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ASSESSING THE IMPACT OF TRADE FACILITATION REFORMS ON THE ENVIRONMENT

Applied Research Project Report

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LIST OF ABBREVIATIONS

CO ₂	Carbon dioxide
COP27	2022 United Nations Climate Change Conference of Parties
COVID-19	Coronavirus disease (pandemic)
DDA	Dairy Development Authority
D-I-D	Difference-in-differences
EAC	East African Community
EU	European Union
FLW	Food loss and waste
GHG	Greenhouse gas(es)
GVCs	Global value chains
IHEID	Institut de Hautes Études Internationales et du Développement (Geneva Graduate Institute)
ITC	International Trade Centre
JICA	Japan International Cooperation Agency
KEN	Kenya
KRA	Kenya Revenue Authority
LDCs	Least developed countries
LLDCs	Landlocked developing countries
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MTIC	Ugandan Ministry of Trade, Industry and Co-operatives
MWE	Ugandan Ministry of Water and Environment
NCTO	Northern Corridor Transport Observatory
NEMA	National Environment Management Authority of Uganda
OECD	Organisation for Economic Co-operation and Development
OSBP	One-stop border post
SCOO	Simplified certificate of origin
SECO	Secrétariat d'Etat à l'Économie (State Secretariat for Economic Affairs)
SMEs	Small and medium-sized enterprises

SPS	Sanitary and phytosanitary
SSA	Sub-Saharan Africa
SST	Small-scale trader
TF	Trade facilitation
TFA	Trade Facilitation Agreement
UGA	Uganda
UNBS	Uganda National Bureau of Standards
URA	Uganda Revenue Authority
UFVEPA	Uganda Fruits and Vegetables Exporters and Producers Association
VAT	Value-added tax
WTO	World Trade Organization

EXECUTIVE SUMMARY

Trade facilitation (TF) encompasses measures that streamline border procedures, promoting convergence of standards to reduce paperwork and administrative formalities. Measures like these can lessen waiting times at borders and reduce product losses, costs of storage and refrigeration, and also enhance competitiveness and transparency, along with efficient production and resource allocation. However, TF and the environment interact with each other in a multifaceted manner. This applied research project (ARP) explores this multifaceted relationship between TF measures and the environment through a case study of the Malaba one-stop border post (OSBP) between Uganda and Kenya.

This report identifies the main characteristics of TF and dives deeper to highlight the complex nexus between trade, TF and the environment, with a specialised focus on perishable goods, in order to determine how TF can reduce the carbon footprint of cross-border trade at border crossings. One point to note is that this nexus must be regarded in terms of its different components. In other words, a useful framework to better understand the environmental impacts of trade is to separate these impacts into scale, composition, and technique effects. Hence, the overall impact of TF on the environment depends on the magnitude of each effect and cannot be determined a priori (WTO, 2022a).

Through a literature review, we note that there is an inverted U-shaped relationship with environmental externalities following the Environmental Kuznets Curve (EKC), where externalities increase up to a certain level as income goes up, after which, it decreases due to demand for less polluting activities (Dinda, 2004). Further, the review also delves into the challenges both developing and developed countries face with respect to inefficiencies at border crossings. For example, in the Global South, countries usually face higher trade costs, sub-optimal infrastructure, limited use of digitalised processes resulting in lengthy procedures, to a point where these countries stand to benefit the most from TF policies and the implementation of the Trade Facilitation Agreement (TFA) (OECD, 2018a), particularly SMEs within these. However, TF measures are also relevant for countries in the Global North, as these promote inclusiveness by supporting SMEs and women entrepreneurs also in high-income countries (OECD, 2018a). With respect to environmental effects of TF in developed economies, TF tends to result in higher efficiency gains through less carbon emissions in high-income economies but more carbon emissions in developing economies (WTO, 2022b).

Interviews with experts led the team to a better understanding of the complexities and interactions in the nexus between trade and environment and provided meaningful insights that helped shape the remainder of the research. The research team then engaged in gathering primary qualitative data through semi-structured and/or structured interviews with government officials and employees and private sector stakeholders at the selected border crossing (Malaba OSBP, Uganda-Kenya). The cross-sectional sample developed and designed for the fieldwork was to account for the different stakeholders involved in the cross-border trading process, TF and environmental policy as well as their implementation. Thereafter, pursuant to the fieldwork, the data collected was evaluated and analysed by the research team along the following categories: (A) cross-border trading processes; (B) key challenges; (C) environmental effects; (D) cross-sectoral collaboration; (E) environmental monitoring; and (F) solutions and future improvements.

To conclude, this report sheds light upon the important nexus between TF and the environment. Through the findings and analysis mentioned, the report clearly identifies several recommended channels for the reduction of environmental externalities through both local and more general TF measures. At the Malaba OSBP, the recommendations are elaborated along three key channels, namely (A) collaboration amongst government entities; (B) processes at the border; and (C) infrastructure development.

In addition to specific recommendations for the Malaba OSBP, we acknowledge that future research on the environmental effects of TF measures remains crucial. In conclusion, we recommend that the net environmental effect of TF should be explored in order to accurately differentiate between the global and local net effects associated with trade, as the same is currently lacking in existing research.

CHAPTER 1: INTRODUCTION

A. PROJECT BACKGROUND AND CONTEXT

Combating the anthropogenic climate crisis is one of the most important global issues humankind is facing today. All human economic activity will have to undergo a paradigm shift to avert climate catastrophe and shape a sustainable world. In this context, international trade, which will continue to be a core feature of the global economy, should embark on a shift towards sustainability and catalyse mitigation and adaptation efforts. There is thus a flourishing debate about the environmental consequences of trade amongst policymakers, trade pundits, and researchers alike. However, many aspects of the nexus between trade and environment have not been sufficiently explored, one of them being the potential of trade facilitation (TF) reforms in reducing some of the negative environmental externalities of trade.

TF can be defined as “...transparent, predictable and straightforward border procedures that expedite the movement of goods across borders...” OECD (2018a, p.11). Measures that streamline or harmonise procedures and reduce paperwork and administrative formalities can reduce trade costs. However, the intersection of TF and the environment has not been sufficiently explored, thereby limiting the knowledge base of reforms that can curb the harmful impact of international trade on the environment. Furthermore, studies on specific regional contexts remain even more scarce (Ibrahim & Ajide, 2022).

Therefore, there is an urgent need to begin filling this gap with new research and evidence that examines how TF measures can have a positive impact on the reduction of negative environmental externalities of international trade procedures. This applied research project aims to contribute to fill the knowledge gap between TF reforms and their effects on the environment. This project seeks to create a better understanding of the ways in which TF reforms can reduce the carbon footprint of international trade procedures through a literature review, expert interviews, and fieldwork at a border crossing in the Global South.

B. RESEARCH QUESTIONS AND OBJECTIVES

Using academic literature, expert interviews and analysis of the data collected through fieldwork and desk research, the research team sought to shine a light on the negative environmental externalities that can be attributed to inefficiencies in cross-border trade (e.g., waste of short shelf-life perishable food due to delays in customs clearance or inappropriate storage, carbon emissions from truck engines, paper usage and waste, waste management, etc.), and provide evidence of the impact that TF measures can have on mitigating these externalities by seeking to answer the following research question:

How can trade facilitation reforms at the border help to reduce the negative environmental externalities associated with international trade procedures?

The research focuses on a terrestrial border crossing as a case study. *Firstly*, because the bulk of carbon dioxide (CO₂) emissions from transport comes from land transport (WTO, 2022a). *Secondly*, as a terrestrial border crossing involves two countries, it should be easier to not only observe the impact of both imports and exports arising from the same transaction but also to see how measures such as cross-border agency cooperation and harmonisation of standards can facilitate the trade of goods and, thus reduce some of the environmental externalities mentioned above. Channels for the same include, *inter alia*, reducing traffic congestions and waiting times as well as digitising paperwork and harmonising

regulations and goods inspections. For example, greenhouse gas (GHG) emissions can be reduced by up to 86% when pre-arrival clearances and sample inspections are conducted jointly to minimise the time at the border (Lucas, 2021).

C. REPORT STRUCTURE

The findings from the academic research and fieldwork are summarised and analysed in this report with the case study forming the main part of the same. The report has been structured into six chapters. [Chapter 1](#) introduces the research project, and gives the reader a brief overview of the nexus between TF and the environment. [Chapter 2](#) provides the research methodology used with regards to the literature review, expert interviews, fieldwork, data analysis, and writing this report. [Chapter 3](#) includes a review of the existing academic literature on trade and TF on one hand and its environmental aspects on the other (especially in the context of perishable goods). [Chapter 4](#) presents our findings from interviews conducted with experts in trade and environment, which forms the basis for our subsequent fieldwork. [Chapter 5](#) zooms into the case study, and provides a detailed qualitative and quantitative analysis of the environmental aspects of TF at the Malaba border crossing between Uganda and Kenya, followed by a set of recommendations structured along three broad channels. Lastly, [Chapter 6](#) concludes the report with a brief summary of the research project, along with next steps which can be used as an effective tool as countries seek to seize opportunities in the green economic transition and promote reforms with both economic as well as environmental benefits.

CHAPTER 2: RESEARCH METHODOLOGY

The research methodology leading to this report follows a meticulous five-step approach, each building on the previous step: (A) review of academic literature; (B) expert interviews; (C) fieldwork at a Global South border crossing; (D) qualitative and analysis of the data collected (by the main research team) along with a quantitative analysis (by ITC's International Consultant); and (E) preparation of a final report with recommendations, the details of which are provided below.

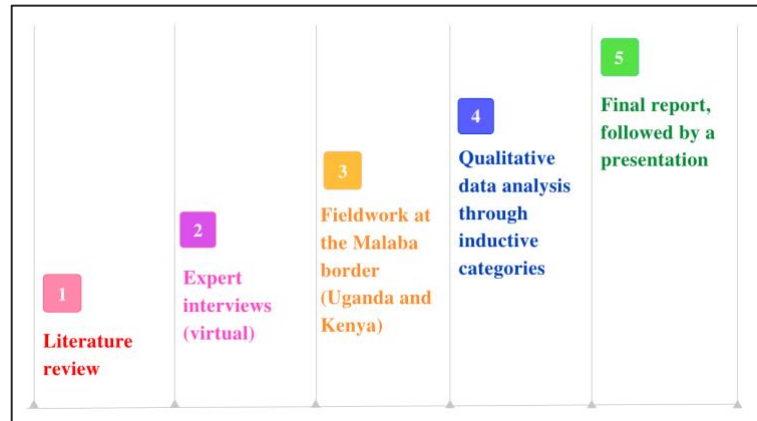


Figure 1: Research Methodology

A. REVIEW OF ACADEMIC LITERATURE

Firstly, the research team has comprehensively reviewed academic literature on TF measures and their environmental implications. Building upon the literature review, the focus of the report is mainly on perishable goods, as it is estimated that these require more energy consumption (e.g., with the need for refrigeration and adequate storage) due to their reduced shelf-life, produce more waste, and thus, generate more GHG emissions (Wu et al., 2019). The aim of this review is to establish a map of the current landscape of academic knowledge on the issue from multiple angles, gather international lighthouse examples and qualify the results by pointing to possible gaps in knowledge or missing puzzles. To this end, the team has examined academic literature on the topic, news articles from established media outlets, and recently published policy reports and briefs by international organisations and non-governmental organisations.

B. INTERVIEWS WITH TRADE AND ENVIRONMENTAL EXPERTS

Secondly, the research team conducted virtual interviews with trade and environmental experts having different areas of expertise. The questions asked and the choice of experts were informed by the literature review. In particular, the team tried to hear from experts about what could be the environmental impact and benefits of TF measures. For instance, the team sought to understand the extent to which TF measures could make trade more sustainable through improved efficiency and dissemination of green technologies.

With this objective in mind, the team developed a potential list of interviewees with the ITC, with around one-third of people reached out to replying positively to the request. The list of experts that were finally interviewed reflected a broad set of perspectives and agendas with regard to trade and environmental sustainability. Once a first version of the questionnaire for the experts was ready, the team received input from ITC as to how to improve the questionnaire, as well as to how best extract information from the experts being interviewed. While the questionnaire tried to gauge how familiar the experts were

with TF and the trade and environment nexus more broadly, it also sought to profit from the respective expertise of the interviewees in order to better understand the environmental impacts of TF measures. The interviews with each expert were conducted virtually and took between 30 minutes and 1 hour. The list of experts interviewed may be found in [Appendix 1](#) whereas the survey questionnaire(s) may be found in [Appendix 2](#).

C. CASE STUDIES AND FIELDWORK

Thirdly, the research team engaged in gathering primary qualitative data through semi-structured and/or structured interviews with government officials and employees at selected border crossing(s) and private sector stakeholders. From the outset, the project was intended to encompass a comparative approach by conducting fieldwork at a Global North border crossing in addition to a Global South border cross.

With respect to the former, the ITC and the research team jointly agreed on the border crossing between Switzerland and France at Bardonnex near Geneva. Between July 2022 and October 2022, the research team sought to establish contacts with Swiss authorities and logistics companies operating near the border. However, only one of the interlocutors sought the State Secretariat for Economic Affairs (SECO) provided answers to the questionnaire shared by the team. However, even though SECO affirmed that TF and digitalisation of trade procedures are very important for the Swiss government and that, in its opinion, TF measures should have a positive environmental effect, they only replied after a first version of this report had been prepared. Additionally, the answer from SECO, in itself, is insufficient for the inclusion of a case study of Bardonnex, Geneva as an example of a Global North border crossing. Therefore, ITC and the team jointly agreed to only focus on a Global South border crossing for the purpose of this report.

