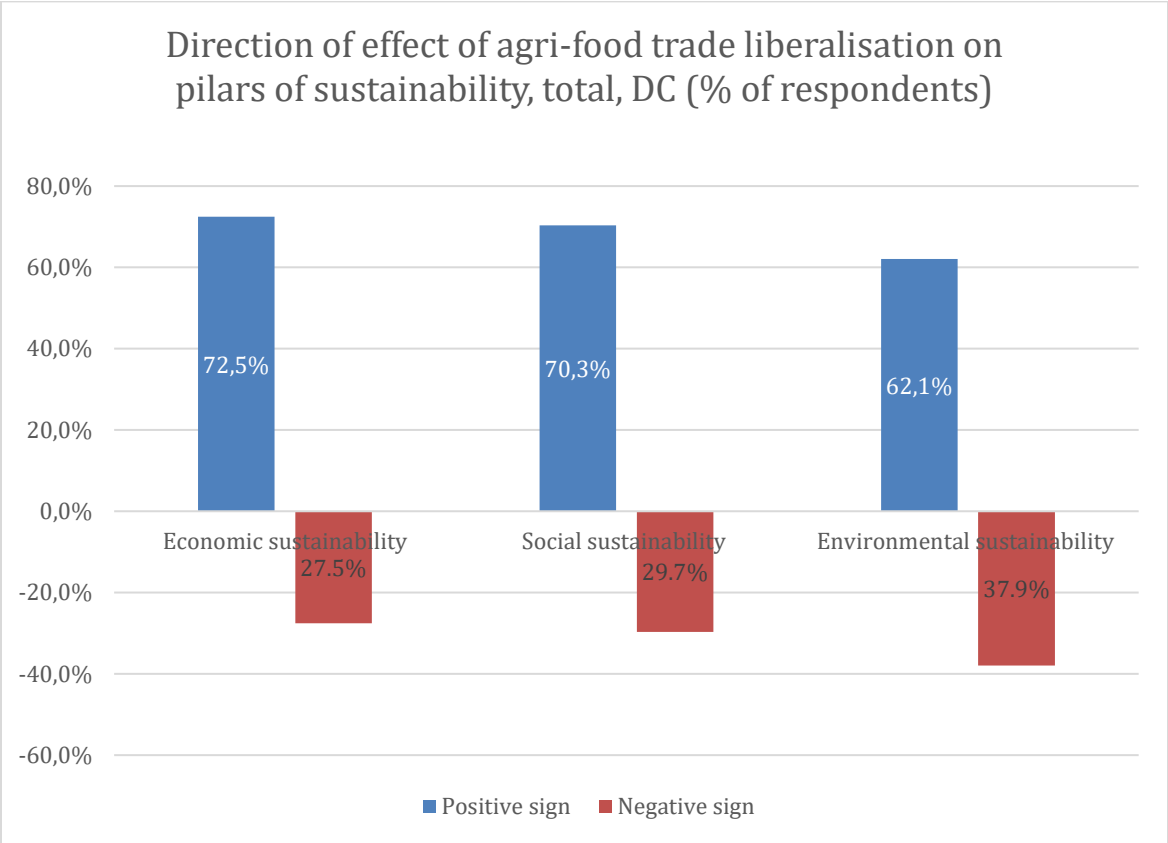

Ranking most important attributes in social sustainability, total, DC (% of respondents)
80,0%
70,0%
60,0%
50,0%
40,0%
30,0%
20,0%
10,0%
0,0%
72,8%
63,7%
60,7%
51,7%
43,2%
42,6%
Eradicate hunger
Improve food security
Improve human nutrition
Make rural and urban areas...
Reforms to give women equal...
Promote and enforce non-...

