Methodological protocol to assess regulatory tools and criteria to improve biodiversity outcomes of small and medium-sized enterprises in the food and beverage sector in Europe

Prepared by the EKLIPSE Expert Working Group on biodiversity considerations for SMEs in the food and beverage sector

Question: How can environmental regulators support businesses to improve the outcomes of their operations for biodiversity, with a focus on small and medium-sized enterprises in the food and beverage sector in Europe?

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LIST OF ABBREVIATIONS

CDP: Formerly the Carbon Disclosure Project, global disclosure system for environmental impacts of companies, cities, states and regions

DJSI: Dow Jones Sustainability Indices

EWG: Expert Working Group

IPBES: Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services

IPES-Food: International Panel of Experts on Sustainable Food Systems

MCA: Multi-Criteria Analysis

NGO: Non-Governmental Organization

QCA: Qualitative Comparative Analysis

QSR: Quick Scoping Review

SDG: Sustainable Development Goal

SEPA: Scottish Environment Protection Agency

SME: Small and Medium Sized Enterprise

TEEB: The Economics of Ecosystems and Biodiversity

TEEBAgFood: The Economics of Ecosystems and Biodiversity for Agriculture and Food

Summary

List of abbreviations

INTRODUCTION

a. Call for experts

EKLIPSE called for expertise on knowledge related to approaches that environmental regulators can use to support businesses to improve their outcomes for biodiversity, with a focus on small and medium-sized enterprises in the food and beverage sector in Europe.

This is a policy request to develop a framework to analyse the different possible approaches and their effectiveness. From that framework, the most promising approaches will be identified and analysed to understand under which conditions they work well.

The call followed a request by the Scottish Environment Protection Agency (SEPA). SEPA is working to implement their new regulatory strategy 'One Planet Prosperity', which summarizes the agency's vision for ways they can work with Scottish businesses to enhance environmental sustainability. SEPA would like to find out which approaches they, and other European regulatory agencies, could use when working with businesses to achieve this vision, reaching from traditional compliance with environmental standards to going beyond compliance, and encouraging and promoting voluntary efforts at enhancing biodiversity outcomes of business operations.

For the purpose of this work, the EKLIPSE Expert Working Group 4/2017 will review the literature and collect case studies and lessons learned to capture the variety of approaches used (or that could potentially be used) to enhance biodiversity outcomes of businesses in general and SMEs in particular. Its final output will present these approaches, along with an overview of different hindering or fostering (context) conditions that constitute challenges or contributing factors to effective policy implementation and outcomes. From a stakeholder perspective this means responding to two expectations: first, showing whether these approaches worked, and if so why and how, and second, to point out the added value compared to business as usual.

The EWG met in person on December 11th 2017 and on February 28th 2018, and met remotely for regular online meetings in order to prepare the present methodological protocol. After receiving background knowledge to the EKLIPSE project and the scope and purpose of the project, the EWG 4/2017 identified a structured process for organising the work tasks. This document outlines the nature of the request, choice of methodology, details of the methodology and expected outcomes. It is important to note that the quick scoping of the literature may not be comprehensive or unbiased because of the short time to respond to the request.

b. Background of the request

Biodiversity loss is one of the biggest challenges that humanity is facing, given that many species and their habitats as well as ecosystems which provide essential resources for human nutrition and wellbeing are threatened by human activities. In particular, the conservation and sustainable use of biodiversity is the prerequisite for sustained future agricultural production and food supply, since the resilience of food production systems

relies on healthy ecosystems and natural resources. On the other hand, current agricultural systems are having a great impact on biodiversity, as is described in the interim report TEEB for Food & Agriculture (2015). Most notably, intensified consumption patterns in industrialized countries and emerging economies, a growing demand for food and beverage products and an increasingly globalized food market have led to the vast exploitation of agricultural land, highly intensive production systems, and dramatic biodiversity loss through land-use change, overexploitation, pollution and the introduction of invasive alien species.

Businesses are increasingly aware of their dependencies upon biodiversity and ecosystem services, taking this into consideration in their business operations, e.g. raw materials such as cotton or coffee. Moreover, multiple influences and demands are pushing businesses to incorporate biodiversity in their work, including but not limited to:

- Consumer demand for environmental credentials;
- Investor requirements for environmental performance;
- Supply-chain requirements for environmental performance;
- Assessment by external ratings bodies (e.g. CDP, DJSI);
- Trade association membership standards;
- Expectations as potential employees about environmental performance;
- Social scrutiny (e.g. residents, NGOs) and via social media (e.g. Twitter).