I. Choosing the Malaba border crossing between Kenya and Uganda

The process for choosing the Malaba border crossing between Uganda and Kenya as a case study was an iterative and a collaborative effort by the student team, the academic supervisors and the ITC personnel involved. The aim was to select a border crossing at which the research objectives could be pursued in a timely manner and the findings could be extrapolated for similar border crossings due to the trade pattern present and the border-crossing's properties.¹

Regarding the trade pattern between Uganda and Kenya, the two countries offer an insightful, exemplary case of strong bilateral economic interdependence, regional economic integration, and joint economic development. *Firstly*, Uganda and Kenya are heavily economically intertwined with bilateral trade flows of national economic importance. In 2020, in terms of value, Uganda was the main destination of Kenyan exports with 14.4% of all exports while Kenya was the second most valuable destination of Ugandan exports with 6.84% of all exports² (OEC, 2022a, 2022c). During the last 25 years, the exports of

¹ To this extent, the main criteria guiding the decision were: the relative importance of the border crossing for trade on the African continent, the fit of the trade pattern between the two countries involved, the experience and contact the ITC already had with the respective countries and border crossing and the safety and ease of logistics for the team during their stay. Due to the scope of this report, we elaborate mainly on the criteria of the fit of trade pattern and the specific border crossing.

² Overall, in 2020, Uganda exported \$401M to Kenya with the main products being tea (\$48.6M), milk (\$38.2M), and corn (\$34.1M). On the other hand, Kenya exported \$940M to Uganda with the main products being gold (\$243M), palm oil (\$94.6M), and coated flat-rolled iron (\$37.3M). (OEC, 2022b).

Kenya to Uganda have increased at an annualised rate of 6.43%, while exports of Uganda to Kenya have increased at an annualised rate of 13.7%. This shows the joint economic development of both countries and indicates the increasing importance of their bilateral trade. Naturally, these figures do not account for bilateral informal trade which continues to play a major role in the East African Community (EAC) (Siu, 2019).³

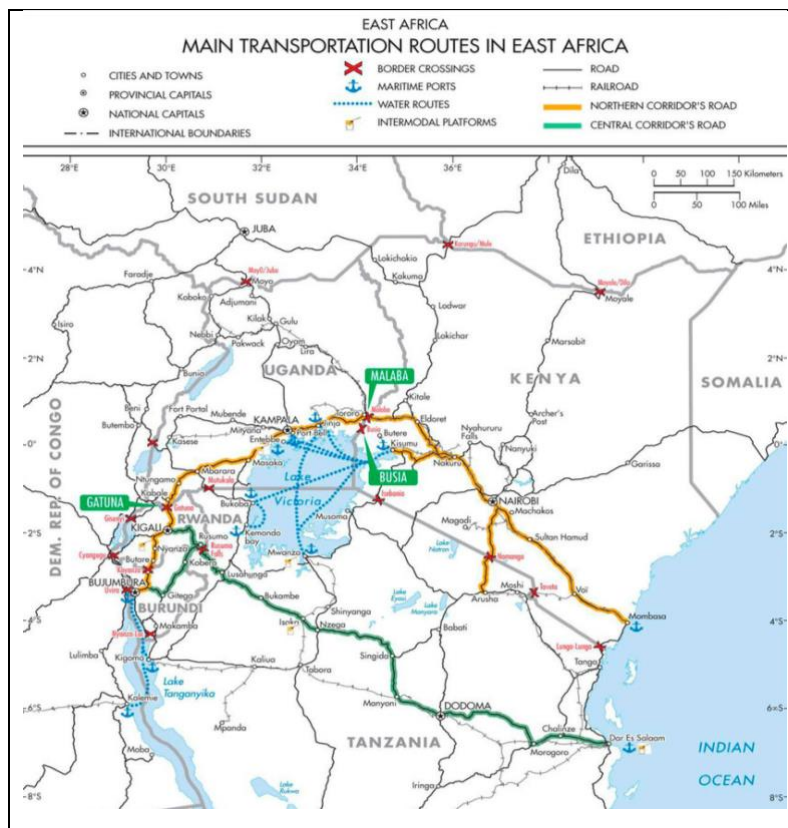


Figure 2: Main Transportation Routes in East Africa (Nugent, 2020)

Secondly, economic cooperation and trade flows between Kenya and Uganda are of major regional importance. Both actors are part of the EAC and its effort towards a common market including a future customs and monetary union (EAC, 2022). Importantly, the trade routes between Kenya and Uganda constitute the EAC's Northern Corridor linking the region's main port, Mombasa (Kenya), to landlocked countries like Uganda, Rwanda, Burundi, and the DRC. This corridor is the region's most important trade route with up to 70% of its trade flowing through the Northern Corridor (NCTO, 2022; USAID, 2013). Hence, any findings from analysing environmental impacts of TF along this corridor will be of regional importance.

Thirdly, the bilateral trade portfolio between Kenya and Uganda matches with the research focus on perishable goods. In 2020, almost 70% of the value of exports from Uganda to Kenya and more than a quarter of exports vice versa were in perishable goods (OEC, 2022b).⁴

To conclude, analysing trade flows between Kenya and Uganda offers promising insights which can inform future research and TF implementation within the East-African region and beyond.

³ In 2018, informal exports from Uganda were estimated at 38% of formal exports (Siu, 2019).

⁴ Categories: foodstuffs, vegetables, animal products, vegetable, and animal biproducts.

Regarding the choice of the Malaba border crossing specifically: *Firstly*, the Malaba border crossing is one of the most important border crossings in the EAC region. It represents one of the main gates for trade via the Northern Corridor from Mombasa to Kampala and beyond. From February 2021 to February 2022, 55% of Ugandan imports and 35% of Ugandan exports passed through the Malaba border crossing.⁵ Making it the most valuable border crossing for Ugandan external trade (Ugandan Bureau of Statistics, 2022).

Secondly, the Malaba border crossing fits the purpose of the research project as it has been piloting TF efforts for more than a decade. Between 2009 and 2013, the East African Trade Hub, piloted and established Joint Border Controls (JBCs) in Malaba to facilitate trade along the Northern Corridor and pioneered 24/7 border services from 2010 onwards to ease traffic congestions (USAID, 2013). Furthermore, the Malaba border crossing was the first One-Stop Border Post (OSBP) along the Northern Corridor in 2007 with Busia following in 2018 (Mutambo, 2021). This reduced the average border-crossing time from 1-2 days to 6-8 hours for trucks in Malaba (JICA, 2011) and by 80% in neighbouring Busia (Siu, 2019). In addition, Simplified Certificates of Origin (SCOOs)⁶ are widely and successfully used in Malaba with 93% of traders reporting that their SCOOs are accepted “*without any problems*” (Siu, 2019) This is also due to the information helpdesk by the Malaba Cross-Border Trade Association at the OSBP which assists traders in filling out their SCOOs (Siu, 2019).

Thirdly, the properties of the Malaba OSBP match the aim of the case study well. Given the dominance of road-based transport on the African continent, findings from Malaba can be insightful for various other terrestrial, mainly road-based border crossings on the African continent (Valensisi et al., 2016).

To sum up, the Malaba border crossing represents a crucial point for regional and inter-regional trade along the northern corridor and comprises favourable properties for conducting a case study with the above defined research objectives in mind.

II. Sample design

The list of interviewees was developed and designed with the aim of accounting for the different stakeholders involved in the cross-border trading process, TF and environmental policy as well as their implementation. To this end, the 25 different stakeholders interviewed represented government entities and their regional representations (19), private business associations involved in imports and exports of goods and policy development (4), a union of truck drivers specifically working on the Northern Corridor route (1) and representatives of small-scale traders (SSTs) (1). Moreover, the sample represented a considerable variety of hierarchy levels ranging from heads of departments⁷ to vice-commissioners⁸ to officers responsible for inspections of individual trucks

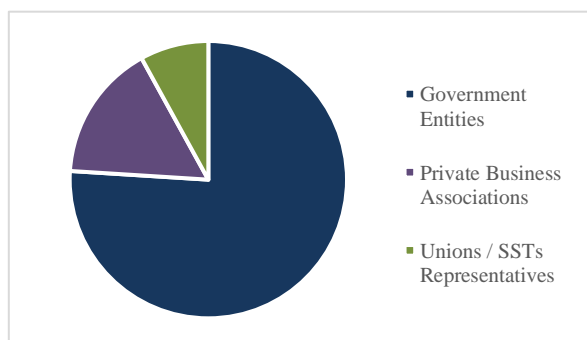


Figure 3: Stakeholders by organisation type

⁵ Percentage meaning in terms of value overall goods.

⁶ SCOOs are simplified clearance forms which can be used by traders who are trading goods originated from EAC partner states when the value of traded goods is \$2,000 or below (MTIC, 2022a).

⁷ For example, the Uganda National Bureau of Standards (UNBS).

⁸ For example, the Ugandan Ministry of Water and Environment (MWE).

at the Malaba OSBP.⁹ A comprehensive list of the government entities and private stakeholders interviewed may be found in [Appendix 1](#).

Consequently, the sample accounted for different levels of experience in working within cross-border trade and on environmental issues. Furthermore, the interviewers did not have any personal contact with the interviewees apart from the interview itself. Hence, influences caused by personal (dis-)affection could be reduced.

III. Questionnaire formulation

The stakeholder-specific questionnaires were developed by the student team in collaboration with ITC and led by the insights from the literature review as well as the expert interviews. Most importantly, the language of the questionnaires was coordinated with the ITC's National Consultant, Charles Nuwagaba to incorporate his experience with the aim of contextual and cultural appropriateness.

The questionnaires were structured in six different sections. The *first section* consisted of a short preamble summarising the research project, its objective and why the specific stakeholder was identified as key stakeholder. The *second section* included introductory questions on TF and the cross-border trading process including key challenges faced. The *third section* introduced the interconnection of trade and the environment, inquiring about environmental effects of trade, TF's impact on different environmental externalities and the state of the local environment at border crossings. The *fourth section* inquired about existing or prospective environmental monitoring mechanisms. The *fifth section* included stakeholder-specific questions. Here, the three main aspects were current collaborations amongst stakeholders, specific strengths and bottlenecks within the cross-border trading process, and the question of incentivising entities to increase environmental activities. The *sixth section* consisted of two concluding questions offering the opportunity for stakeholders to mention untouched issues and provide an outlook into future efforts.

The survey questionnaire(s) used for the interviews were compiled into a master questionnaire for convenience which may be found in [Appendix 2](#).

IV. Interview set-up and execution

The fieldwork took place from 5 September 2022 to 9 September 2022 in Kampala, the capital of Uganda and at the Malaba OSBP i.e., the border crossing of interest between Uganda and Kenya. The meetings were arranged by ITC's National Consultant with support the ITC staff based out of their headquarters in Geneva, Switzerland. All of the interviews were conducted in-person either in Kampala within the offices of the government entity or the private stakeholder and in Malaba within the offices of the respective Ugandan and Kenyan border officials at the OSBP. With the exception of two interviews,¹⁰ all the interviews were conducted in the presence of all the students, ITC's Senior



Figure 4: Guided visit of the Malaba OSBP premises by the URA

⁹ For example, from the Ugandan Dairy Development Authority (DDA).

Officer, ITC's International Consultant, and ITC's National Consultant. With the exception of the MWE and the Horticultural Exporters Association of Uganda (HORTEXIA), all the interviewees were male only.¹¹



Figure 5: Group photo with all Ugandan Authorities present at the Malaba OSBP



Figure 6: Group meeting with all Kenyan Authorities present at the Malaba OSBP

Two interviews were conducted with more than a single stakeholder present. *Firstly*, the interview with the Kenyan authorities was conducted as a group interview with all Kenyan stakeholders present. *Secondly*, the interview with the Ugandan Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) was conducted together with the Ugandan Dairy Development Authority (DDA) at the Malaba OSBP. It is possible that these logistical circumstances made internal power dynamics resulting in self-censorship more relevant. However, due to the limited time with the various stakeholders, the assessment of its relevance lies out of the scope of this project. Further, the interviews were conducted within a short time frame of five days due to the limited time available which reduces possible influences of timing related biases.

For logistical reasons and the varying flow of the conversation according to the insights offered, the length of the interviews varied between 15 and 60 minutes. On average, the interviews lasted for approximately 40 minutes. Typically, they began with a formal introduction along professional and social hierarchies. The research objective was summarised, and the stakeholder was requested to consent to the recording of the interview, to which they all consented. Thereafter, the team began with general questions on the cross-border trading process which was followed by either the stakeholder-specific questions (on their responsibilities, collaborations, and challenges) or the environmental questions (on environmental effects and their monitoring). Depending on the schedule, concluding questions were asked before a formal farewell followed partly by a joint photograph and informal exchanges. At the Malaba OSBP, the team was given a guided tour of the OSBP premises (on both sides of the border) after conducting the interviews, during which, further questions could be asked.

Considering time constraints, individual responsibilities and expertise of the interviewees and the flow of the conversation, some of the questions asked (mainly in terms of order) differed from the questionnaire that was prepared. Nevertheless, all stakeholders were asked questions from each section of the survey questionnaire.

¹⁰ For logistical reasons, the team had to divide up for the interview with the MWE and the interview with the Uganda Fruits and Vegetables Exporters and Producers Association (UFVEPA).

¹¹ The data could be subject to a gender bias as the interviewees mainly identified as male.