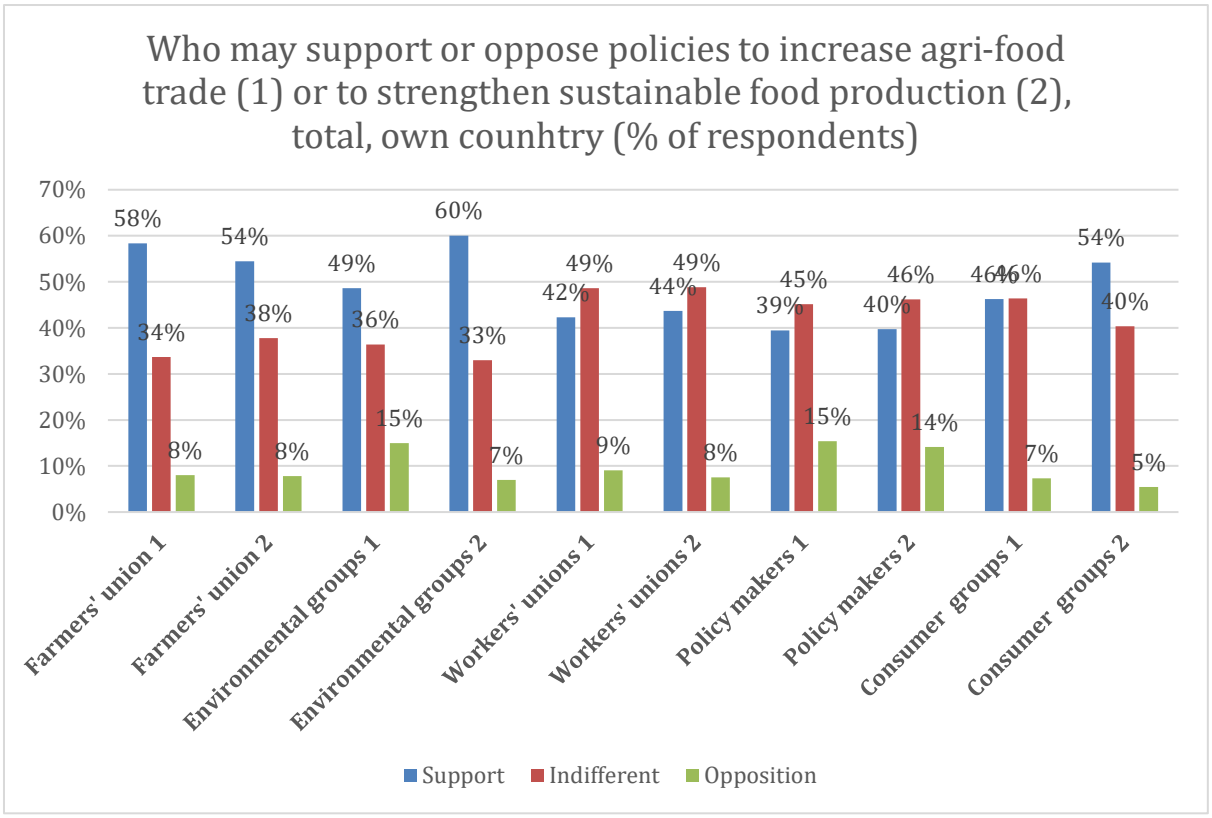

Ranking the most important attributes in environmental sustainability, total, own country (% of respondents)
70,0%
60,0%
50,0%
40,0%
30,0%
20,0%
10,0%
0,0%
68,8%
63,4%
61,9%
56,9%
50,4%
48,2%
Protect Nature
Improve/Protect Water Quality
Reduce water waste
Increase share of renewable energy
Greater adoption of environmentally friendly technologies in agriculture
Protect soils from erosion

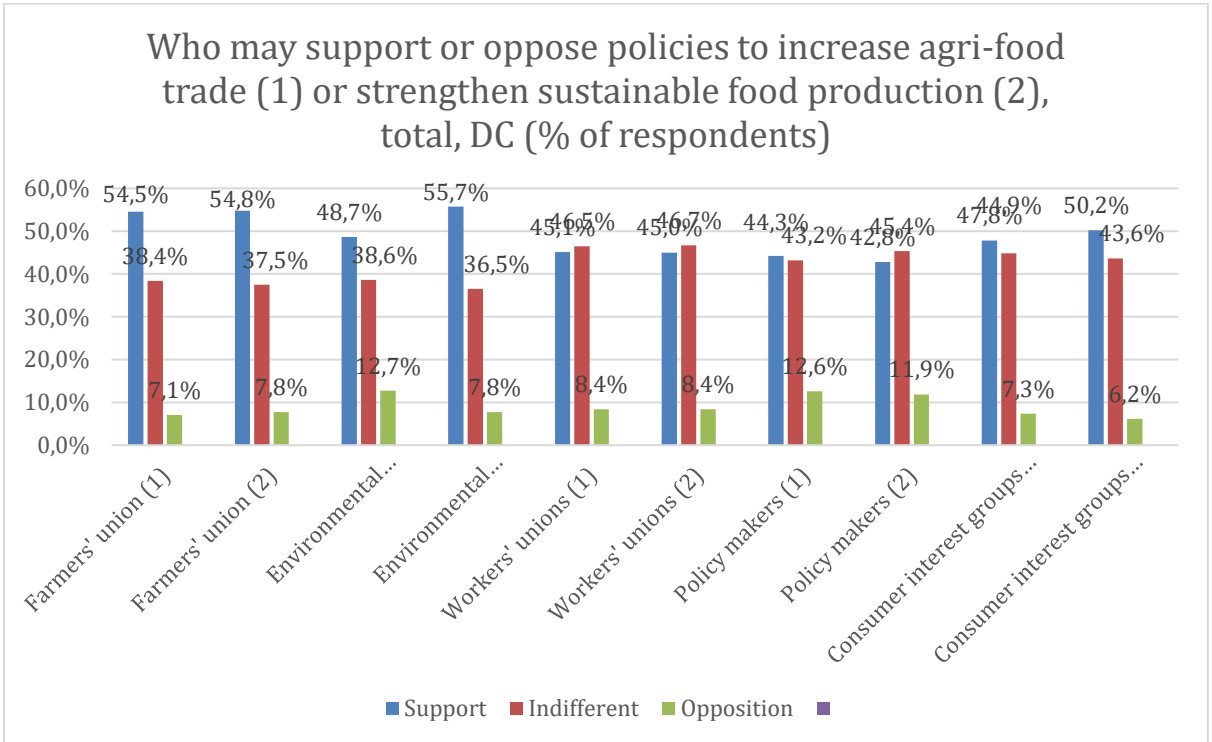

Ranking most important attributes in environmental sustainability, total, DC (% of respondents)
70,0%
60,0%
50,0%
40,0%
30,0%
20,0%
10,0%
0,0%
66,8%
62,0%
51,2%
49,9%
46,1%
43,9%
Improve/Protect Water Quality
Reduce water waste
Protect Nature
Protect soils from erosion
Greater adoption of environmentally friendly technologies in agriculture
Increase share of renewable energy