Interventions to improve biodiversity outcomes of businesses span a multitude of approaches from command-and-control regulation to standards, voluntary and market based approaches. It is essential, however, to understand and evaluate how effective the various approaches are in changing mind-sets of corporate decision makers and employees, company culture and customer behaviour.

c. Building on existing work

In recent years, a number of international collaborative projects have published reports on the intersection of biodiversity, food production and business conduct that the response to this call builds on.

In their first thematic report, the International Panel of Experts on Sustainable Food Systems call ***for a shift from uniform to diverse agroecological food systems*** in order to preserve biodiversity, soil health, land and aquatic ecosystems and secure human livelihoods (IPES-Food, 2016). Their third report sounds the alarm on the concentration of power in the agri-food sector and highlights ***the importance of small-scale farmers and manufacturers in establishing shorter supply chains and innovative food distribution and retail schemes*** that may have more positive biodiversity outcomes (IPES-Food, 2017).

The Economics of Ecosystems and Biodiversity for Agriculture and Food (TEEBAgFood) project aims to capture the values of ecosystems services and biodiversity across different agricultural systems where a variety of management practices are used and compares the price paid for different food commodities to their 'true' costs, taking into account the full range of public costs through negative impacts on natural and social capital. Its 2015 interim report highlights that "the economic environment in which

farmers operate ***is distorted by significant externalities, both negative and positive, and a lack of awareness of our dependency on nature***" (TEEB, 2015, p. xi).

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), an intergovernmental body that assesses the state of biodiversity and of the ecosystem services it provides to society in response to requests from decision makers, has published an 552-page thematic assessment of changes in animal pollination as a regulating service that underpins food production, and its contribution to gene flow and the restoration of ecosystems. In recognizing that 75% of our food crops and nearly 90% of wild flowering plants depend at least to some extent on animal pollination and that a high diversity of wild pollinators is critical to pollination even when managed bees are present in high numbers, the experts emphasize ***the interdependence between human needs and biodiversity conservation*** and state that "effective policy interventions would ensure that the social, cultural, environmental and economic values of pollinators are maintained" (IPBES 2016, p. 5).

At request of the Secretariat of the Convention on Biological Diversity, the PBL Netherlands Environment Assessment Agency (2014) drew up recommendations on how sectors – including the food sector – can contribute to sustainable use and conservation of biodiversity. Their report presents three long-term pathways for biodiversity conservation in the food sector: the Global Technology pathway, with a focus on yield and input optimization, and strictly separating land use functions (land sparing); the Decentralized Solutions pathway, in which agriculture is increasingly ecologically focused and technologies are adapted to small-scale farming and ecosystem service solutions such as ecological intensification, intercropping, agroforestry and the use of set-aside land for pollination and pest control; and the Consumption Change pathway, in which reduced meat and dairy consumption and reduced food losses lower the ecological burden of food production through demand-side signals. Their report furthermore presents actions and strategies for countries, the private sector, civil society and international organizations to support sectors in that goal, for instance through appropriate investments in research, development and agricultural extension; pre-competitive collaboration and the inclusion of biodiversity criteria in certification schemes; and through the use of choice editing and nudging consumers toward healthier and less wasteful consumption behavior.

In presenting their private-sector options, the Dutch Environment Assessment Agency builds upon existing overviews of business strategies that focus on natural capital accounting and innovation for biodiversity and business, for instance the EU Business @ Biodiversity Platform 2010 report "Food supply sector and biodiversity conservation. Best practice benchmarking". Furthermore, the Natural Capital Protocol, a collaboration of the Natural Capital Coalition and the University of Cambridge, is an example of a tool supporting accounting for biodiversity that provides a specific sector guide for food and beverage businesses (Natural Capital Coalition, 2016). Subsectoral guides such as the "IDF Guide on Biodiversity for the Dairy Sector", published by the International Dairy Foundation, are also increasingly becoming available.

The inclusion of biodiversity protection in food standards, in turn, has been addressed by the European Center for Nature Conservation (ECNC, 2005) and, more recently, by the EU LIFE Project "Biodiversity in Standards and Labels for the Food Industry". This

project aims to improve the biodiversity performance of standards and labels within the food industry by supporting standard organizations to include efficient biodiversity criteria into their schemes, motivating food processing companies and retailers to include biodiversity criteria into their sourcing guidelines, and initiating a European sector wide initiative "Biodiversity Performance in the Food Sector" by 2020. On the basis of a screening of 54 regional, national and international standards for the food sector and requirements of food companies for their supply chain, the project concludes that "biodiversity protection is still not considered with the adequate importance by the sector" and makes a number of recommendations to standards organizations and companies elaborating own sourcing guidelines with regard to both standard-setting and implementation such that sustainably certified farms implement effective biodiversity management and "very good" agricultural practices (Food & Biodiversity, 2017, p. 5).
The present report will draw upon these and other resources in establishing the evidence base on the biodiversity outcomes of various policy options and in making its final policy recommendations to regulators that wish to work with businesses to enhance environmental sustainability.