D. QUALITATIVE AND QUANTITATIVE ANALYSES

Thereafter, pursuant to the fieldwork, the data collected was evaluated and analysed by the team. The method of analysis used to analyse the data collected in semi-structured interviews is “*qualitative oriented category-based text analysis*” (Mayring, 2010). In brief, this method combines quantitative content analysis with qualitative-interpretive evaluation steps. At the centre of this method is the formation of categories according to which the interview transcriptions are filtered, and the results coded to visualise patterns and trends within the data. Hereby, inductive, and deductive category formation are differentiated. For the case study at hand, the categories used to code the data shown in Table 1 are defined inductively, accounting for uncertainties due to the modalities of the fieldwork. Specifically, the categories and the corresponding coding rules are defined considering the academic literature reviewed, the assessments collected during expert interviews and the evaluation of the data collected during the fieldwork together with the project partner i.e., ITC. As a result, the six categories mirror the content-wise sections within the questionnaire as well as the general flow of the interviews conducted.

Table 1: Data Analysis Categories

Category	Definition	Coding rule
Cross-border trading process analysis	Description of the current process of trading goods between UGA and KEN in general and via Malaba OSBP specifically.	Descriptive statements and statements on temporal development of trade process and pattern.
Key challenges	Identification and description of challenges for UGA – KEN trade in general and the stakeholder’s part of the cross-border trading process specifically.	Descriptive and normative statements of discontent with aspects of the current cross-border trading process.
Environmental effects	Identification and knowledge of environmental externalities of the cross-border trading process especially at the Malaba OSBP.	Descriptive and evaluative statements on environmental effects of the cross-border trading process and the state of the environment close to the Malaba OSBP.
Cross-sectoral collaboration	Description and evaluation of collaboration between stakeholders within UGA and on a regional level.	Descriptive and evaluative statements on past, existing, or future collaboration between stakeholders.
Environmental monitoring	Knowledge of monitoring mechanisms of environmental externalities of trade between UGA and KEN within one’s organisation and by other entities.	Descriptive and evaluative statements on past, existing, or future environmental monitoring mechanisms.
Solutions and future	Identification and description of possible future improvements at the nexus of the	Descriptive and normative expressions concerning changes from the status-quo.

Category	Definition	Coding rule
improvements	cross-border trading process and its environmental effects.	

Lastly, since ITC has separately engaged an external International Consultant to conduct quantitative research on the topic, the report which was authored by the International Consultant may be found in [Chapter 5](#).

CHAPTER 3: LITERATURE REVIEW

A. OVERVIEW OF TRADE FACILITATION (TF) AND THE TRADE FACILITATION AGREEMENT (TFA)

Recent theoretical studies consider that the gains from trade may differ from country to country, and that these gains depend critically upon country-specific differences in the economic and institutional environment (McMillan et al., 2014). That being said, TF is a complex concept with its scope encompassing several dimensions that could encourage access to international markets. These dimensions can conveniently be grouped under four broad headings: (A) physical infrastructure; (B) information and communications technology (ICT), (C) business environment; and (D) border and transport efficiency (Portugal-Perez & Wilson, 2012).

The benefits of TF measures are many. With the development of global value chains (GVCs), some goods may be traded multiple times across borders, first as inputs or unfinished goods and later as final products (OECD, 2018a). In this context, measures to streamline lengthy border procedures, harmonise standards, and reduce paperwork and administrative formalities can not only reduce waiting times at borders, but also reduce product losses, costs of storage and refrigeration, and lead to increased competitiveness and transparency, along with efficient production and resource allocation (OECD, 2018a).

To help resolve border inefficiencies, Members of the World Trade Organization (WTO) negotiated the landmark Trade Facilitation Agreement (TFA), which entered into force on 22 February 2017. The purpose of the TFA is to expedite the movement, release and clearance of goods, including goods in transit. At present, importers and exporters incur significant costs due to inefficient control and clearance procedures at customs and other border authorities, unnecessary border formalities and documentation requirements and opaque administrative fees and charges – all of which add significant dead-weight economic cost to international trade.

The TFA is legally binding on all WTO members that have ratified the same, and are required to incorporate its provisions into national legislation. Implementation of TF reforms will require a systematic approach so that it can be done in a cost-effective manner. However, true progress in this realm will be measured by how developing countries and small and medium-sized enterprises (SMEs) benefit from it (ITC, 2020).

B. TF IN THE GLOBAL SOUTH (AFRICAN CONTEXT) AND THE GLOBAL NORTH (EUROPEAN CONTEXT)

In this sub-section, we provide a general overview of the importance of TF reforms in the Global South and contrast it with the Global North while comparing the relative environmental benefits in both regions.

As developing countries in the Global South face challenges such as higher trade costs and sub-optimal infrastructure at borders, they stand to benefit the most from TF measures. In fact, while such measures may lower costs for all countries, they would be particularly beneficial for lower-income countries, especially in Asia and in Sub-Saharan Africa (SSA). Further, high trade costs are one reason many African countries have a very narrow export base, whether measured in terms of the number of

products that account for most revenue earned, the number of export markets or the number of exporting companies (Cadot et al., 2013). New products often account for just a very small share of total exports.

Existing research suggests that inefficiency at borders such as lengthy customs procedures, coupled with infrastructural issues, represent one of the binding constraints to developing countries' trade performance. Against this backdrop, it is understandable that developing countries in the Global South should benefit more from TF policies and the implementation of the TFA (OECD, 2018a). In fact, a report by the OECD (2018b) suggests that implementing the TFA can lead to a reduction of 16.5% in trade costs in lower-income countries and 17.4% in lower-middle-income countries, against a potential reduction of 11.8% of trade costs in Organisation for Economic Co-operation and Development (OECD) countries. Landlocked developing countries (LLDCs), such as Uganda, appear to be particularly disadvantaged, not only owing to higher expenses for inland transportation, but also to inefficient procedures at both their own borders and those of transit countries.

On that note, it is interesting to observe that SMEs play an important role in generating economic activity and employment in both developing and developed countries. However, due to, *inter alia*, at-the-border trade costs, SMEs continue to be less represented in international trade (Gonzalez & Sorescu, 2019). These costs also explain why informal trade is pervasive between SSA countries. High trade costs have been suggested as a factor which contributes to the persistently low recorded levels of intra-African trade, and a factor which encourages unrecorded informal trade. For instance, between Uganda and its neighbours alone, informal exports were estimated to be worth \$538 million in 2018 (38% of formal exports to its neighbours). Moreover, informal cross-border traders tend to be male, deal in perishable goods, and are also more likely to experience demands for bribes (Siu 2019).

Therefore, there are significant gains to be accrued from TF measures especially for African countries, where the estimated economic benefits are expected to be the highest relative to the rest of the world. In fact, the assessment of TF measures reveals important insights. Almost all components are found to have a significant positive impact on trade flows, with particularly strong impacts in formalities and advance rulings. Harmonising formalities related to external trade procedures stand as the most critical TF policy, as estimated in both global and African samples (Bagci et al., 2022). Moreover, TF is critical to the reduction of chronic poverty in Africa – since TF promotes trade leading to increased economic activity, employment opportunities, competition, education, public health, technology transfer, and higher income and growth (Winters et al., 2004).

Are trade policy barriers also a big issue for the Global North? The impact of TF measures should differ significantly according to their context. Trade policy barriers are, in general, the most important element of trade costs among developing countries, and trade costs are higher for lower-income economies than for those in the upper echelon (WTO, 2021a). Besides, trade costs for manufactured goods (which represent a large share of trade in goods among Global North countries) are usually much lower than for agricultural goods (WTO, 2021a).

Yet, even countries in the Global North can benefit significantly from TF as the implementation of the TFA fosters inclusiveness by supporting SMEs and women entrepreneurs in high-income countries too (OECD, 2018a). Besides, as the OECD Trade Facilitation Index indicates, even countries that score high in many parameters that are relevant for the ease of doing business can still benefit from streamlining border procedures and automating customs and border processes (OECD, 2018b).

The cases of Switzerland and France can help illustrate this point. While France has a very high score in the OECD Trade Facilitation Index (1.788 on 2), it could still improve its performance in areas such as procedures and internal border agency cooperation. Switzerland also has a very high score (1.738). Yet, it could perform better in areas such as external border agency cooperation and through

completion of the single-window procedure. This is the reason why it is engaged in the “*DaZit transformation programme*”. As a part of the “*Digital Switzerland Strategy*”, it aims at simplifying, optimising and digitising all customs, duty collection and control processes and therefore reducing regulatory costs.

For countries in the Global North, it is also important to look at regional economic cooperation. Again, the case of Switzerland can provide a useful glimpse into the impact of TF measures in a high-income economy. Being surrounded by European Union (EU) countries, it is natural that its main terrestrial border crossings will play a significant role in its economy. In addition to a Free Trade Agreement with the EU, Switzerland also has in place more than 100 bilateral agreements with the EU (European Commission, 2022). One should note, however, that its context is very different from that of LLDCs. A recent WTO report on these countries stresses that they face trade costs which, on average, are almost double of that for coastal countries, and largely as a result of transport costs and non-tariff measures (WTO, 2021b), while high-income countries regulatory differences represent a much smaller share of trade costs (WTO, 2021a).

Finally, it is important to note that TF matters not only for perishable goods. Rather, it is also critical for high-tech manufacturing components, which are also sensitive to delays (OECD, 2018a) and are a relevant component of trade in goods among Global North countries. Furthermore, TF is becoming more, and not less relevant with digitalisation, as e-commerce has boosted international trade of goods (OECD, 2018a).

With respect to environmental effects of TF in developed economies, we find that the technique effect tends to dominate the scale effect, while the reverse is observed in developing economies because of relatively less stringent environmental regulations and limited access to pollution abatement technologies (Managi, 2006). Therefore, TF tends to result in higher efficiency gains through less carbon emissions in high-income economies but more carbon emissions in developing economies (WTO, 2022b).

C. IMPORTANCE OF TF FOR THE TRADE OF PERISHABLE GOODS

Perishable foods are the most vulnerable to border inefficiencies such as trade delays or mishandling at international borders, which can compromise safety and quality and result in both food waste and income loss (Durkin, 2017). For products with a higher degree of perishability, all steps involved in their production, transformation and distribution until their final consumption will share the vulnerabilities linked to their limited shelf life (Moisé & Sorescu, 2021). Therefore, this increases the significance of TF reforms as it allows for the speedy movement of traded goods may be more important for agricultural, especially perishable, products than for other goods because of their time sensitivity, especially for developing countries (Liapis, 2015). In this context, TF reforms can reduce the environmental impacts of trade in perishable goods by, for example, reducing the need for refrigeration and storage (and with this, energy consumption) and also reducing food waste (OECD, 2018a).

The TFA explicitly takes perishable goods into account and defines them as “...*goods that rapidly decay due to their natural characteristics, in particular in the absence of appropriate storage conditions...*” The ability to move food efficiently, cheaply, and safely across borders is crucial to linking small commercial farmers from national markets to larger regional markets, creating a virtuous cycle of demand for increased production to meet need in international markets, along with providing a critical opportunity to grow the incomes of smaller producers in developing countries. There is an added cost to clearing high-value, perishable food across borders as food and agricultural products typically undergo sanitary and phytosanitary (SPS) clearances involving import licences and permits checked at the border.

One-third of food produced worldwide is lost or wasted. The economic costs of global food loss and waste (FLW) have been estimated to exceed \$1 trillion annually. There are large inefficiencies along the entire food supply chain that result in food going uneaten, representing significant economic, environmental, and social costs. Additionally, significant data gaps are persisting with respect to quantities of FLW by food types and stages in the supply chain. A need to prioritise FLW research is imperative, especially for developing countries to address the issues of food insecurity (Sprang et al., 2019). The aim of this study is, therefore, to explore and analyse the potential of TF reforms to reduce the negative environmental externalities (with a special focus on perishable goods) associated with trade procedures at terrestrial border crossings.

D. TF AND THE ENVIRONMENTAL EFFECTS OF TRADE

TF and the environment interact with each other in a multidimensional manner. Empirical evidence has established that TF presents significant benefits to the environment through the cross-border movements of environmentally-friendly goods amongst trading countries (Ibrahim & Ajide, 2020). Similarly, some estimates suggest that GHG emissions can be reduced by up to 86% due to efficient trading procedures at the border (Lucas, 2021). Further, an economy with an inefficient border is bound to experience moderate inflows and outflows of goods and services as against a country with flexible conditions, *ceteris paribus* (Ibrahim & Ajide, 2022). Additionally, implementation of the TFA may lead to a more efficient allocation of resources and a reduction of food waste and of energy employed in refrigeration and storage (OECD, 2018a).

The recent WTO Trade Report 2022 tries to summarise the main aspects of the relationship between trade and climate change, providing a useful guide to understand the environmental impacts of trade more broadly. On the one hand, like any economic activity, trade generates GHG emissions by fostering more production, transportation and disposal of products, in addition to contributing to deforestation and biodiversity loss. However, TF reforms can also help in reducing CO₂ and GHG emissions by facilitating access to clean technologies, spurring innovation and the uptake of low-carbon goods and services whilst also reducing the carbon footprint of a production process by promoting a better allocation of resources to companies and regions that can be more efficient from an environmental standpoint (WTO, 2022b).

Trade economists have developed a framework to better understand the environmental impacts of trade, which suggests separating impacts as they relate to scale, composition, and technique effects (WTO, 2022a). The scale effect relates to the possible rise of GHG emissions due to an increase in economic output. The composition effect relates to the change in the mix of what is produced in a given country, and the result can be lower GHG emissions if the expanding sectors are less energy-intensive than the contracting sectors (WTO, 2022a). Finally, the technique effect relates to improvements in energy efficiency, where goods can be produced with less GHG emissions, with the diffusion and deployment of greener technologies (Kohler, 2013).