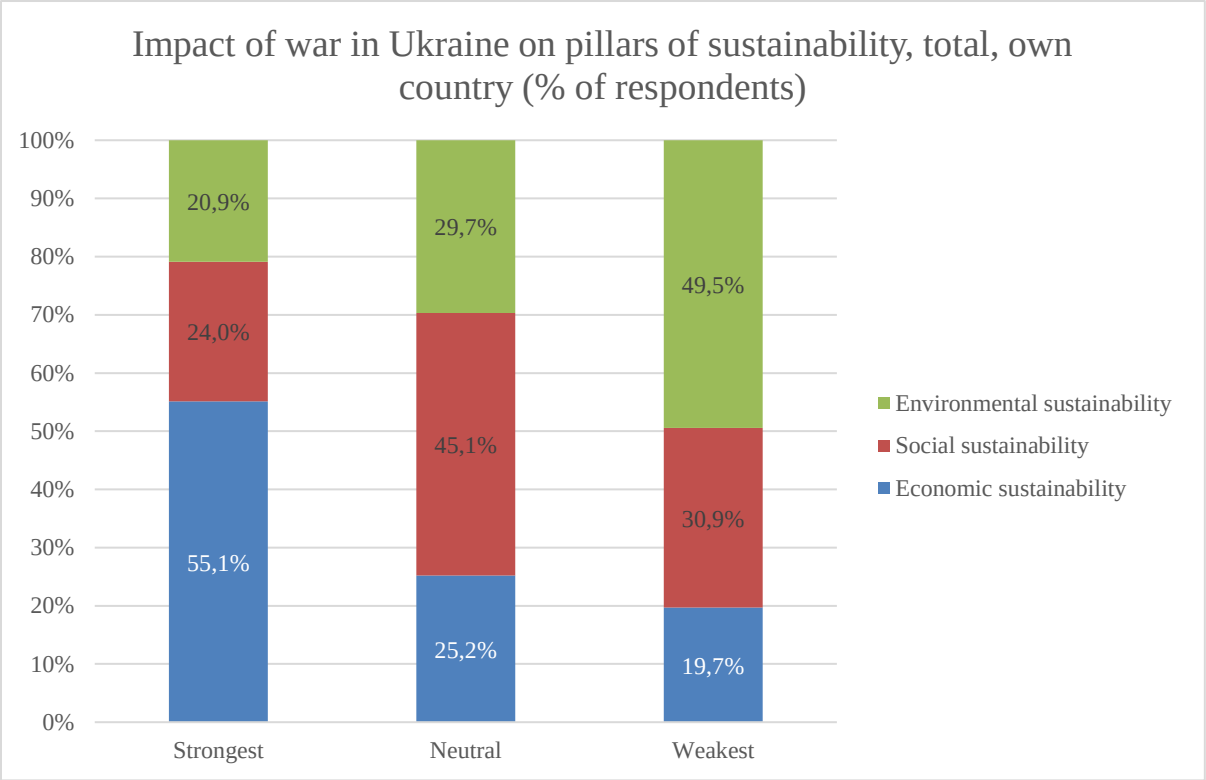

Ranking pillars of sustainability most affected by agri-food trade liberalisation, total, own country and DC (% of respondents)
100,0%
90,0%
80,0%
70,0%
60,0%
50,0%
40,0%
30,0%
20,0%
10,0%
0,0%
40,6%
19,0%
40,4%
29,7%
24,9%
45,3%
28,3%
37,4%
34,3%
27,5%
42,1%
30,4%
31,1%
43,6%
25,3%
42,8%
32,9%
24,3%
1st own
1st DC
2nd own
2nd DC
3rd own
3rd DC
Economic sustainability
Social sustainability
Environmental sustainability

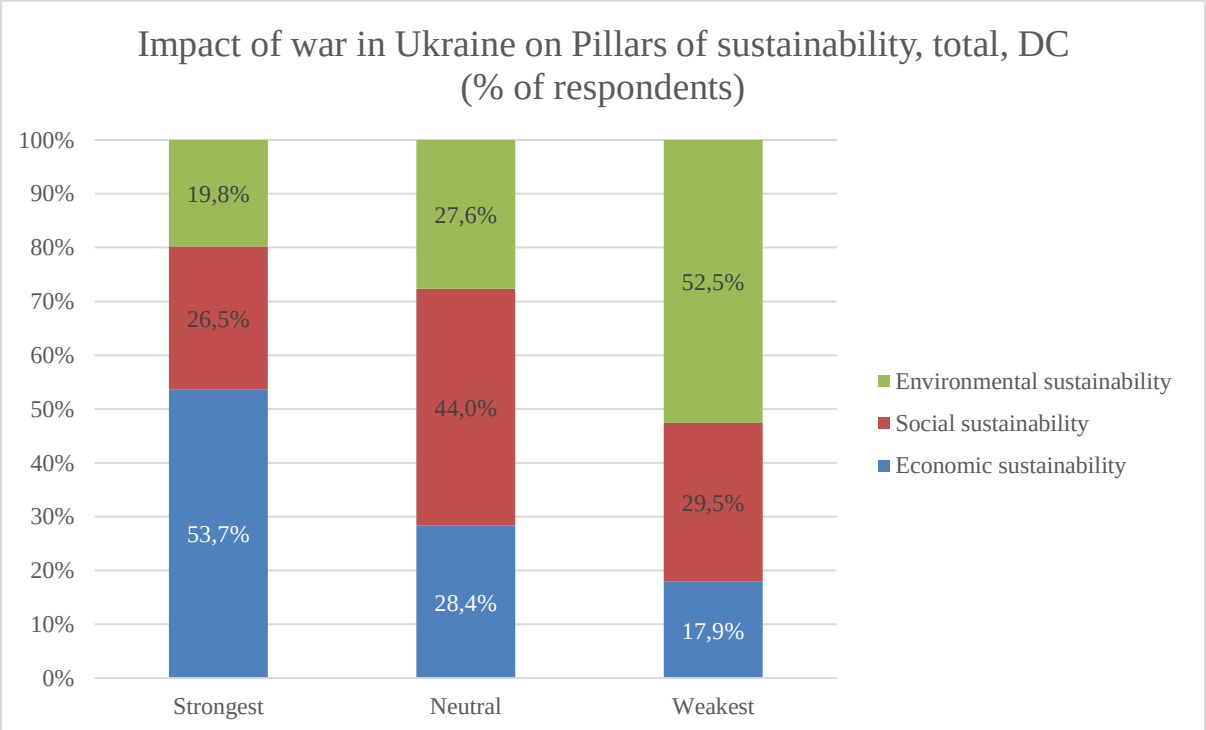

Direction of impact of agri-food trade liberalisation, total, own country (% of respondents)
80,0%
60,0%
40,0%
20,0%
0,0%
-20,0%
-40,0%
73,6%
70,1%
70,3%
26.4%
29.9%
29.7%
Economic sustainability
Social sustainability
Environmental sustainability
Positive impact
Negative impact