1. THE REQUEST

a. Original request

EKLIPSE called for experts to join an expert working group to develop recommendations to find out which approaches regulatory agencies in Europe could use when working with small and medium sized businesses in the food sector on the topic of biodiversity.

The original request is available here, and the document of work can be found here.

Questions to answer through the work will be:

- What approaches can improve biodiversity outcomes of businesses?
- How do we know these approaches work / are effective in improving biodiversity outcomes and over what timeframe?
- What are the advantages and disadvantages of existing (and potential) approaches?
- Which of the approaches identified are most promising to be used by regulators?
- Which of these approaches work well under which conditions?

b. Anticipated tasks

The project contains three different tasks to be performed towards finalizing the outputs:

Task 1: Define a framework of approaches and their effectiveness

The goal of this task is to provide a systematic overview of approaches that regulators could potentially use.
- What approaches can improve biodiversity outcomes of businesses?
- How do we know these approaches work / are effective in improving biodiversity

outcomes and over what timeframe, i.e. regarding accounting for biodiversity impacts, identifying the most relevant parts of the value chain, and keeping track of interactions across complex value chains?

Task 2: Identify the most promising approaches to be used by regulators

The goal of task 2 is to provide a comprehensible and expedient choice of approaches from task 1 for further in-depth analysis in task 3.
- What are the advantages and disadvantages of existing (and potential) approaches?
- Which of the approaches identified in task 1 are most promising to be used by regulators?

Task 3: Analyse under which conditions the chosen approaches work well

- Which of these approaches work well under which conditions?
This shall take into account different perspectives and can include for example the following conditions:

- Conditions related to the national policy and legal context (e.g. do integrated food policies as recently developed in some EU countries help to have a more holistic approach?),
- Conditions related to the specific scheme (different standards, governance schemes),
- Conditions related to corporate biodiversity and natural capital management practice, culture and mind-set,
- Conditions related to the socio-economic context, e.g. structure and interactions within the entire market chain, consumer awareness and choices, and
- Conditions related to the level of trust and partnership between the private and public sector.

c. Anticipated outputs

There will be three main outputs of this work:

1) A peer-reviewed report providing the key findings related to the three main steps taken in the review. This report will outline the recommendations on the approaches that are effective according to multi-criteria analysis and under which conditions they work well.

2) An Executive Summary that can be used in the awareness-raising process.

3) If requested: A PowerPoint presentation to members of EKLIPSE, SEPA and key stakeholders as part of a workshop/conference organised by the requesters of the work.

We are not ruling out the possibilities for members of the group to publish academic papers partly grounded in the working group's work.

d. Interpretation of and refinements to the request

Interpretation of the request

In reviewing the request, the members of the Expert Working Group agreed on the following interpretations regarding its scope:

- Focal group: The focus of the 'businesses' mentioned in the request are "small and medium-sized enterprises in the food and beverage sector in Europe". The Expert Working Group understands this focal group to include small and medium enterprises in the entire food chain reaching from farm to retail, and thus also sees small and medium farms and enterprises that engage in simultaneous farming/processing activities, as well as food processing companies and retailers, as falling within the focal scope of this request. We will also include in our project the influence of larger companies have on the biodiversity performance of the SMEs through their sourcing policies and requirements.

- **Strategies available to public regulators**: SEPA's request refers specifically to environmental regulators and enquires how they can "support businesses" in improving biodiversity outcomes. In line with SEPA's new regulatory strategy "One Planet Prosperity", we take an expansive view of the strategies available to regulators in supporting businesses up to and beyond legal compliance, including but not limited to the use of traditional command-and-control regulation, incentive- and market-based approaches, the reduction of regulatory burdens or incentives that stand in the way of farmers' achievement of biodiversity outcomes, the support of voluntary and private standards and sourcing strategies, the utilization of public procurement as a demand driver, and the use of sector-wide engagement with other factors within the regulators' "influence map" (SEPA, 2016) such as consumer demands, industry bodies and NGO programs.