The scale and technique effects traditionally operate in opposite directions, whilst the composition effect is dependent upon the comparative advantage of countries. Hence, the overall impact of trade on GHG emissions depends on the magnitude of each effect and cannot be determined a priori (WTO, 2022a). However, in terms of the net environmental effect of TF measured in CO₂ emissions, the positive effects of TF are counterweighted by a twofold scale effect of increased CO₂ emissions due to increased volumes of global trade through higher flow of goods and general production levels (Ibrahim & Ajide, 2022; Lucas, 2021; Udeagha & Ngepah, 2019). Therefore, even though TF reforms such as digitalisation

have the potential to reduce environmental externalities, “...*the scale effect tends to dominate, implying that trade increases emissions...*” (WTO, 2022b).

The first component of this scale effect is described by a significant negative relation between TF indicators such as import costs and time and carbon emissions. This suggests an externality moderating effect of inefficient trading procedures and an externality increasing effect of harmonising TF measures (Ibrahim & Ajide, 2022). Importantly, this effect is stronger for import, i.e., consumption-based activities, prompting the attention of policymakers towards demand-oriented policies (Ibrahim & Ajide, 2020). The second component, the general production level, and its environmental impact, remains contentious. Traditionally, the general production level is understood to have an inverted U-shaped relation with environmental externalities following the Environmental Kuznets Curve (EKC). Environmental externalities increase up to a certain level as income goes up, after that, it decreases due to demand for less polluting activities (Dinda, 2004). However, this hypothesis, specifically the decreasing component, could not be confirmed on a sample of Western African states (Adu & Denkyirah, 2018) while an analysis of 48 nations from the whole continent supported the hypothesis (Ibrahim & Ajide, 2022).

CHAPTER 4: INTERVIEWS WITH TRADE AND ENVIRONMENTAL EXPERTS

A. CONTEXT OF INTERVIEWS

Building on the literature review, the research team conducted virtual interviews with trade and environmental experts. These interviews offered insights into the relationship between trade and environment more broadly, and also provided the team a glimpse of the extent to which environmental experts are familiar with TF measures, and how steps could be taken to improve efficiency and border crossings with positive effects on the environment.

B. MAIN FINDINGS

With regard to the answers provided by the experts, we observed that their familiarity with the concept of TF varied according to their expertise. Some experts provided clear insights into the positive developments resulting from TF reforms. It was highlighted that the gains from TF reforms were multi-dimensional, resulting in not only financial gains for stakeholders involved in trade, but also efficiency gains through a reduction of transaction costs that tend to have positive impacts on the economy in a broader sense. Additionally, TF measures could also have local environmental benefits, as they reduce food wastage and paper usage at the border. Similarly, the expert argued that TF measures enable firms to export more and a higher variety of goods. In fact, the expert argued that recent research of his suggested that between 2015 and 2019, approximately 40% of trade increase globally was due to TF measures.

While all experts demonstrated exposure to some of the environmental dimensions of trade, according to their expertise, some were less familiar with the environmental externalities of TF. Yet, the interviews provided concrete insights into how TF measures could impact the environment, for instance, the idea that the research should differentiate between the units of analysis (i.e., local versus global effects) as their effects on CO₂ emissions can be considerably different. At the local level, it was mentioned improving the efficiency of border crossings through TF measures which reduced the number of physical inspections would reduce waste and energy consumption at the border. Yet, the net effect would remain hard to discern, as more shipments crossing the border could result in negative externalities (e.g., increased CO₂ emission) due to a scale effect. At the global level, TF measures could induce more specialisation that can lead carbon intensive production to be moved to more fitting regulatory environment, and the net effect would depend on whether the “new” country has a strict carbon market or a cleaner energy matrix that would allow it to produce with a smaller carbon footprint.

It was also pointed out that policies such as digitalisation could be helpful in reducing environmental effects as long as they were part of a broader, holistic approach. For example, some argued in favour of using blockchain technologies in TF, but these require large servers that consume energy and generate emissions. They, thus cautioned that different regions should have different environmental priorities and that policy makers should cater to the needs and priorities of local populations and implement tailored solutions.

The interviewees were asked to inform, on a scale of 1-10, how important they would say environmental concerns are for trade policymaking in developed and/or developing countries. It was argued that developed countries should attribute higher importance, as there were still a north-south cleavage when it came to the relevance attributed to the environmental agenda. However, some affirmed this was changing, with many local authorities in developing countries becoming more aware of the

opportunities that sustainability offered. It was also argued that the focus had been on the economic aspects and that measures such as carbon markets were more suitable in the promotion of environmental goals.

Experts were also asked to attribute scores between 1 to 10 for how much they believed trade contributed to climate change, and how much they thought it could be a part of the solution. Overall, the answers of the experts to the first question diverged more in comparison to their answers to the second one. While their answers diverged with regard to the role of trade as a source of the problem, experts converged that trade should play a key role in solving issues pertaining to climate change.

The questionnaire(s) used included questions that were tailored to each expert. It was argued, among others, that the easier it would be to transfer critical minerals and technologies, the quicker our transition towards a lower carbon economy would be. It was also argued that TF could foster trade in environmental goods and services and that this process would be helped by regulatory harmonisation and reducing costs of compliance. Another argument was that TF could contribute to reducing negative environmental externalities related to trade by raising awareness about how to process and be compliant with Basel and Rotterdam conventions, a step that would limit the trade (or reduce its processing time) of hazardous materials, and thus, reduce the chance of being discharged in unsuitable facilities. It was also highlighted how environmental standards could be particularly cumbersome for SMEs who lacked the technical capacity to comply with them and that they were more vulnerable to environmental shocks than large companies since they do not have activities in non-affected areas that would cushion the shock.

C. RELEVANCE TO THE FIELDWORK AND LIMITATIONS

Some experts provided insights and recommendations for the field research that would be conducted by the research team as part of the next step in the project. It was stated that the scale effect could be of a very large magnitude and that, for the locally occurring externalities on a partial equilibrium level such as paper usage, waste produced and local air pollution, one would need to do a survey to gather the data locally and then use a difference-in-differences (D-I-D) type of approach to analyse it.

One important limitation as to the relevance of these virtual interviews to the research as a whole is that even though all experts were very knowledgeable in their fields, it appeared that not a lot of the conversation pertained to the actual environmental effects related to trade inefficiencies at border crossings.

CHAPTER 5: FIELDWORK IN UGANDA AND KENYA

A. KEY FINDINGS AND CHALLENGES

I. General cross-border trade related challenges

Uganda and Kenya, within the East-African context, face a plethora of bottlenecks and challenges. The major challenges that the interviewees reported facing at the OSBP are:

(a) Hindrance of production

Uganda, is a land-locked country which is predominantly agricultural. Out of the different stages of the value chain, production is their biggest hindrance as the farmers are very small in size. There are no formal contracts, leaving the farmers at the mercy of a myriad of externalities like shortage of funds or ill treatment by creditors, climate change, natural disasters, etc.

(b) Information asymmetry

There are asymmetries in the information available with respect to the various processes, documents, and necessary requirements essential for the seamless flow of trade. Further, awareness levels are not adequate as traders often do not comply with international requirements, and there is still a prevalence of hazardous goods being traded without any certifications. There is also a lack of information or awareness of the communities on the benefits of formal trade versus informal trade through media and local voices.

(c) Lack of infrastructure

The infrastructure in this region is mainly made for larger trucks and not for small-scale traders, which accelerates their use of informal channels of trade instead of regularised ones. Additionally, the roads are not maintained, which not only leads to traffic and stoppages but also increases the cost of transportation on account of excessive use of fuel. Further, there are no adequate storage facilities at the OSBP due to which the possibility of spoilage (for perishable goods, in particular) is higher.

(d) Lack of co-operation and personnel

This is a typical challenge which comes when the status quo changes. There is a clear lack of co-operation with respect to harmonisation of trading policies, procedures and standards. Due to this, trade not only becomes expensive but also cumbersome as traders have to comply with different policies and standards for each country in the region. Further, a clear bottleneck is the lack of personnel, especially at the OSBP as personnel from the respective revenue authorities (i.e., URA and KRA) work 24/7 to ensure efficient trading procedures; however, other border agencies on both sides of the OSBP (e.g., government ministries, standards authorities, dairy development authorities, etc.) do not, making clearance of goods more difficult.

(e) Traffic congestions due to double weighing

Even though the border officials may release consignments and trucks quickly from the OSBP, there are multiple checkpoints immediately after the OSBP which include weighbridges managed by the respective road authorities. Delays are often caused when

trucks line-up outside these weighbridge checkpoints at the time of entering a country (on both sides of the border) and also during the further journey towards their final destination. In addition to the time spent, such delays (which can extend from a few minutes to several hours depending on the prevailing traffic situation) mean increased CO₂ emissions and are relatively unnecessary regarding the type of information gained as all trucks entering the OSBP are already weighed.

(f) Paperwork

Despite efforts to digitalise trading procedures, every producer and trader still has to maintain a record of each and every formality on paper. Paperwork is checked to ensure the consignment's quality and even though the SPS certification is on the electronic portal, it is an unsaid requirement that the hard copy is necessary too. Most of the work is done via physical copies and seldom in an automated manner, leading to extra delays.



Figure 7: Truck waiting area



Figure 8: Inspection yard

(g) Corruption and vulnerability of small-scale traders

Another challenge faced, especially by small-scale traders, is the prevalence of rampant corruption by security personnel and customs officers along the OSBP. Crossing the Malaba OSBP is quite expensive compared to informal border crossings as there are almost 6-8 checkpoints from the weighbridge to the exit of the OSBP. Many traders are frequently forced to stop and bribe the security officials.

(h) Empty trucks

A majority (estimated to be 70% by the border officials) of the trucks only make one cross-border trip with goods whereas they come empty on the return journey. Such empty trucks also have to go through the scanning procedures at the OSBP (in addition to the driver having to go through health and immigration checks).

(i) COVID-19

The COVID-19 pandemic was a major challenge with respect to health testing requirements and the subsequent bio-waste which did not have clear disposal regulations. As the traders needed to show their test certificates at every checkpoint, inefficiencies increased as there were delays due to traffic, outbreaks, etc. The only potential solution to avoid an overlap of this sort is for clearing agents to know their mandates.

II. Cross-sectoral collaboration related challenges

Collaboration across different sectors and stakeholders is key to address the intersectional issue of TF and the environment. Oftentimes communication channels and coordinative efforts remain informal and are difficult to examine from the outside. Thus, asking interviewees directly about the relevant communication and collaboration using open questions was crucial.

Overall, the results demonstrated that different stakeholders maintain regular collaboration and communication channels between each other. However, a clear separation between actors focusing on the cross-border trade of goods from an economic perspective and actors with an environmental focus could be observed. Only partially collaborative efforts cross this divide, for example between the MWE and the Ministry of Trade, Industry, and Cooperatives (MTIC), which, however, are limited to the trade in certain rare environmental goods such as protected trees and animal species.

However, some collaborative efforts were clearly identified as success factors by a majority of stakeholders. *Firstly*, the collaboration on each side of the border as well as internationally between stakeholders at the Malaba OSBP was referred to as success by all stakeholders working at the OSBP. Especially, the regular institutionalised *Joint Border Committee* exchanges with all authorities present and the “sister agency” exchanges between, for example, the standards bureaus of the two countries were deemed key (13). *Secondly*, the regional cooperation within the EAC on TF issues was identified as crucial for the (future) development and implementation of TF as well as environmental policies. For example, it enabled the pre-clearance by URA officials in the port of Mombasa improving trade flows throughout the Northern Corridor (8). According to a majority of stakeholders, the successful regional collaboration via the EAC should be intensified to further harmonise regulations between member countries (21).¹²

To sum up, the interviews identified several successful collaborative efforts which should be strengthened. Importantly, considering the remaining knowledge divide between economic and environmental aspects, the largest potential might lie in increasing cross-sectoral collaboration and bridging this divide.

III. Environmental monitoring related challenges

Environmental monitoring is a crucial cornerstone to incorporate environmental aspects into the development and the implementation of policies successfully.

Overall, no existing institutionalised systematic monitoring scheme was mentioned by any actor regarding CO₂ emissions, paper usage, pollution levels or spillage incidents, waste volumes or volumes of perished goods. The main initiative identified in the interviews is the assessments of CO₂ emissions conducted by the MWE within the context of the Third National Communication to the United Nations Framework Convention on Climate Change (UNFCCC) in July 2022. The assessment was conducted in the transport sub sector which

¹² The recent addition of the Democratic Republic of Congo and South Sudan was generally perceived positively. Some interviewees mentioned however that integrating them might slow down economic integration for UGA and KEN due to the increased differences in economic development EAC members.

accounts for close to 66% of the emissions of Uganda's energy sector and is ranked the fifth key source of emissions in Uganda (MWE, 2022). Furthermore, the MWE set up a taskforce on emission assessment to support Uganda's COP27 negotiations.

Interestingly, no other stakeholder mentioned the described initiatives which suggests little inter-stakeholder communication on issues of emission assessment.

Besides the MWE's work, singular actors mentioned monitoring instances of, for example, truck drivers recording their fuel use (paper-based) or restrictions on certain types of goods such as plastics which are only incompletely enforced. The two fruits and vegetables exporting stakeholders indicated that they monitored the volume of fruits and vegetables perished during trade. According to them, between 30-40% of the original yield is lost prior to export due to inappropriate storage and transport, depending on the season and ease of logistics. However, neither described the process of recording their observations.