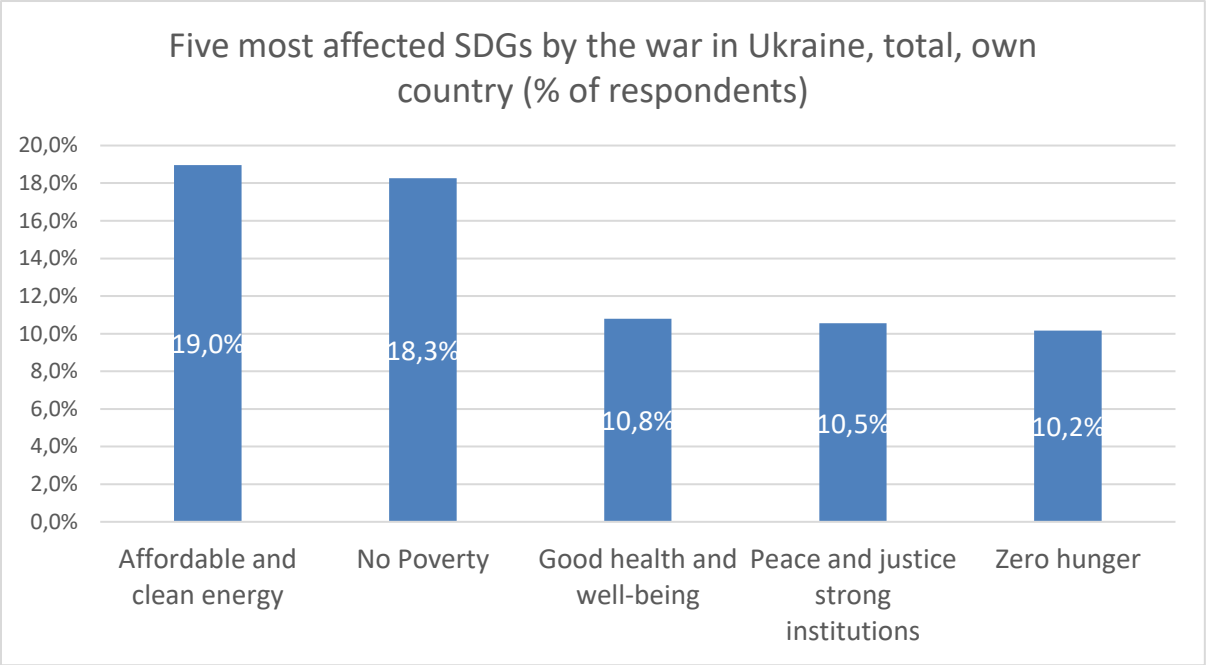

Direction of effect of agri-food trade liberalisation on pilars of sustainability, total, DC (% of respondents)
80,0%
60,0%
40,0%
20,0%
0,0%
-20,0%
-40,0%
-60,0%
72,5%
70,3%
62,1%
27.5%
29.7%
37.9%
Economic sustainability
Social sustainability
Environmental sustainability
Positive sign
Negative sign

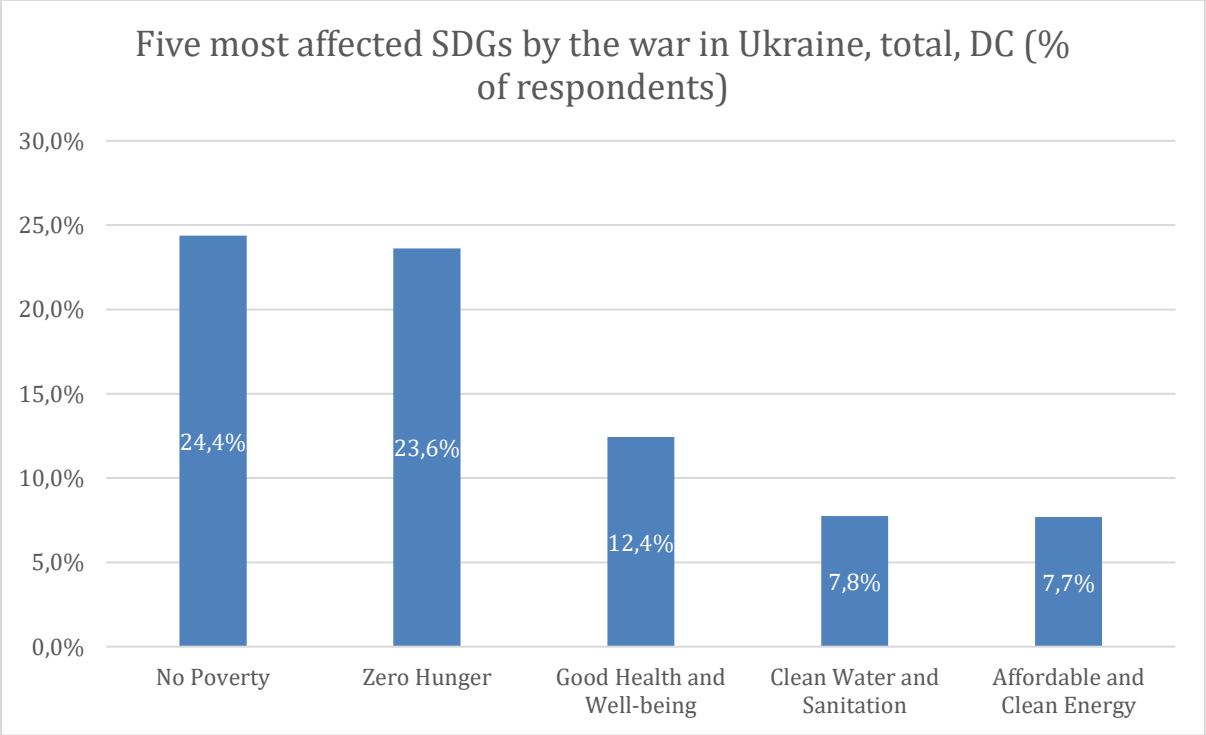

Who may support or oppose policies to increase agri-food trade (1) or to strengthen sustainable food production (2), total, own counhtry (% of respondents)
70%
60%
50%
40%
30%
20%
10%
0%
58%
34%
8%
54%
38%
8%
49%
36%
15%
60%
33%
7%
42%
49%
9%
44%
49%
8%
39%
45%
15%
40%
46%
14%
46%
46%
7%
54%
40%
5%
Farmers' union 1
Farmers' union 2
Environmental groups 1
Environmental groups 2
Workers' unions 1
Workers' unions 2
Policy makers 1
Policy makers 2
Consumer groups 1
Consumer groups 2
Support
Indifferent
Opposition