<u>Challenges that will be taken into account while working on recommendations</u>

- Specificities of SMEs: They will require support in understanding, selecting, and implementing mandatory and voluntary approaches for biodiversity. They will need for incentives and resources to cover initial investments and initial losses. While making recommendations, we will have to take into account that there might be a competitive issue with sharing innovative best practice.

- Language: Government agencies and others need to communicate with businesses in their own language and with a good understanding of their business operations and supply chains. This includes brief tailor-made and result-oriented communication.

-Time: Temporal aspects need to be taken into consideration, both with regard to anticipating and piloting future regulation (what may be a standard today may become a regulation tomorrow) and the longevity of any biodiversity improvements (people want immediate results, but how effective are approaches in terms of long-term biodiversity outcomes?)

- Geographical scale: It would be interesting to reflect on the level at which a measure or approach would work best – sub-national, national or EU (e.g. where a level playing effect is important). This question of scale also refers to what is relevant on the market in the food and drink retail industry, e.g. mostly global standards that reach many businesses vs. regional initiatives and influences. The geographical scale needs to be thought of both at the measure/approach level but also in relation to potential impacts on biodiversity, which are most likely to be local.

- **Internal organizational change**: The output should ideally take into consideration how various approaches will be effective at changing employee mind-sets and company cultures. We will reflect on the ability of various approaches to also developing a different mind-set for business owners and managers which would affect the vision and values of companies that use them.
- **Influence on customers:** The final report should also consider how various approaches may be effective at influencing change in customer behaviour.
- **Practicality of approaches**: Practical approaches for businesses to understand and manage their impacts on biodiversity and natural capital across their supply chains are lacking to date. For instance, most businesses face the problem that they don't know where their products/raw materials come from and which risks or threats may be associated with them, thus data on the provenance of raw materials would be needed to be aware of risks that arise along the supply chain. We will take the practicality of recommended measures, along with their implementation cost (see below) into account.
- **First movers versus mainstreaming**: Ultimately, with regard to the target group for biodiversity improvements of business operations two different strategies could be used: 1) Innovation leverage for businesses to go beyond regulation (i.e. pilots, first movers) or 2) mainstreaming the variety of existing approaches beyond the minority of already committed businesses. This project will consider both types of strategies.
- **Soft approaches**: We will not limit ourselves to approaches such as regulations, standards or market-based instruments, but also include soft approaches such as change in business models and management innovations.
- **Costs of implementation**: The costs of implementation of any policy measure under consideration are an important consideration for small and medium sized enterprises and will be included in the selection criteria. In addition, it is important that the effectiveness of any new approach is appropriately monitored and measured by an independent third party. It is however recognised that this requirement could include substantial costs that may not be possible for a smaller enterprise to cover. The report will be cognisant of this issue although (as noted below) specific recommendations on schemes that could tackle this issue are out of scope.

<u>Recommendations from experts contacted by the EKLIPSE Secretariat[1]</u>

In preparing the Document of Work, the EKLIPSE Secretariat reached out to a number of external experts to provide recommendations and inputs on issues this group of experts should keep in mind while dealing with the request. Those external experts highlighted the following issues:
- The work should be linked to the existing international context to make it more relevant.
- In particular, it is important to align it with the main goals of the Convention on Biological Diversity (the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising from genetic resources).
- Furthermore, it would be good to consider the Sustainable Development Goals (in particular Goals No. 13, 14 and 15) when writing the report.
- Finally, the experts noted that the majority of existing case study evidence, particularly

[1] See pages 20/21 of the EKLIPSE Document of Work: SME regulation request (Improving biodiversity outcomes of business)

regarding the outcomes and impacts of possible policy measures, only speak to the immediate outcome/impact of a measure, not the medium or long term impact on biodiversity. Therefore, it is important to make a distinction in the report between strategies that regulators might use to support SMEs in having those immediate impacts, and strategies that could lead to long-term biodiversity improvements, and point to the limitations in the evidence base (see below.)

Limitations and delimitation of scope of business request

- Whenever possible, we will draw upon independent, scientific evaluations of existing approaches' effectiveness on biodiversity and ecosystem conservation; however, we recognize that the existing evidence may be limited in this regard, and will as needed also draw upon self-reported impacts and grey literature. We will furthermore highlight such cases where the evidence is too scarce to support final recommendations in the report.
- Although it is vital to pull together a database and data collection method to evaluate the biodiversity impact of businesses (both large and SMEs), this is out of scope and reach of the EWG. While this is part of the approaches that could be recommended as at a foundation level by governmental bodies, the scope and length of this work has to be conducted separately.
- It is also out of scope to develop, apply or implement a biodiversity performance tool or a monitoring system.
- Due to time constraints on the project, there will be no pilot projects, or capacity building and training for the public sector or businesses.