To sum up, environmental monitoring mechanisms remain very limited and only the MWE is currently engaged in setting up and progressing systematic mechanisms.

IV. Environmental effects related challenges

The main environmental effects of trade and TF prevalent in the qualitative data collected can be broadly categorised into the following effects which were further analysed in the quantitative analysis conducted by ITC's International Consultant.

(a) Paper usage

Despite the implementation of the single-window clearance system at the Malaba OSBP, paper documentation is still being widely used for trading procedures on both sides of the border i.e., by the Ugandan and Kenyan authorities alike. Waste generated from this continued paper usage constitutes to environmental externalities at the Malaba OSBP.

(b) Waste management

Statistically, the private business associations interviewed reported that about 40% of their perishable goods are wasted at the border due to a myriad of reasons including delays caused by inefficient trading procedures. These goods, therefore, constitute the biggest sources of waste (lemon, oranges, and pineapples, in particular). Most often, these goods do not meet the quality standards since they do not come in refrigerated trucks. This leads to them being overripe, implying that they are not fit for sale in the market or for consumption. Goods like these which are not compliant with the border requirements lead to delayed processing, dumping, double packaging along with wastage as there is a lack of storage infrastructure at border crossings. Additionally, second hand commodities, plastic waste, bio-waste, chemicals, paper waste and e-waste are major contributors within this externality.

It should be noted that the issue of waste production and waste disposal go hand in hand, wherein disposal facilities at these border crossings are very meagre. The town council (often partnered with private waste disposal companies) and border agencies are responsible for waste disposal but they have not been able to manage the disposal of larger quantities of waste due to inefficiencies and the lack of infrastructure and compliance.

The interviewees suggested that informal channels of trade contribute to a lot more waste in comparison to formal channels of trade.

(c) Local pollution

First and foremost, it is important to note that the Malaba OSBP is built in a wetland area close to the Malaba river, which is the natural border between Uganda and Kenya. There is rampant water pollution in this river due to inadequate disposal facilities. There is also a prevalence of leakages, which tend to be very risky in multiple aspects. These leakages and spills, along with wrongly disposed chemicals and waste, exert a bad influence on the air quality in and around the OSBP, affecting not only the local population but also livestock. Further, transport emissions are a major source of air pollution as with an increase in trade, CO₂ emissions see a massive jump. Idling vehicles contribute significantly to this externality as wait-times at weighbridges can extend from a few minutes to several hours depending on congestion due to the prevailing traffic situation. Lastly, after the COVID-19 pandemic, one of the major contributors to pollution and contamination is wrongly disposed of medical waste.



Figure 9: Malaba River (natural border between Uganda and Kenya)

B. QUANTITATIVE ANALYSIS (BY MAHEZABIN H. NATASHA, ITC'S INTERNATIONAL CONSULTANT)

The quantitative estimation and analysis of the environmental impact at the border is a complex undertaking. The scope of this high-level quantitative analysis is limited to the Malaba one-stop border post (OSBP) in Uganda for the export of fresh fruits and vegetables that cross the border to neighbouring Kenya and other countries. The analysis has been carried out to quantify the emission of pollutants from the idling of the trucks or carriers at the border; waste generation, water usage and green-house gas (GHG) emission from paper-based export transactions; and the perishable goods lost in the supply chain from the pack-house to border. For the high-level analysis, the data was mainly obtained through some key informant interviews within the short period of the field survey. The interviews were conducted with Malaba border agencies, Uganda Fruits and Vegetables Exporters and Producers Association (UFVEPA),

Ugandan Revenue Authority (URA), Ugandan National Bureau of Standards (UNBS), Ugandan Transport Association (UTA) and other relevant stakeholders.

I. Emission of pollutants due to idling of trucks

A common scenario at the Malaba border is long queues of trucks waiting for border clearance procedures. According to the exporters and the Uganda Revenue Authority (URA), the delay in procedures and formalities can cause traffic congestion as long as 4-10 kilometres. Most of these long distance, freight-hauling or heavy-duty trucks have diesel engines and they tend to stay idle during this long waiting or queuing time at the border. Idling is the time spent running the vehicle's engine while it is not operating or standing still (Sigurjonsdottir et al., 2022; Shancita et al., 2014). According to the exporters, the truckers at Malaba OSBP tend to idle at least 50% of the total time required at the border. Within the scope of this study, idling due to the following reasons is considered - waiting in the queue for the border clearance procedures, traffic congestion, driving condition created from the delay in formalities or disruption at the scanner, or while parked at the border for meals or other breaks. There could be other types of idling too, e.g., overnight idling when drivers keep the engine on while parking overnight at rest areas, or by the side of the road, to maintain comfortable temperature inside and also to keep the engine fluids warm and the batteries charged (Gaines et al., 2006).

According to URA, a total of 2451 exporting trucks carrying fresh fruits and vegetables crossed the Malaba OSBP during the last ten months. This means, on average, everyday 8 to 10 trucks of fresh fruits and vegetables goods are exported through Malaba OSBP from Uganda to other countries. The average border clearance time¹³ for export is 2 to 4 hours per truck or consignment. The exporters of fresh fruits and vegetables added that this time can reach even up to a full day due to various impediments e. g. failure to do pre-declaration, absence of necessary documents, delay in the verification process or disruptive scanner at the importing border etc.

Idling of the trucks emits gases from its tailpipe during idling, which includes significantly high amount of Carbon dioxide (CO₂) and also other criteria air contaminants (CACs) including Nitrogen oxides (NO_x), Particulate matters (PMs), Carbon monoxide (CO) and Hydrocarbons (HC) (Stodlosky et. al. 2000; Shancita et al., 2014). The emission of the air pollutants can be estimated by applying an activity-based methodology using the following equation:

$$E = A \times EF, \text{ Where: } E = \text{Emission, (gram/year)} \quad A = \text{Activity, (hour/year)} \quad EF = \text{Emission Factor, (gram/hour)}$$

Khan et al. (2012) finds that a typical long-haul truck consumes 1800 gallons of diesel and emits an average amount of CO₂ at 4484 g/hr on idling annually. Similar emission factor of truck engine idling, 4640 g/hr of CO₂ emission has been indicated in another study (Chen et al., 2013). Applying these estimates to the collected data, the CO₂ emission from idling of the export trucks of perishable goods at Malaba border is found to be 80-484 kg per day. This translates in to an annual CO₂ emission of 29-177 tons due to the idling of trucks only. This is equivalent to 913 to 5479 trees required to offset this emission in a year¹⁴. The emission of GHG and other pollutants due to idling of the vehicles at the border is given in Table 2 below:

¹³ The time considered from the point of arrival of the trucks to inspecting the trucks, completing documentation and going out of the border.

¹⁴ <https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references>

Table 2: Annual Emission from Idling of Trucks at the Malaba OSBP

GHG and other pollutants	Estimated annual emission from idling (tons/year)	
	Min	Max
CO ₂	29	177
NO _x	0.3	1.9
CO	0.2	1.4
HC	0.15	0.9
PM	0.03	0.15

Source: Author's calculation

The emission due to idling depends on various factors including the type and size of vehicles, fuel used, accumulated mileage, geographical condition, and behavioural pattern of the drivers. Limited data exist on the extent and duration of idling from the trucks in case of Malaba OSBP. From the interviews with a few exporters, freight forwarders, and transporter association, a wide variation in actual performance was found. While more reliable data are needed, a speculative estimation has been reported in this paper to understand the significance of the issue, as shown in Table-X.

II. GHG emissions, waste generation and water consumption from paper usage

In trade processes, one of the prime contributors to the environmental impact is the use of paper documents for various regulatory and commercial procedures. Paperless trade implementation eliminates the usage of the paper documents and reduces the resulting emissions from paper, including the emissions from ink and electricity usage for printing (Duval and Hardy, 2021). Moreover, paper generates significant solid wastes at production and after usage. A study on the perishable food supply chain in the United Kingdom revealed that every year one billion paper documents are generated of which over 90 per cent are subsequently destroyed (SITPRO, 2008). A huge amount of water is also consumed at the paper production level. In the recent study on Bangladesh readymade garments export sector, it has been found that paperless export transactions can save 8969 tons of GHG, 37 thousand tons of waste and 2928 million gallons of water in a year (Natasha et al., 2021).

One of the main objectives of the OSBP is to streamline processes and reduce the amount of paperwork and time required to cross the border. According to the URA, the national single window system has been partially implemented. Approximately 80% of the paperwork in a single transaction is processed online. For the exports of fresh fruits and vegetables, the documents that are submitted in paper form include commercial invoice, packing list, phytosanitary certificate, and clearance form. These documents amount to around 9 to 14 A4 pages per transaction process. The Uganda Fruits and Vegetables Exporters and Producers Association (UFVEPA) indicated that a set of all these documents again need to be submitted at the URA as a record, after six months of the export. Therefore, it doubles the amount of the number of papers used for the export transactions.

According to the Environmental Paper Network, one kilogram of unrecycled uncoated copy paper releases 9100 grams of CO₂ equivalent (CO_{2e}) into the environment (Environmental paper network, 2022). The ink and the electricity used in the printing add up to this emission. The pulp and paper industry is also one of the largest users of fresh water. One kilogram of paper consume 89 litres of water, which is consumed or degraded throughout the life cycle of the paper product. At the paper production level, solid wastes are also generated at a rate of 1,035 kg per ton of paper, in the form of sludge during pulp and paper manufacturing, and used paper disposed of in landfills and incinerators. The assessment

parameters to quantify the environmental impact from paper include the above factors, the number of documents required for each export process and the daily number of export transaction through the Malaba OSBP. Table 3 provides a summary of the initial estimates of the annual GHG emission, waste generation and water consumption from the paper usage during the export process of fresh fruits and vegetables. It is to note that the emission factors depend on multiple complex criteria and are not always available for a particular context. Provided the ambiguities associated with the emission factors, the wide variation in the collected data and the assumptions made for the assessment, these findings should be regarded as symbolic of the environmental impact that might be reduced through paperless trade facilitation measures.

Table 3: Environmental Impact of Paper Usage for Export of Fresh Fruits and Vegetables at the Malaba OSBP

Environmental aspects	Estimated environmental impact per year	
	Min	Max
GHG emission (kg CO ₂ e)	2821	4389
Solid wastes production (kg)	307	478
Water consumption (litre)	26845	41759

Source: Author's calculation

As this study was not aimed at a thorough quantitative research, limited statistics were obtained during the interviews with various stakeholders. A range of assumptions have been made for the calculation. They include the type of paper used; the emission factors based on different geographical locations, the number of perishable export transactions per day, etc. Still with the conservative estimate, the GHG emission from only paper documents associated with the 'fresh fruits and vegetables' export process is found to be 2821-4389 kg of CO₂e per annum. The solid waste generated and water used for this amount of papers annually are estimated as 307-478 kg and 26-41 thousand litres respectively. These figures do not include the emission from the vehicles used for documents transportation or the wastes generated and the water used at the office premises.

III. Food loss and waste

Fresh fruits and vegetables are highly perishable and subjected to generate food loss and waste along the supply chain in absence of adequate methods of harvesting, proper handling, preservation and transportation techniques. An efficient logistics chain reduces quality losses and waste by reducing the time from producer or packer to retailer and ensuring higher shelf life of a perishable product at retail and consumer level (UNECE, 2020). It requires the cooperation of all the actors along the distribution chain to improve this logistics system, handling and planning, both inside countries and across borders.

According to the exporters and UFVEPA, approximately 50% of the production is lost in the post-harvest operations including collection, storage or processing stages, while about 10% of the production is lost from the point of loading or pack-house until crossing the border which also includes the waiting time for border clearance procedures. This information is also consistent with what FAO estimates that in developing countries 30-40% of total production is lost before reaching the market due to lack of proper post-harvest storage, processing or transportation facilities (FAO, 2022). These losses can reach up to 40-50% for fruits and vegetables. From the interview with the exporters, the standard volume of the exported fruits and vegetables can be a minimum of 16 tons to a maximum of 36 tons per consignment. The detailed data on the amount of loss of the product at each hotspot along the supply chain would

require extensive primary research and data collection. However, the high-level estimate suggests that a total of 5256 to 11,826 tons of food is lost over a year from the exports of fresh fruits and vegetables at Malaba border¹⁵. Using the methodology for truck unit conversion of lost or wasted food amounts proposed by UNECE (2020), these amounts represent 134 to 358 fully loaded trucks of lost food annually. According to the European Environment Agency, the net emission from the landfilling of 1 ton of kitchen and garden waste is 1188.3 kg of CO₂e (EEA, 2011). Applying this estimate, the food wastes produced at the border can be translated into the emission of 6-14 million kgs of CO₂e if landfilled.

Overall, the study mainly examines the prime areas through which trade facilitation reforms can help reduce the negative environmental impact. The broad estimates presented in this section are based on the limited data availability and few assumptions made, with the objective to visualize the significance of the issue and to encourage further research in this area. Targeted primary research for the exports of fresh fruits and vegetables including other perishables e.g., maize, coffee, milk and dairy products etc. would be helpful in deepening the understanding of how trade facilitation reforms may contribute in reducing negative environmental impacts, and to verify the accuracy of the initial estimates analysed here.

C. RECOMMENDATIONS FOR THE MALABA OSBP

Pursuant to the analysis of the interviewees' responses, the research team has identified a set of recommendations to potentially minimise environmental impacts through reforms at border crossings categorised along three key channels.