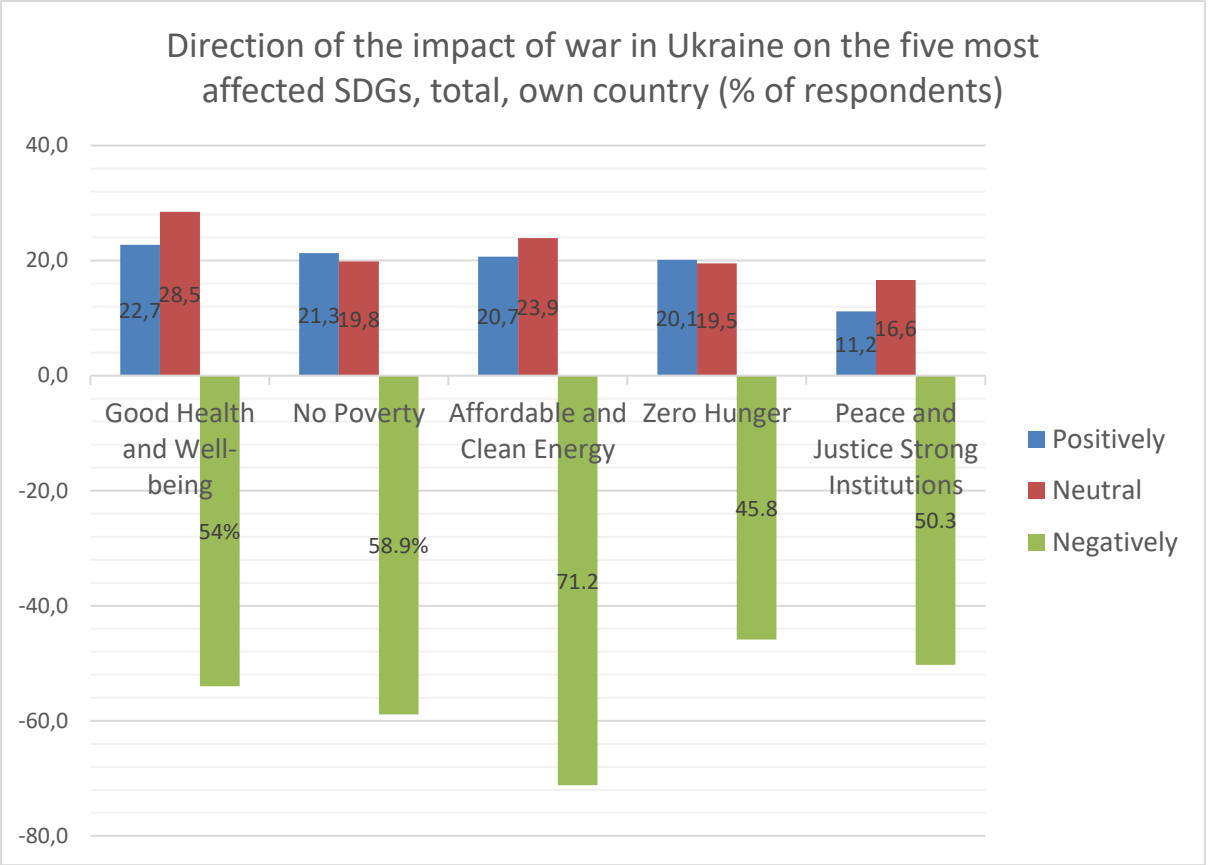

Who may support or oppose policies to increase agri-food trade (1) or strengthen sustainable food production (2), total, DC (% of respondents)
60,0%
50,0%
40,0%
30,0%
20,0%
10,0%
0,0%
54,5%
38,4%
7,1%
54,8%
37,5%
7,8%
48,7%
38,6%
12,7%
55,7%
36,5%
7,8%
45,1%
46,5%
8,4%
45,0%
46,7%
8,4%
44,3%
43,2%
12,6%
42,8%
45,4%
11,9%
47,8%
44,9%
7,3%
50,2%
43,6%
6,2%
Farmers' union (1)
Farmers' union (2)
Environmental...
Environmental...
Workers' unions (1)
Workers' unions (2)
Policy makers (1)
Policy makers (2)
Consumer interest groups...
Consumer interest groups...
Support
Indifferent
Opposition