2. KNOWLEDGE SYNTHESIS FRAMEWORK

The suggested knowledge synthesis framework is based on the work derived from the request and adapted by the EWG during the in-person kickoff meeting on December 11th 2017. On that occasion, the EWG decided to apply a step-wise approach for the comprehensive identification of the existing research evidence covering the whole food chain. In order to do that, most of the interconnections occurring at each step of the chain, as well as across it, between economic and societal drivers to biodiversity related issues were mapped through a participatory process on a visual of the food supply chain already developed by the EKLIPSE team.

The result of this mind-mapping exercise can be seen in Figure 1. The Figure shows that there are numerous actors (in black boxes) and approaches (in blue boxes) that may influence biodiversity outcomes within the food supply chain. Regulators (in red boxes) were seen to intervene in a number of direct ways (e.g. using import restrictions or imposing environmental standards on food production and processing), and influence other approaches (such as Eco-Management and Auding Schemes) in more indirect ways. The expert group furthermore collected first impressions on important measures (e.g. outcomes versus impacts) and policy-relevant evaluation criteria (e.g. additionality and cost effectiveness).

In further discussions by the Expert Group, it was noted that for the policy measures under consideration to be effective, three conditions need to be fulfilled:

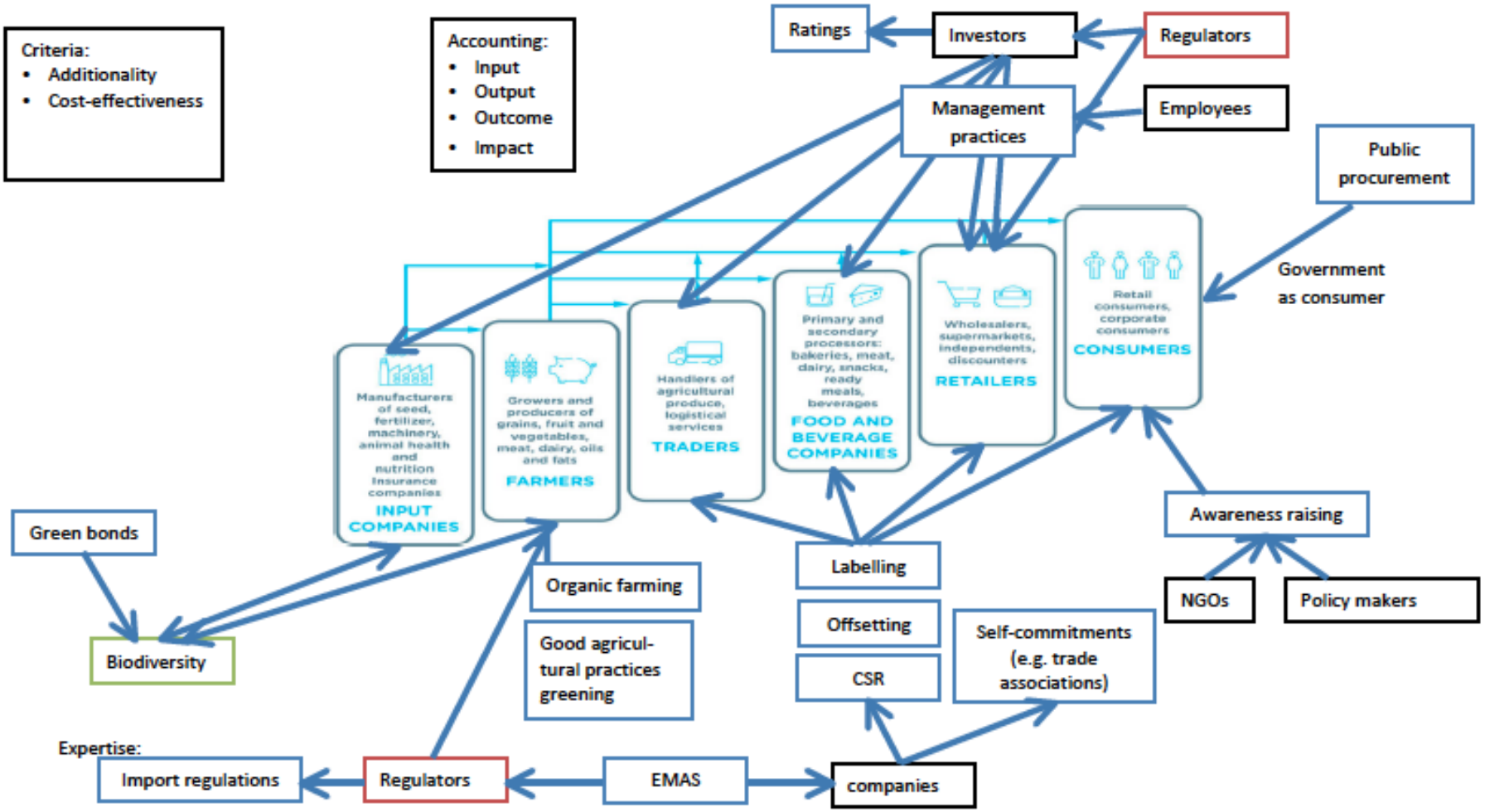
- They need to be adopted by the targeted actors ;
- They need to affect behavior change by targeted actors ;
- These behavioral changes will need to create positive biodiversity impacts.