I. Channel 1: Collaboration amongst government entities

(a) Integration of border and road processes to reduce traffic congestions

Encouraging cooperation between the revenue and the road authorities on both sides of the border to avoid double weighing by merging their weighing processes, could ensure that there is no time wasted at these additional checkpoints. For instance, the weighing process could be entered digitally into the single-window system which the road authority could simultaneously gain access to. This measure would reduce waiting time and emissions.

(b) Environmental monitoring and information-sharing to improve action

There is a lack of interdisciplinary knowledge and collaboration amongst different government entities when it comes to environmental monitoring of GHG emissions and other environmental externalities. Government authorities such as the revenue authorities or the trade ministries are solely focussed on the economic aspects of trade, and do not concern themselves with possible positive environmental effects of improved trading



Figure 10: Scanning system at the Malaba OSBP

¹⁵ Applying loss of 10%, each day around 2 to 4 tons of products are lost at the border.

procedures. Similarly, government agencies such as NEMA are solely concerned with environmental protection in general, and do not collaborate extensively with their economic counterparts, for example on monitoring the environmental effects of trade. Therefore, there is an urgent need for sensitisation amongst different government agencies in order to improve collaboration and communication between trade and business on one hand and environmental actors on the other, especially with respect to environmental monitoring and information-sharing with respect to CO₂ emissions at the OSBP. An incentive for such a roundtable could be improved CO₂ measurements which would enable further investments into Uganda via Just Energy Transition Partnerships (JETPs).

(c) Adequate funding and staffing to drive implementation of environmental legislation

Given the problem of underfunding and understaffing, organisations such as NEMA are unable to fulfil their comprehensive environmental mandate. NEMA, being the primary implementing and enforcing environmental authority needs to be given adequate resources to meet its objectives and responsibilities. Therefore, we recommend that as a pre-condition for receiving trade-related technical assistance or funding from international organisations such as ITC, government authorities like NEMA have to provide and share environmental data, which would incentivise their governments to improve their capacities.

Domestic and regional harmonisation to reduce average crossing times. In this regard, what would be needed is twofold: *Firstly*, clearer agenda-setting from the top of the government to prioritise domestic collaboration between different government entities, so that the country has a uniform development agenda. This is because many government agencies reported not having an environmental focus as their mandate lay on the economic side of things. Therefore, there needs to be harmonisation amongst different agencies within a country so that they collaborate in a unified manner. *Secondly*, stakeholders clearly identified that common EAC policies should not be in the nature of generic agreements only. Instead, these should be increasingly focused on joint implementation and enforcement of regulations. Therefore, in addition to harmonisation within a country's borders, policies of different countries within a region like the EAC should also be merged with one another which would foster EAC-wide environmental and economic integration.

II. Channel 2: Processes at the OSBP



Figure 11: Driver waiting for clearance at the OSBP

(a) “Trusted Drivers” system to streamline drivers’ immigration processes

A system of “Trusted Drivers”¹⁶ should be implemented in order to automate and merge immigration and port health procedures. Given that the drivers who operate the trucks and transport goods are the same individuals who cross the border 2-3 times a week, with each driver taking 10-15 minutes to get their documents verified at the OSBP, we recommend that the revenue authorities set up a “Trusted Drivers” system in conjunction with the health and immigration authorities so that there is a

¹⁶ The name is inspired by the “trusted traders” approach which gives certain historically compliant traders preferential consignment clearances.

database of trusted drivers and their documentation is not physically checked in the immigration office every time they cross the border. Therefore, in such a scenario, there will be a database of pre-approved drivers who could obtain an express treatment for immigration and port health procedures once identified at the entrance gate of the OSBP. According to the URA, this database could be set up using the framework of the regionally accepted database used to store the drivers COVID-19 test certificates. Such a system could be seamlessly integrated within the OSBP procedures and the single-window system, and improve digitalisation of trading processes as well as regional cooperation.

(b) Pre-approval for empty trucks to reduce traffic volumes

Similar to setting up a “Trusted Drivers” system for individuals, empty trucks crossing the border frequently could also be set-up for pre-approval so that no additional time is wasted at the OSBP. We recommend that such empty trucks are pre-approved in the single-window clearance system so that their movement can happen seamlessly through the border crossing.

(c) Full digitalisation to minimize paper usage

The interviewees reported a massive improvement in cross-border trade due to the establishment of the Malaba OSBP. However, it must be noted that the single-window clearance system has not been made fully operational yet, and different government authorities still require hard copies of documents for physical verification. We recommend that the single-window system be made 100% operational in order to promote paperless trade.

(d) Reduce corruption by abolishing numerous checkpoints

There are around 7-8 security “checkpoints” on the Ugandan side of the border at the Malaba OSBP itself (not counting further checkpoints outside the OSBP). Having multiple checkpoints, each manned by 4-5 police or border officers increases the chance of bribes. We recommend that under the single-window clearance system, the government abolish these numerous police checkpoints to reduce transaction costs especially for small scale traders.

(e) Local participation and rewarding mechanisms to integrate local communities

The local communities surrounding the OSBP are very much economically dependent on facilitating some of the procedures at the OSBP. For example, some local persons work as agents and travel by foot between the transporting trucks and the offices to speed up the exchange of documents without the driver having to exit his or her vehicle. Therefore, in order to implement TF measures successfully (e.g., to aim for full digitalisation), TF measures have to be catered to the needs and priorities of the local population. One such possibility of involving local communities as active participants in improving the environmental effects of trade at the border crossing could be to create an incentive scheme or a reward mechanism which pays them for collecting litter and trash in the surroundings of the OSBP and depositing them at designated checkpoints. The financial costs of setting up such a measure would be limited, with a number of positive externalities i.e., sensitisation of local communities towards environmental matters, reduction in local pollution, and improvement in waste management.

III. Channel 3: Infrastructure

(a) Refrigerated trucks for transportation to prevent goods from perishing before inspection

Efficient and safe trade in perishable goods between Uganda and Kenya is crucial for both countries. For example, the interviewees estimated that 30-40% of vegetables and fruits perish due to

poor storage and transportation conditions. Other than meat, most of the goods are exported in regular trucks which do not have adequate protection from adverse weather conditions. Therefore, in order to avoid food waste, traders and exporters must be provided with incentives to invest in improved transportation infrastructure through refrigerated trucks.

(b) Cold storage infrastructure at the OSBP to prevent goods from perishing during inspection

Delays at OSBPs on account of power shortages or even improper documentation can hold up a truck for an entire day. Whilst the Kenyan side of the Malaba OSBP already has a cold storage facility, the same is not maintained. On the other hand, the Ugandan side does not even have a facility for the same. Therefore, we recommend that the facility on the Kenyan side be repaired and maintained whereas a new facility should be built on the Ugandan side. This would also serve as a good example for inter-governmental collaboration across the border.



Figure 12: Cold storage infrastructure at the Malaba OSBP (Kenyan side)

CHAPTER 6: CONCLUSION AND FUTURE RESEARCH

The objective of this report was to fill the research gap with respect to the nexus between TF and the environment by addressing the question: “*How can trade facilitation reforms at the border help to reduce the negative environmental externalities associated with international trade procedures?*” Although the research initially entailed a comparative analysis of a Global North border (i.e., the Swiss-French border at Bardonnex, Geneva) and a Global South border (i.e., the Uganda-Kenya border at Malaba), the research team and ITC were unable to establish contact with the government authorities at the border, and therefore, it was jointly decided to shift the focus of the research project and fieldwork solely to the Global South border.

The Malaba OSBP border crossing is part of a trade route of continental importance i.e., the Northern Corridor which connects the Port of Mombasa, Kenya with landlocked countries in East Africa such as Uganda, Rwanda, Democratic Republic of Congo and Burundi. This fieldwork encompassed interviewing 25 different stakeholders involved in cross-border trade. The stakeholder sample consisted of 19 government entities and their representations of Kenya and Uganda, 4 private business associations, a union of transporters operating on the Northern Corridor as well as an association of small-scale traders. The interviews were conducted either at the respective headquarters in Kampala, Uganda or at the Malaba OSBP at the border with Kenya with the stakeholder’s local representatives.

The main avenues for improvement that emanated from the findings can be clustered into three realms: *Firstly*, the need for increased cross-sectoral co-operation and exchange was voiced by a majority of stakeholders. The largest potential lies in increasing cross-sectoral collaboration bridging the divide between economic and environmental aspects and the work of the respective authorities. *Secondly*, a clear lack of environmental monitoring became obvious on both, the global scale regarding monitoring of CO₂ emissions, and on the local scale regarding waste management and documentation. *Thirdly*, key challenges identified were remaining asymmetries between the observable reality of the trading process and the agreed upon trade regulations due to information asymmetry, lack of resources (personnel) and corruption.

From our findings, this report extrapolates targeted recommendations to reduce the negative environmental effects associated with international trade procedures and build capacities towards cross-sectoral collaboration, comprehensive policymaking with respect to trading procedures, infrastructure development, and further avenues for research. In particular, key recommendations identified by the research team were, *inter alia*, a unified platform for “Trusted Drivers” and empty trucks to significantly shorten immigration and port health procedures at border crossings, collaborative initiatives across disciplinary boundaries of government authorities focused on environmental monitoring of local and global environmental externalities, and improvements in physical infrastructure in order to increase the resilience of trade processes and routes.

In conclusion, through our findings and analysis, we have clearly identified several recommended channels for the reduction of environmental externalities through both local and more general TF measures. Although the findings and analysis emanated out of fieldwork conducted in a particular geographical context, our proposed recommendations and solutions are based on certain standard or core principles that can be applied to any border area.

FUTURE RESEARCH

In addition to the recommendations mentioned above, future research on the environmental effects of TF measures remains crucial. In particular, the net environmental effect of TF should be explored in order to accurately differentiate between the global and local net effects associated with trade, as the same is currently lacking in existing research.

I. Modelling the TF-environment nexus to analyze global effects

Differentiated research should be conducted in order to model the global net-effect of TF measures on one hand, and research examining local levels on the other. Regarding the latter, locally occurring externalities such as paper usage, waste produced, and local air pollution would need to be locally surveyed over time and then used in a D-I-D analysis. The difficulty, however, would be in isolating TF effects from the many other location-specific developments taking place at border crossings.

Regarding global modelling, one should use a general equilibrium model with a carbon index and analyse it through a D-I-D approach to understand what changed on a global scale after TF initiatives were implemented. Another source for an insightful analysis could be the OECD's data on production and consumption-based CO₂ emissions which could provide a basis for a preliminary analysis when mirrored with respective TF measures.

II. Computing trade-offs to implement more targeted initiatives

Even though improved facilities such as cold storage or using refrigerated trucks for transportation may reduce food wastage, these facilities themselves have GHG emissions that may have a negative impact on the environment at border crossings. Therefore, we recommend that further research be conducted to compute the trade-offs between the environmental externalities due to food wastage and emissions from refrigeration.

III. Exploring the viability of alternative transportation routes in the long term

The traffic at border posts such as the Malaba OSBP may be avoided by exploring alternative non-terrestrial means of transportation. For instance, water transport via inland lakes and rivers presents an alternative option for landlocked countries in order to avoid emissions on account of road congestion at terrestrial border crossings. We recommend that further research be conducted to assess the viability of using water transport for trade along with quantitative research on computing the environmental effects of the same.

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APPENDIX 1: LIST OF EXPERTS AND STAKEHOLDERS INTERVIEWED

Experts

1. Ben Shepherd (Developing Trade Consultants)
2. Christophe Bellmann (Forum on Trade, Environment and the SDGs)
3. Kei Ohno Woodall (United Nations Environment Programme / Secretariat of the Basel, Rotterdam and Stockholm Conventions)
4. Philip Gass (International Institute for Sustainable Development)
5. Sarah Mohan (International Trade Centre)

Kampala, Uganda

Government Authorities

1. Uganda Revenue Authority (URA)
 - Mr. Geoffrey Balamaga – Acting Commissioner Customs
 - Mr. Timothy Malinga – Manager Trade and International Affairs
2. Ministry of Trade, Industry and Cooperatives (MTIC)
 - Mr. Kasirye Julius – Senior Trade Officer
3. Uganda National Bureau of Standards (UNBS)
 - Mr. Martin Inimalingati – Manager Imports Inspection
 - Mr. Abubakali Bakulumpagi – Principal Imports Inspector
4. Ministry of Agriculture, Animal Industry, and Fisheries (MAAIF)
 - Dr. Okuyo Bosco – Ag. Commissioner, MAAIF
 - Dr. Kaumango Andrew Simon – SVO/DAH
 - Dr. Ssenkeera Ben – VI/DAH
 - Dr. Tashorora B. Optato – PVI/DAH
 - Dr. Sarah Nabukenya – VI/DAH
5. Dairy Development Authority (DDA)
 - Mr. Akankiza Samson Mpiira – Director Technical Services
 - Mr. Harriet Nnamui – Principal Dairy Inspector
 - Mrs. Agness Audes Baguma – Manager Dairy Inspection
 - Mrs. Elizabeth Ahimbisibwe – Senior Dairy Inspector