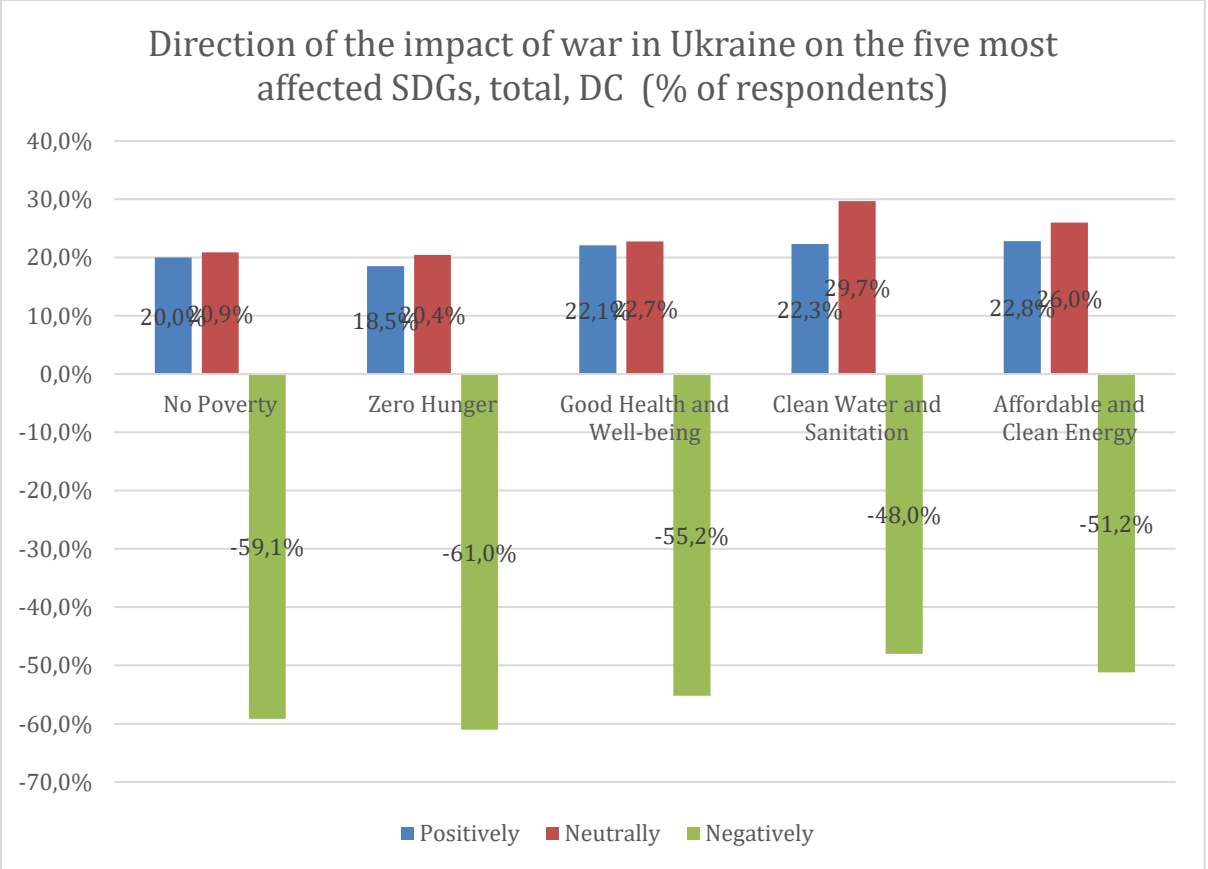

Impact of war in Ukraine on pillars of sustainability, total, own country (% of respondents)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
20,9%
24,0%
55,1%
29,7%
45,1%
25,2%
49,5%
30,9%
19,7%
Strongest
Neutral
Weakest
Environmental sustainability
Social sustainability
Economic sustainability

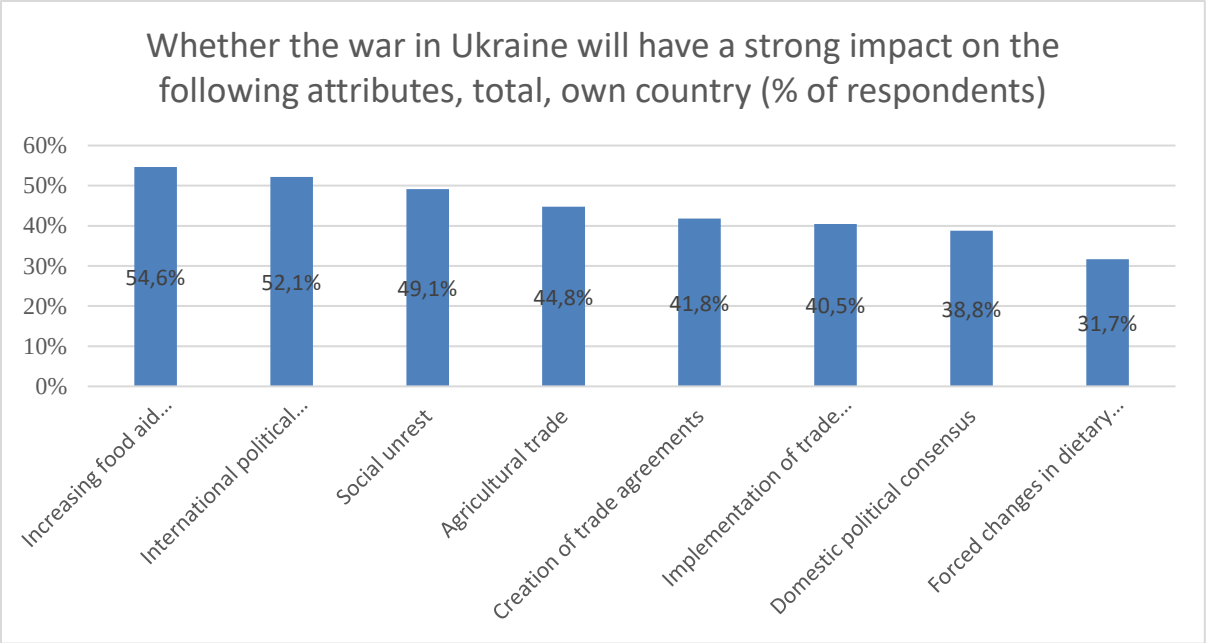

Impact of war in Ukraine on Pillars of sustainability, total, DC (% of respondents)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
19,8%
26,5%
53,7%
27,6%
44,0%
28,4%
52,5%
29,5%
17,9%
Strongest
Neutral
Weakest
Environmental sustainability
Social sustainability
Economic sustainability