Ideally, the evidence gathered during this knowledge synthesis procedure will allow the group to address all three conditions by identifying publications and expert knowledge that either provide insights on several conditions simultaneously or that can be joined together in a step-by-step process to arrive at the desired conclusions.

This overview provides the guiding framework for the approach this EWG will take in carrying out the work to respond to SEPA's request. It will however be expanded on during the initial steps of the knowledge synthesis process, both in order to add more approaches and to identify a higher number of criteria and measures to take into consideration during the multi-criteria analysis.

Building on suggestions by the EKLIPSE working group on methods, we furthermore agreed in a recursive and collaborative process to use a number of subsequent methods to address each part of the request that are presented in detail in the next part of this protocol.

Figure 1: mind map exercise from EWG kickoff meeting. The food and beverage supply chain. Source : Trucost. 2016. Environmentally extended input-output (EEI-O) model; Natural Capital Coalition. 2016. «Natural Capital Protocol – Food and Beverage Sector Guide ».



3. METHODOLOGICAL APPROACH

Our methodological approach follows standard practice in policy analysis by 'starting with what you know' (as summarized by Figure 1 above), followed by the location of relevant sources – both published document and expert opinions – and by the identification of malleable criteria used to categorize alternative courses of action and intervention strategies (Geva-May and Pal, 1999). To achieve these aims, we settled on the following methods to achieve the tasks set out in the Document of Work:

a. Overview of Methodology

The EWG methodological approach involved a quick scoping review of the literature (Collins et al. 2015) and expert consultation. We anticipate the following methods to achieve tasks 1 to 3:

Task 1: Define a rough framework of approaches and their effectiveness
- What approaches can improve biodiversity outcomes of businesses?
- How do we know these approaches work / are effective in improving biodiversity outcomes and over what timeframe, i.e. regarding accounting for biodiversity impacts, identifying the most relevant parts of the value chain, and keeping track of interactions across complex value chains?

Method used: Non-systematic Literature Review (or **Quick Scoping Review**), supported by a part-time research assistant following an agreed-upon scoping protocol, that leads us to develop a portfolio of approaches that environmental regulators can use to improve outcomes for businesses.

Task 2 & 3: Identify the most promising approaches to be used by regulators, and analyse under which conditions the chosen approaches work well
- What are the advantages and disadvantages of existing (and potential) approaches?
- Which of the approaches identified in task 1 are most promising to be used by regulators?
- Which of these approaches work well under which conditions?

This shall take into account different perspectives and can include for example the following conditions:

- conditions related to the national policy and legal context (e.g. do integrated food policies as recently developed in some EU countries help to have a more holistic approach?),
- conditions related to the specific scheme (different standards, governance schemes),
- conditions related to corporate natural capital management practice, culture and
- mind-set,
- conditions related to the socio-economic context, e.g. structure and interactions within the entire market chain, consumer awareness and choices, and
- conditions related to the level of trust and partnership between the private and public sector.

Methods used:

1. **To identify criteria used to classify advantages and disadvantages: Building on the QSR, undertake a Qualitative Comparative Analysis, accompanied by an expert consultation using a Delphi process to narrow down most important criteria**
2. **To identify the most promising approaches to be used by regulators: Multi-Criteria Analysis**
3. **To identify under which conditions these approaches work well: Draw on existing evidence regarding the concrete effectiveness of the identified most promising approaches as gathered by the Quick Scoping Review and the Qualitative Comparative Analysis.**
4. **To allow for peer-review of the final outcome: Request for written feedback of experts contacted for the Delphi process.**

The connection between the different methods and the planned outputs can be seen in Figure 2.