6. Ministry of Water and Environment (MWE)

Mrs. Maureen Aneno – Assistant Commissioner, MWE/DESSS

Ms. Birungi Jean – Environmental Officer, MWE/DESSS

Ms. Irene Nanyondo – Senior Forest Officer, MWE/FSSD

Mr. Emmanuel Tenywa – Climate Change Officer, MWE/CDD

Mr. George Ssekamate – Principal Environment Officer, MWE/DESS

Mr. Jamal Kibono – Senior Climate Change Officer, MWE/CCD

Mr. Sserunkuma Hakim – Environment Officer, MWE/DESSS

7. National Environment Management Authority (NEMA)

Mr. Waiswa Ayazika Arnold – Director, NEMA Environmental Inspection and Control

Dr. Daniel Babikwa – Director, NEMA Quality Assurance and Enforcement

Business Associations

8. Private Sector Foundation Uganda

Mr. Martin Mako – Director, Imports and Exports

Ms. Eva Ekanya – Administration Manager

9. Uganda National Transporters Alliance

Mr. Busulwa William – Manager Imports

Mr. Ronald Mugisha – Operations Manager

10. Horticultural Exporters Association of Uganda (HORTEXIA)

Mrs. Florence Nakitto – Executive Secretary

Mr. Godfrey Bugera – Director

11. Uganda Fruits and Vegetables Exporters and Producers Association (UFVEPA)

12. Uganda Freight Forwarders Association (UFFA)

Mr. Charles Mwebembezi – Chairman UFFA

Mr. Humphrey Asiimwe – Vice-Chairman UFFA

Mr. John Kutwabami – Board Member UFFA

Mr. Nicholas Kafeero – Chief Executive Officer UFFA

Malaba OSBP, Uganda

Government Authorities

13. Uganda Revenue Authority (URA)
 - Mr. Haruna Mutebi Wadde – Acting Regional Manager (URA Customs) and Chairman Joint Border Committee (JBC)
 - Mr. Karatunga Paul – Supervisor URA Customs
14. Uganda National Bureau of Standards (UNBS)
 - Mr. Albert Kanakulya – Head of UNBS
15. Ministry of Agriculture, Animal Industry and Fisheries (MAAIF)
 - Dr. Jonathan Kikanga – MAAIF
 - Dr. Joshua Makabugo – Head of Animal Health and Veterinary Inspector
16. Dairy Development Authority (DDA)
 - Mr. Muhwezi Ronald – DDA in Charge Officer Malaba
17. Directorate of Citizenship and Immigration Control (DCIC)
 - Mr. Prosper Arinaitwe – Head of Immigration
18. Malaba Port Health
 - Mr. Kwemoio Sam – TIDO CBTA

Business Associations

19. Malaba Cross-Border Trade Association
 - Mr. Etyang Livingstone – Chairman CBTA

Malaba OSBP, Kenya

Government Authorities

20. Kenya Revenue Authority (KRA)
 - Mr. Gideon Chepkole – Supervisor - Customs and Border Control Enforcement (CBCE)
 - Mr. Aquilino Mwithalii – Manager - KRA Customs and Border Control (CBC)
21. Kenya Bureau of Standards (KBS)
 - Mr. Martin Makhoka – Senior Officer, Kenya Bureau of Standards (KeBS)
 - Mr. Justin Chesergon – Kenya Bureau of Standards (KeBS)
22. Kenya Plant Health Inspection Services (KEPHIS)

Mr. George Nchari – Head of Kenya Plant Health Inspection Services (KEPHIS) Malaba

Mr. Paul Kiibi – Port Health Board (PHB)

23. Directorate of Immigration Services Kenya

Mr. William Okello – Head of Department of Immigration

24. Kenya Ministry of Agriculture Livestock Fisheries and Cooperatives (KILIMO)

Mr. Wilfred Mwo – Directorate of Agriculture and Food Authority (DAFA)

Mr. Stephen Naibei – Directorate of Crop Inspection – DCI-ATPU

25. Kenya Dairy Board (KDB)

Mr. Chrispine Owino – Directorate of Veterinary Services (DVS)

APPENDIX 2: SURVEY QUESTIONNAIRE(S)

A. SAMPLE QUESTIONNAIRE – EXPERTS

Part I: Introductory Questions: Trade, TF and the Environment

1. How would you describe your exposure to the nexus between trade and environment?
2. Have you worked on the environmental externalities of trade in general?
[If so, in what way?] / [If not, why do you think this is the case?]
3. Are you familiar with TF measures and the WTO Trade Facilitation Agreement?
[Be prepared to give examples of specific measures]
4. Have you had any exposure to the environmental dimensions of trade facilitation? If so, in what way?
5. On a scale of 1-10, how much has trade contributed to climate change? Why is this the case?
[With 10 meaning it is the most crucial component]
6. What are the biggest gains from trade facilitation reforms, in your view?

Part II: Specific Questions: Environmental Aspects of TF

1. Do you think measures such as establishing a single window for customs clearance, digitalisation of processes and streamlining procedures can contribute to reducing the following environmental externalities at the border: (a) food wastage; (b) paper usage; and (c) energy usage?
2. Apart from its potential contribution to reducing the environmental externalities mentioned above, do you think trade facilitation can have other positive environmental impacts?
[E.g., facilitating the diffusion of environmentally sound technologies, shifting the mix of goods being traded in a manner that increases resource efficiency]
3. Do you think that the environmental net-effect of TF measures is positive or negative, measured in CO₂ emissions?
4. On a scale of 1-10, how important would you say that environmental concerns feed into trade policymaking in developed and/or developing countries according to your experience? Why is this the case?
5. Even though trade has a positive effect on a country's economic growth, there are negative environmental externalities because of increased trade volumes; therefore, how should trade facilitation measures counter-balance the negative externalities of increased trade?
6. In particular, how can trade facilitation measures ensure that perishable goods such as agricultural products do not get wasted due to inefficiencies at border crossings?

Part III: Specific Questions for Experts

1. [These questions were tailored according to the specific expertise of each interviewee.]

Part IV: Concluding questions

1. Do you understand trade facilitation to be a channel to reduce the environmental externalities of trade? Why?
2. Do you have any recommendations and/or suggestions for improving trade facilitation measures when considering its impact on the environment in the near future?

B. FIELDWORK QUESTIONNAIRE – KAMPALA (UGANDA)

Part I: Preamble

The purpose of this research inquiry is to shed light upon the intersection of trade facilitation measures and their environmental effects. To this end, the work of the distinguished [name of organisation] is of great importance to our research.

As you are championing the [function / mandate of the organisation], we would be honoured to hear your valuable insights on the subsequent questions.

Your responses will be most well received and handled with utmost confidentiality.

Thank you in advance for your kind consideration.

Part II: Introductory Questions – Trade Facilitation Measures

1. Are you familiar with trade facilitation measures of the WTO Trade Facilitation Agreement?
2. Speaking from your experience, which policy measures come to your mind which have eased the clearance of goods over the past five years?

[e.g., establishing a single window for customs clearance, digitalisation of processes and streamlining procedures]
3. In your opinion, what are the main challenges to the implementation of trade facilitation measures or trade reforms in Uganda?

Part III: Introductory Questions – Link between Trade and Environmental Effects in Cross-Border Procedures

1. Cross-border trade, export, import, and transit can be quite resource-intensive. In your view, what are the biggest sources of waste and pollution that cross-trade (export/import) procedures at border crossings may create?

[e.g., paper usage, plastic waste, transport -> fine particulate matter, perishable goods lost etc. + could distinguish between local and global effects in discussion]
2. In your opinion, can trade facilitation measures reduce greenhouse gas emissions / energy usage / paper usage / waste / pollution associated with international trade and if so, how?
3. How has the state of the local environment (micro-climate) at or close to border crossings evolved over the last five years?

[e.g., waste, pollution with fine particulate matter, quality of air, wastewater, traffic, etc.]

Part IV: Introductory Questions – Internal Monitoring of Environmental Effects

1. Does your organisation monitor the environmental effects of cross-border trade procedures?
[For example, litres of fuel burned, volume of waste accrued, amount of paper used throughout the process of trading goods etc.]
2. If so, how is the monitoring implemented? / If not, why is this the case and are you aware of any governmental or private sector party who implemented a monitoring mechanism?

Part V: Specific Questions

V-A. Government Authorities (Kampala, Uganda)

Specific Questions for Government Authorities in Kampala, Uganda

1) Uganda Revenue Authority

1. On a scale of 1-10, how efficient or successful do you think the overall cross-border trading process in Uganda is? Why do you think so? [10 being the most efficient / successful]
2. What are the strengths and bottlenecks of the overall customs clearance process for consignments?
3. Do you keep track of the paper waste generated in connection to export/import documents issued by your institution?
4. What are the benefits and drawbacks that have resulted from the increased digitalisation of trade processes?
5. How does the URA incorporate environmental effects of trade into their policies on border procedures?
6. What are the policies which govern the carbon footprint and source of waste of border stations such as OSBPs? How are they implemented?
7. In your view, what are the main channels through which the URA collaborates with other relevant entities when it comes to environmental aspects of trade?
[If so, with whom and in what way?]
8. Environmental regulations sometimes present a regulatory challenge to companies. How can businesses be incentivised to drive a green transition? How does the Uganda Revenue Authority address this issue of incentivising businesses?

2) Ministry of Trade, Industry and Cooperatives

1. How does the Ministry of Trade, Industry and Cooperatives collaborate with other government authorities when it comes to trade policy and trade facilitation measures?
2. Are there active communication channels between the Ministry of Trade, Industry and Cooperatives and other actors on environmental matters?
[If so, with whom and in what way?]

3. To what extent does the Ministry of Trade, Industry and Cooperatives take into consideration environmental concerns in trade-related policymaking? Is there any example of trade-related policy in Uganda that included environmental considerations or objectives?
4. Trade and environmental regulations sometimes present a regulatory challenge to companies. How does the Ministry of Trade, Industry and Cooperatives address this issue? How can businesses be incentivised to drive a green transition?

3) Uganda National Bureau of Standards

1. What are the main challenges in the implementation and enforcement of environmental standards in Uganda?
2. Has the Uganda National Bureau of Standards issued standards for environmental management systems and energy management systems? What standards are currently in place?
3. How do you assess their application at border crossing stations such as the Malaba OSBP?
4. Environmental regulations sometimes present a regulatory challenge to companies. How does the Uganda National Bureau of Standards address this issue? How can businesses be incentivised to drive a green transition?
5. In your view, what are the main channels through which the Uganda National Bureau of Standards collaborates with other government authorities when it comes to environment-related standards?

4) Ministry of Agriculture, Animal Industry and Fisheries

1. How does the Ministry of Agriculture, Animal Industry and Fisheries view the environmental aspects of cross border trade?
2. What are the main challenges in the clearance of perishable goods at border crossings? How many consignments are on average inspected from your border officers? [For example, in percent]
3. Do you keep track of the paper waste generated in connection to permits and licences that are granted by your Ministry?
4. What are the key phytosanitary and animal health procedures typically required for agricultural and animal being transported / traded across borders?
5. In your view, what are the greatest challenges and bottlenecks in the enforcement of these regulatory requirements?
6. Are there any active communication channels to regularly exchange information on the clearance process of perishable goods at the border like crops, fruits and vegetables, livestock, dairy products etc. with border authorities?
[If so, with whom and in what way?]
7. What is the Ministry planning to do over the next five years to ensure reliable trade of perishable goods in a sustainable and environmentally safe manner?
8. Trade and environmental regulations sometimes present a regulatory challenge to companies. How does the Ministry of Agriculture, Animal Industry and Fisheries address this issue? How can businesses be incentivised to drive a green transition?

5) Dairy Development Authority

1. In your view, how has the dairy market in Uganda evolved over the last five years, especially in relation to consumer or buyer preferences?
2. Trade and environmental regulations sometimes present a regulatory challenge to companies. How does the Dairy Development Authority address this issue? How can businesses be incentivised to drive a green transition?
3. What are the key health procedures typically required for dairy products being transported / traded across borders? In your view, are there inefficiencies in the enforcement of these health regulatory requirements for dairy products?
4. Do you monitor whether dairy products go stale during the border crossing procedures due to delays in the clearance of goods?
[If so, in what way? / If not, why is this the case?]
5. Which trade facilitation measures would most significantly reduce the time it takes for dairy products to cross the border?

6) Ministry of Water and Environment

1. How does the Ministry of Water and Environment view the environmental aspects of cross border trade?
2. Does the Ministry of Water and Environment monitor local environmental effects such as pollution, and waste accrual at border crossings?
3. In what way does the Ministry of Water and Environment monitor GHG emissions throughout the trading process for exports and/or imports?
[If so, are there specific monitoring efforts at border crossings?]
4. How does the Ministry of Water and Environment collaborate with other entities on environmental sustainability when it comes to cross-border trade of goods?
5. In particular, do mechanisms exist to exchange information with border authorities or among regulators on the effects of environmental degradation at border crossings?
[E.g., GHG emissions, waste of perishable goods that go spoiled, paper waste, etc]
6. Environmental regulations sometimes present a regulatory challenge to companies. How does the Ministry of Water and Environment address this issue? How can businesses be incentivised to drive a green transition?

7) National Environment Management Authority

1. How does the National Environment Management Authority view the environmental aspects of cross border trade?
2. Does the National Environment Management Authority monitor local environmental effects such as pollution, and waste accrual at border crossings?
3. In what way does the National Environment Management Authority monitor GHG emissions throughout the trading process for exports and/or imports?
[If so, are there specific monitoring efforts at border crossings?]

4. How does the National Environment Management Authority collaborate with other entities on environmental sustainability when it comes to the cross-border trade of goods?
5. In particular, do mechanisms exist to exchange information with border authorities or among regulators on the effects of environmental degradation at border crossings?
[E.g., GHG emissions, waste of perishable goods that go spoiled, paper waste, etc]
6. Environmental regulations sometimes present a regulatory challenge to companies. How does the National Environment Management Authority address this issue? How can businesses be incentivised to drive a green transition?