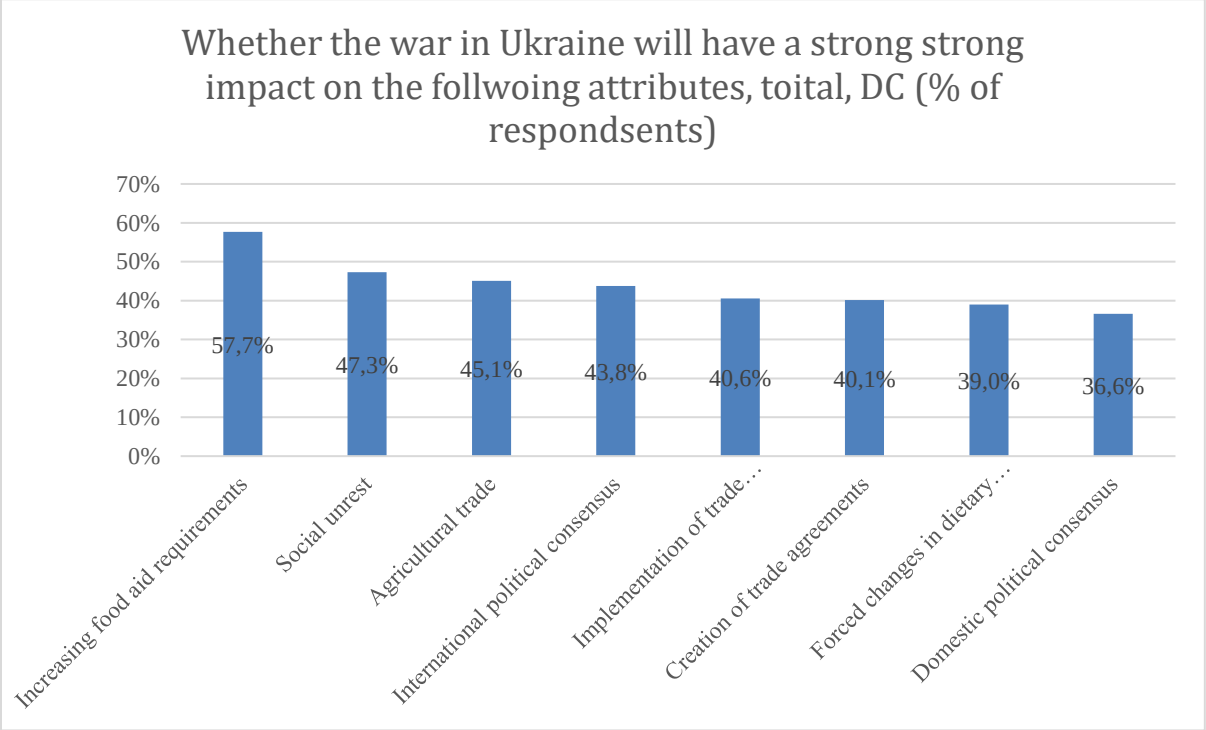

Five most affected SDGs by the war in Ukraine, total, own country (% of respondents)
20,0%
18,0%
16,0%
14,0%
12,0%
10,0%
8,0%
6,0%
4,0%
2,0%
0,0%
19,0%
18,3%
10,8%
10,5%
10,2%
Affordable and clean energy
No Poverty
Good health and well-being
Peace and justice strong institutions
Zero hunger


Five most affected SDGs by the war in Ukraine, total, DC (% of respondents)
30,0%
25,0%
20,0%
15,0%
10,0%
5,0%
0,0%
24,4%
23,6%
12,4%
7,8%
7,7%
No Poverty
Zero Hunger
Good Health and Well-being
Clean Water and Sanitation
Affordable and Clean Energy


Direction of the impact of war in Ukraine on the five most affected SDGs, total, own country (% of respondents)
40,0
20,0
0,0
-20,0
-40,0
-60,0
-80,0
22,7
28,5
21,3
19,8
20,7
23,9
20,1
19,5
11,2
16,6
54%
58.9%
71.2
45.8
50.3
Good Health and Well-being
No Poverty
Affordable and Clean Energy
Zero Hunger
Peace and Justice Strong Institutions
Positively
Neutral
Negatively


Direction of the impact of war in Ukraine on the five most affected SDGs, total, DC (% of respondents)
40,0%
30,0%
20,0%
10,0%
0,0%
-10,0%
-20,0%
-30,0%
-40,0%
-50,0%
-60,0%
-70,0%
20,0%
20,9%
18,5%
20,4%
22,1%
22,7%
22,3%
29,7%
22,8%
26,0%
-59,1%
-61,0%
-55,2%
-48,0%
-51,2%
No Poverty
Zero Hunger
Good Health and Well-being
Clean Water and Sanitation
Affordable and Clean Energy
Positively
Neutrally
Negatively


Whether the war in Ukraine will have a strong impact on the following attributes, total, own country (% of respondents)
60%
50%
40%
30%
20%
10%
0%
54,6%
52,1%
49,1%
44,8%
41,8%
40,5%
38,8%
31,7%
Increasing food aid...
International political...
Social unrest
Agricultural trade
Creation of trade agreements
Implementation of trade...
Domestic political consensus
Forced changes in dietary...


Whether the war in Ukraine will have a strong strong impact on the follwoing attributes, toital, DC (% of respondsents)
70%
60%
50%
40%
30%
20%
10%
0%
57,7%
47,3%
45,1%
43,8%
40,6%
40,1%
39,0%
36,6%
Increasing food aid requirements
Social unrest
Agricultural trade
International political consensus
Implementation of trade…
Creation of trade agreements
Forced changes in dietary…
Domestic political consensus

11. Policy Note

This deliverable provided new unique information on stakeholders' and general public opinions on sustainability, and on the impact of policies towards agri-food trade liberalisation.

During the period when this study was carried out, the war in Ukraine broke out. Although it has been too early to provide empirically based research due to the lack of systematic data on its impact on sustainability, it was judged necessary to include questions on the impact of Ukrainian war in the surveys of stakeholders and the public to provide information about the main immediate concerns in relation to sustainability.