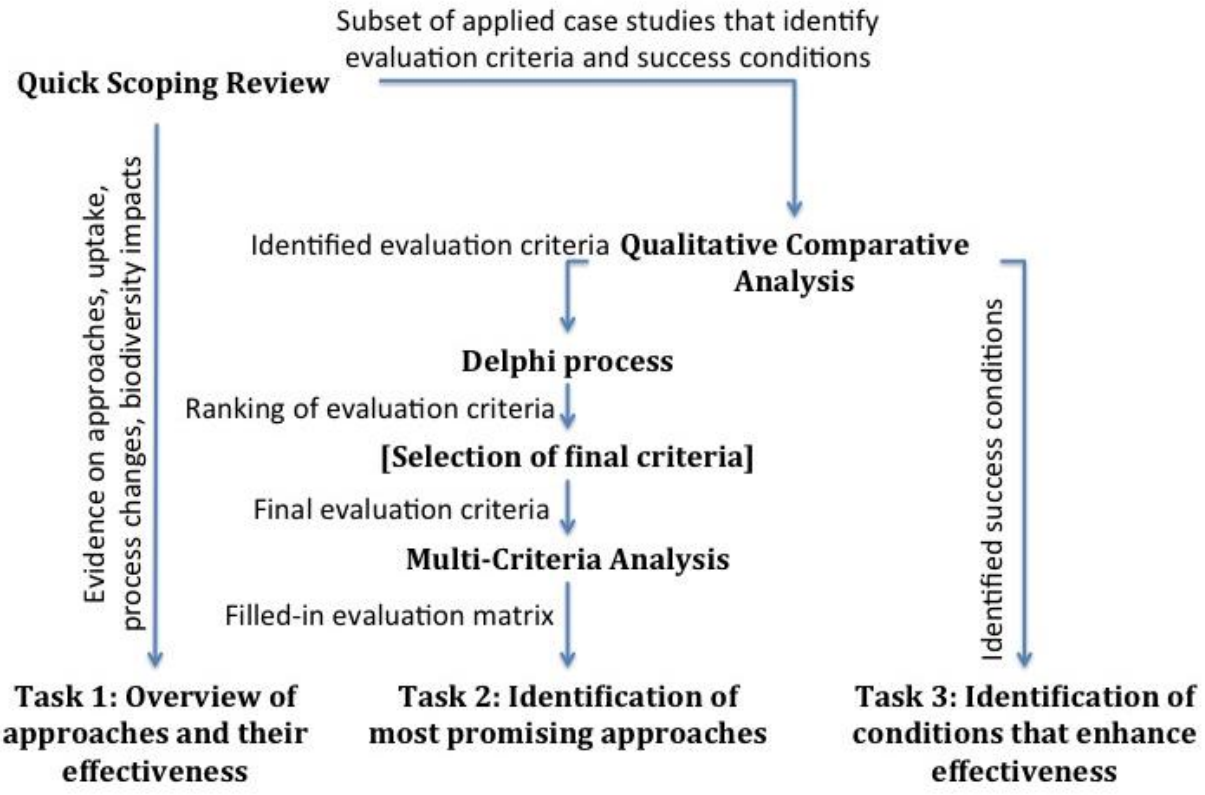


Figure 2: Conceptual overview of methods and their use in addressing the three requested tasks

The following paragraphs provide additional background information on the methods we are planning to use.

b. Quick Scoping Review (QSR)

A QSR aims to provide "an informed conclusion of the size and type of evidence available and a summary of what that evidence indicates with respect to the question/s posed" (Collins et al., 2015). It is defined as "a structured, step-wise methodology, preferably following an a priori protocol to collate and describe existing research evidence (traditional academic and grey literature) in a broad topic area, following a systematic map methodology but with components of the process simplified or omitted to produce information in a short period of time" (Dicks et al. 2017).

The different steps include:

1. Writing a protocol to collect the literature from different sources. The protocol will contain the following (Collins et al., 2015):