V-B. Business Associations (Kampala, Uganda)

General Questions for all Business Associations in Kampala, Uganda

1. Are you aware of the Ugandan Trade Portal (<https://ugandatrades.go.ug/>) and if so, how would you rate its usefulness on a scale of 1-10 for your field of work, and why? [10 being the most useful]

Specific Questions for Business Associations in Kampala, Uganda

1) Private Sector Foundation Uganda (PSFU)

1. How do you view the debate within the Ugandan private sector on the need to comply with environmental regulations and standards to access foreign markets, on the one hand, and the increased costs that the private sector would bear to comply with those requirements?
2. Environmental regulation sometimes presents a regulatory challenge to companies. Based on your experience, how could one build a business case for complying with environmental regulations across sectors?
[For example, monitoring and disclosure of GHG emissions]
3. How could trading SMEs be best incentivised to become allies of a green transition?
4. Are you advocating or involved in the implementation of trade facilitation programmes in Uganda? If so, which ones?

2) Uganda National Transporters Alliance

1. From your experience, which are the main reasons for delays at border crossings? What are the greatest challenges and bottlenecks at border stations to clear goods?
[e.g., paperwork / documentation related, infrastructure-related, personnel-related]
2. How long do usually truck-drivers queue at the border before obtaining clearance to cross?
3. In your organisation, how does your membership approach environmental considerations of cross-border trade? Are they concerned by the harmful effect of cross-border trade on the local border environment ecosystem?
4. Environmental regulation sometimes presents a regulatory challenge to companies. Based on your experience, how could one build a business case for environmental regulation in your sector?
[For example, monitoring and disclosure of fuel used.]
5. Would you support environment-related regulations in your sector?

[If yes, why? If no, why?]

6. How could environmental regulation be successfully implemented in your field of work? How could truck driver companies and truck drivers become allies driving a green transition?

3) Horticultural Exporters Association of Uganda (HORTEXIA)

1. How would you describe the clearance process of exports of fruits and vegetables at the border in general? What are the greatest challenges and bottlenecks at border stations to clear perishable goods?
2. From your experience, how regularly are perishable goods lost/seized due to delays in the transit and clearance of goods? Can you provide an estimate in percent of overall traded perishable goods?
3. If so, do you monitor the amount of goods lost? What are the main reasons for such delays? If not, what are other reasons for perishable goods to be lost during transport?
4. Which measure would improve the clearance process of perishable goods like vegetables and fruit the most in your opinion?
5. Environmental regulation sometimes presents a regulatory challenge to companies. Based on your experience, how could one build a business case for environmental regulation in your sector?
6. Would you support environment-related regulations in your sector? If yes, why? If not, why?

[For example, monitoring and disclosure of waste produced, or fuel used during the transport.]

4) Uganda Fruits and Vegetables Exporters and Producers Association (UFVEPA)

1. How would you describe the clearance process of exports of fruits and vegetables at the border in general? What are the greatest challenges and bottlenecks at border stations to clear perishable goods?
2. From your experience, how regularly are perishable goods lost/seized due to delays in the transit and clearance of goods? Can you provide an estimate in percent of overall traded perishable goods?
3. If so, do you monitor the amount of goods lost? What are the main reasons for such delays? If not, what are other reasons for perishable goods to be lost during transport?
4. Which measure would improve the clearance process of perishable goods like vegetables and fruit the most in your opinion?
5. Environmental regulation sometimes presents a regulatory challenge to companies. Based on your experience, how could one build a business case for environmental regulation in your sector?
6. Would you support environment-related regulations in your sector? If yes, why? If no, why?

[For example, monitoring and disclosure of waste produced, or fuel used during the transport.]

5) Uganda Clearing Industry and Forwarding Association (UCIFA)

1. From your point of view, what are the main challenges of customs clearance at border crossings which hamper the efficient trade of goods?

2. Would you say that your members are concerned about the state of the local environment at and close to border crossings?
[e.g., environmental effects such as local pollution, waste, or GHG emissions]
3. Environmental regulation sometimes presents a regulatory challenge to companies. Based on your experience, how could one build a business case for environmental regulation across sectors?
4. Would you support environment-related regulations in your sector? If yes, why? If no, why?
[For example, monitoring and disclosure of GHG emissions.]
5. How could trading SMEs be best incentivised to become allies of a green transition?

6) Uganda Freight Forwarders Association (UFFA)

1. From your point of view, what are the main challenges of customs clearance at border crossings which hamper the efficient trade of goods?
2. In your organisation, how does your membership approach environmental considerations of cross-border trade?
3. Would you say that your members are concerned about the state of the local environment at and close to border crossings?
4. Environmental regulation sometimes presents a regulatory challenge to companies. Based on your experience, how could one build a business case for environmental regulation across sectors?
5. Would you support environment-related regulations in your sector? If yes, why? If not, why?
[For example, monitoring and disclosure of GHG emissions.]
6. How could trading SMEs be best engaged to become allies and advocates of a green transition?

Part VI: Concluding Questions

1. Looking into the future, how do you see the role of the environmental and environmental sustainability concerns/objectives being taken more into account by your organisation?
2. Do you have any other recommendations and/or suggestions to reduce the impact of cross-border trade on the environment in the near future?

C. FIELDWORK QUESTIONNAIRE – MALABA (UGANDA AND KENYA)

Part I: Preamble

The purpose of this research inquiry is to shed light upon the intersection of trade facilitation measures and their environmental effects. To this end, the work of the distinguished [name of organisation] is of great importance to our research.

As you are championing the [function / mandate of the organisation], we would be honoured to hear your valuable insights on the subsequent questions.

Your responses will be most well received and handled with utmost confidentiality.

Thank you in advance for your kind consideration.

Part II: Introductory Questions – Trade and Trade Facilitation at the Malaba OSBP

1. How would you describe the development of the volume of trade in the last 5 years?
[e.g., increase or decrease in traffic vehicles]
2. In your opinion, what are the main challenges to the implementation of trade facilitation measures at the Malaba OSBP?

Part III: Introductory Questions – Link between Trade and Environmental Effects in Cross-Border Procedures

1. What are the biggest sources of waste and pollution created at the Malaba OSBP due to trading processes?
[if unclear - give examples: paper usage, plastic waste, transport -> fine particulate matter, perishable goods lost etc. + could distinguish between local and global effects in discussion]
2. How has the state of the local environment (micro-climate) at or close to the Malaba OSBP evolved over the last five years?
[e.g., waste, pollution with fine particulate matter, quality of air, wastewater, traffic]

Part IV: Introductory Questions – Internal Monitoring of Environmental Effects

1. Does your organisation keep track of the environmental effects of your part of trading procedures?
[For example, energy usage, litres of fuel used, volume of waste accrued, amount of paper used throughout the process of trading goods etc.]
2. If so, how is the monitoring implemented? / If not, why this is the case and are you aware of another actor involved at the Malaba OSBP who implemented a monitoring scheme?

Part V: Specific Questions

V-A. Government Authorities (Malaba, Uganda)

Specific Questions for Government Authorities in Malaba, Uganda

1) Uganda Revenue Authority

1. On a scale of 1-10, how efficient or successful do you think the overall cross-border trading process is at the Malaba OSBP? Why do you think so?
[10 being the most efficient / successful]
2. What are the strengths and bottlenecks of the overall customs clearance process for consignments?
3. What are the benefits and drawbacks that you have experienced from increased digitalisation of trade processes?
4. Are there active communication channels between the Uganda Revenue Authority and other actors on the Ugandan and/or the Kenyan side on environmental matters?
[If so, with whom and in what way?]
5. How would you rate the importance of perishable goods within your work at the Malaba OSBP in comparison with other traded goods? Can you provide data on the traffic of perishable goods (fresh fruits, vegetables, coffee, maize, dairy products) cleared every day at Malaba OSBP?
6. Do you have special procedures in place to clear perishable goods on a priority basis?
7. How much does informal trade contribute to the overall volume of cross-border trade at the Malaba OSBP? How did it develop over the last five years?

2) Uganda National Bureau of Standards

1. What are the main challenges in the enforcement of standards (including environmental, if any) of traded products at the Malaba OSBP?
2. In your view, what would be the most impactful measures to optimise the implementation of standards (including environmental) of traded products at the Malaba OSBP?
3. How does the Ugandan National Bureau of Standards collaborate with other government authorities on the Ugandan and/or the Kenyan side when it comes to standards relevant to cross-border goods?
4. What standards are already in place to protect the environment in and around the Malaba OSBP to avoid the trade of dangerous and/or sub-standard products?

3) Ministry of Agriculture, Animal Industry and Fisheries

1. How are perishable goods handled and cleared at the Malaba OSBP? What is the exact process they go through at the border crossing to obtain clearance? [e.g., Vegetables, dairy products, Fruits, crops such as maize, coffee]
2. How is the quality of perishable goods ensured / monitored during the consignment clearance process at the Malaba OSBP?

3. What is the inspection rate for different categories of perishable goods (such as vegetables, fruits, maize, coffee, dairy products, vegetables, fruits, etc.) at the Malaba OSBP?
4. Which measure would improve the clearance process of perishable goods the most in your opinion?
5. In your view, how would you describe your Ministry's collaboration with other entities on the Ugandan and the Kenyan side at the Malaba OSBP with respect to clearances of perishable goods?

4) Dairy Development Authority

1. In your view, how important is the trade in dairy products at the Malaba OSBP relative to other perishable goods in terms of daily volume and complexity of clearances?
2. How is the quality of dairy products ensured / monitored during the consignment clearance process at the Malaba OSBP?
3. What is the inspection rate for different categories of dairy products at the Malaba OSBP?
4. How does the Ugandan Dairy Development Authority collaborate with other government authorities on the Ugandan and the Kenyan side when it comes to standards on dairy products relevant in trade procedures such as transport and clearance?
5. Which measure would improve the clearance process of dairy products the most in your opinion?

5) Directorate of Citizenship and Immigration Control

1. What is the process of clearance of individual truck drivers and transporters at the Malaba OSBP?
2. In your opinion, which is the most time-consuming step?
3. In your view, what would be the most impactful measures to optimise the clearance of individuals crossing the border at the Malaba OSBP?

6) Malaba Port Health

1. How would you describe the role of the Malaba Port Health office at the Malaba OSBP?
2. What is the process of clearance of individual truck drivers and transporters at the Malaba OSBP? In your opinion, which is the most time-consuming step?
3. How does your office coordinate with other stakeholders at the Malaba OSBP (in particular, the Malaba CBTA) in ensuring efficient border crossing?
4. In your view, which trade facilitation measures would most significantly reduce the time it takes for the clearance of individuals crossing the border at the Malaba OSBP?

V-B. Business Associations (Malaba, Uganda)

Specific Questions for Business Associations in Malaba, Uganda

1) Malaba Cross-Border Trade Association

1. On a scale of 1-10, how would you rate the usefulness of the Ugandan Trade Portal (<https://ugandatrades.go.ug/>) for your field of work, and why?

[10 being the most useful]

2. How would you rate the importance of perishable goods at the Malaba OSBP in comparison with other traded goods? Which are the main products that most of the traders, whom you assist here at the Malaba OSBP, export / import from / to Uganda?
3. What are the different trade facilitation services that you provide to local traders in Malaba?
4. What are the charges that traders pay for your services?
5. In your opinion, what are the key challenges that most traders face in respect to crossing the Malaba OSBP?
6. In your view, which trade facilitation measures would most significantly reduce the time it takes for products (especially perishable goods) to cross the Malaba OSBP?

V-C. Government Authorities (Malaba, Kenya)

Specific Questions for Government Authorities in Malaba, Kenya

1) Kenya Revenue Authority

1. On a scale of 1-10, how efficient or successful do you think the overall cross-border trading process is at the Malaba OSBP? Why do you think so?

[10 being the most efficient / successful]

2. What are the strengths and bottlenecks of the overall customs clearance process for consignments?
3. What is the inspection rate of all export consignments coming from Uganda and cleared by the Uganda Revenue Authority?
4. What are the benefits and drawbacks that you have experienced from increased digitalisation of trade processes?
5. Are there active communication channels between the Kenya Revenue Authority and other actors on the Kenyan and/or the Ugandan side on environmental matters?
[If so, with whom and in what way?]
6. How would you rate the importance of perishable goods within your work at the Malaba OSBP in comparison with other traded goods?
7. Do you have special procedures in place to clear perishable goods on a priority basis?
8. How much does informal trade at the Malaba OSBP contribute to the overall volume of cross-border trade?

2) Kenya Bureau of Standards

1. What are the main challenges in the implementation of standards (including environmental, if any) of traded products at the Malaba OSBP?
2. In your view, what would be the most impactful measures to optimise the implementation of standards (including environmental) of traded products at the Malaba OSBP?

3. How does the Kenyan National Bureau of Standards collaborate with other government authorities on the Kenyan and/or the Ugandan side when it comes to standards relevant to cross-border goods??
4. What standards are already in place to protect the environment in and around the Malaba OSBP to avoid the trade of dangerous and/or sub-standard products?

3) Kenya Plant Health Inspectorate

1. What is the clearance process for agricultural inputs and produce entering in the Kenyan territory from Uganda at the Malaba OSBP?
2. What is the inspection rate of different agricultural perishable goods at the Malaba OSBP?
3. In your view, what would be the most impactful measures to optimise the implementation of environmental standards of traded agricultural perishable goods at the Malaba OSBP?

Part VI: Concluding Questions

1. Looking into the future, how do you see environmental considerations being incorporated into your organisation's operations in the future?
2. Do you have any other recommendations and/or suggestions for policymakers to reduce the impact of cross-border trade on the environment in the near future?