The deliverable had two main objectives:

- To give modellers in WP3 contextual information on agri-food stakeholders, and general public priorities and concerns in relations to trade and sustainability interactions.
- To inform the EC on the preferences of food chains stakeholders and the general public in the context of sustainability, and their perceptions about the effect of trade liberalisation on different Pillars of sustainability.

Method

The main method was design and implementation of surveys to reveal the priorities of interested parties on a range of aspects of linkages between international trade and sustainability. Two surveys were carried out, one with H2020 TRADE4SD project stakeholders and one with general public to elicit whether better knowledge and information of stakeholders, and probably their vested interests, will lead to differences in responses in comparison to the general public.

The stakeholders' survey was carried out first. A group of stakeholders, identified by the partners in TRADE4SD, were asked to answer an online survey organised in three rounds based on three different questionnaires. Stakeholders from the EU project partners and the partner from Vietnam participated. The samples were small. The first round was the most general, it included questions trying to elicit stakeholders' opinions on the importance of each Pillar of sustainability (economic, environmental and social), the perceived effect on sustainability of trade liberalisation and the perceived effect on agriculture of further drive to sustainability. Responses to this round were received from 43 respondents from the EU and 24 from Vietnam.

The second round was more detailed asking stakeholders to rank attributes within each Pillar of sustainability, pre-determined by the TRADE4SD team. Responses to Round 2 were received from 28 stakeholders in the EU and 21 in Vietnam. The third round only provided contextual information about the opinions of a small group of stakeholders about the impact on sustainability of the ongoing war in Ukraine.

The general public survey was implemented after that in Hungary, Germany and the UK. The main reason to proceed with a general public survey was that in a democratic society an important indication of future policies is what citizens think of the issue at hand. Therefore, it was deemed essential to provide new evidence of general public views on the interactions between trade and sustainability. The survey was commissioned to an external company specialised in market research. The samples were of 1,000 respondents per country representative by gender, age and residence in the country. This survey consisted of one round

only, and the three questionnaires used in the three rounds of stakeholders' survey were consolidated, editorial amendments were incorporated to avoid technical concepts not familiar to non-experts.

At the end of the work on the deliverable, for validation of results a workshop of stakeholders and experts was organised. The workshop also provided feedback on technical modelling issues, in particular the impact of the EU free trade agreement with Vietnam and the partnership agreement with Ghana, and output of different scenarios of trade liberalisation accompanied by an introduction of CO2 tariffs and carbon output taxes. Thirty-seven individuals attended the workshop representing a mix between agri-food stakeholders and experts from the project advisory committee.

Policy relevant conclusions

- In the post-Covid and the war in Ukraine environment, the major concerns are about the economic sustainability, where policy efforts should be focused (at least in a short to mid-term). Within the broad area of economic sustainability, preferences are for reducing poverty and securing employment.
- Under the conditions of Ukrainian war the main emphasis should be put on security of food supply chain and the protection of food consumers who are expected to be most of all hurt by the economic changes as a result of the war. A comparison between citizens views on the effect of the war in Ukraine and stakeholders' responses shows important consistencies. These consistencies somehow increase the relevance of stakeholders' responses, despite small samples.
- In periods when there are growing concerns for prices and incomes nationally and globally, exacerbated by the Russian invasion of Ukraine, the need of stronger economic sustainability takes a priority over environment. The main priorities in the social Pillar should be societal stability, employment level and income distribution.
- Water quality and water waste have been put at the centre of environmental sustainability. These results stemming from both stakeholders' and the general public surveys are significant for policy. They are relevant to current policy debate as the European Economic and Social Committee (EESC) had a high-level conference in October 2023 calling for the EU to treat water as priority and set an EU Blue Deal.
- The general public appear to believe in the sustainability benefits of trade liberalisation and they appear to be willing to lend support for trade liberalisation and strengthening policies that boost agricultural sustainability.
- Increased agricultural trade could have many positive effects on the economy – increased productivity and jobs in the trading countries. However, a balanced approach is necessary as increased agricultural trade may lead to increased production resulting in reduced land available for sustaining habitats for local wildlife and increase of GHG emissions.
- Societal stability could also be impacted by an increase in agricultural trade as it may result in changing the income distribution. It is necessary to investigate the income distribution under different scenarios for agri-food trade.

- Concerning future policy, the priorities in the EU should be to ensure structural changes in the agri-food sector that comply with sustainability objectives. The future emphasis of policy in Vietnam must address poverty.
- The general public survey was implemented with panels only in several EU countries. The impact for developing countries is often more important as they are more dependent on trade with Europe. It is recommendable to have a similar study in the trade partner countries where the sustainability issues are usually more exacerbated and often act as a barrier to trade.

Consistencies and inconsistencies between the opinions of the project stakeholders and the general public

There were two important results showing consistent views of stakeholders and the general public: (i) water came as the most precious environmental resource, and (ii) the increase in the relative importance of social sustainability under the conditions of the continuing war in Ukraine.

At the same time, several interesting inconsistencies have been observed. One example is that the stakeholders from the EU put the highest relative value on the environment, whilst the general public consistently valued most of all the economy. This may suggest that the citizens' pressure on governments to fulfil their political promises for a net zero emission economy might decrease which might be embraced by some governments which struggle with the potential economic and social costs of their green agenda.

Words of caution

The opinions of stakeholders and the general public may vary over time so it is recommendable to repeat such surveys after 5 years, when also the geopolitical situation might be different.

Some samples, in particular of project stakeholders, were rather small. Therefore, it is necessary to proceed with caution in generalising stakeholders' opinions to larger groups of agri-food chain stakeholders.

Concerning future approach to such surveys, respondents should be prompted to give their understanding of what sustainability is and prioritise a list of policies they think that could enhance or constrain the drive to sustainable development.

In the surveys, each Pillar of sustainability was treated on its own. However they are strongly interconnected. Economic growth may not provide prosperity without a fair society, and these cannot be obtained without respect for the ecological capacity of the ecosystems and environment. Therefore, more emphasis on interconnectivity is necessary.