- Authors – Team members and report authors;
- Background – Outlining the rationale behind the evidence review, including the policy context;
- Objective – Clarify the primary question and secondary questions if used, detailing the PICO (Population, Intervention, Comparator, and Outcome) elements;
- Scope – Provide clear limits to the question elements such as geographic range, topic, language, and time period;
- Conceptual model – A conceptual model of the interactions that are the focus of the evidence review (see figure 1);
- Methods - Outline of how the following search, extraction and synthesis steps are to be carried out, including:
    - Search keywords. These search keywords will be tested against the literature already collected by the EWG (see below) to make sure they are appropriate. However, given the interdisciplinary nature of the policy request, we also anticipate this to become a recursive process which we will undertaken along with the research assistant;
    - A strategy for where evidence will be searched for, covering peer-reviewed, grey literature and unpublished evidence. A list of focal journals and academic databases used will be provided. For grey literature, we will list the places to be searched (websites), giving the rationale in order to ensure transparency. Furthermore, given that the Expert Working Group has already collected a number of publications that may be relevant, the first step of the QSR will be to review and sort these publications before moving to the search of new material;
    - Outline inclusion and exclusion criteria (Any types of evidence that will not be considered should also be stated in the protocol with justification of the reasons why) – these criteria may also need to be revised in due course and all such revisions will be documented;

    - Strategy for extracting information: build our database of included evidence to extract information relevant to the scoping review's question in a systematic manner;
- Strategy for critical appraisal;
- Indication of how information will be synthesised;
- References and sources of information used in the protocol.

2. Collecting the data

Literature will be collected from three sources: academic literature, grey literature on the themes in the knowledge synthesis framework and the different approaches (reports from private governance, working groups, public sector, NGOs) and case studies and lessons learned to capture the variety of approaches used.

The data collection proceeds in three steps, two of which have already been undertaken:
1) the Eklipse team collected a number of academic papers on behalf of the project group.
2) Each of the expert of the group collected documents from their academic background based on their expertise from the conceptual map (figure 1).
3) A research assistant will assist in systematically collecting additional academic literature and grey literature (reports, case studies) based on the scoping review protocol (with keywords, boundaries, inclusion and exclusion criteria).

3. Sorting the data and provide a systematic view of the research evidence (an excel file)

1) Articles and reports will be downloaded from the databases
2) We will develop an Excel template for information extraction
3) We will sort the outputs from the search on the "cloud" according to the Excel template information.

4. Critical assessment of the evidence

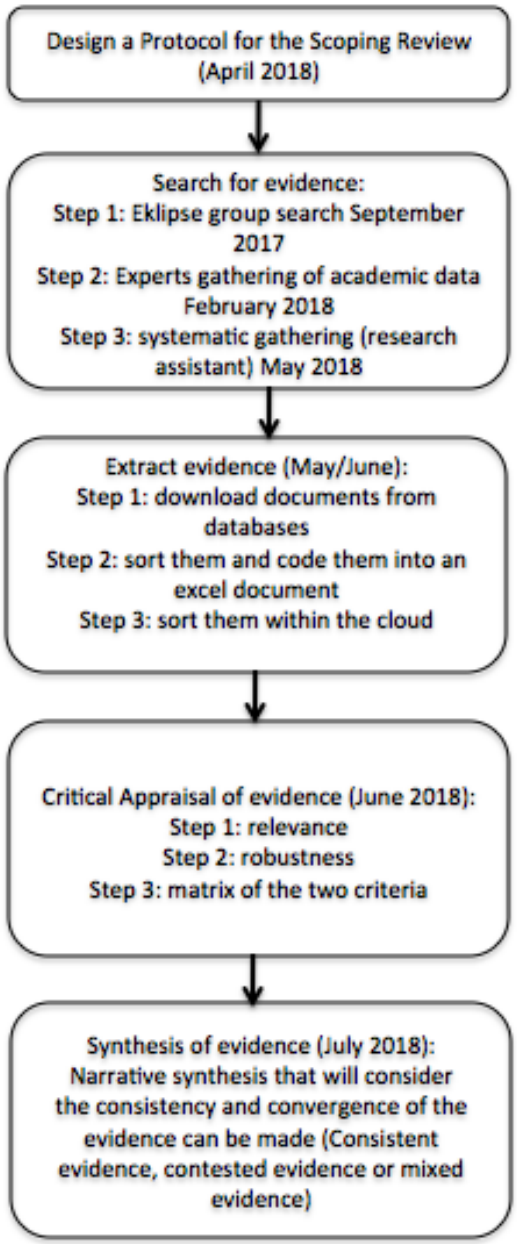
1) We will assess the relevance of the studies. We should consider:
The relevance of the method used to the scoping review question
The relevance of the evidence to the target subject/population
The relevance of the intervention assessed
The relevance of the outcome measured
2) We will assess the robustness of the evidence returned by the scoping review.
3) Finally we will build a matrix, whereby the weighting of relevance and methodological quality are combined to prove a combined weighting (Collins et al., 2015).

5. The synthesis of evidence

The synthesis of the evidence will describe three aspects:
1) The volume and characteristics of the overall evidence base
2) What the evidence base indicates in relation to our question.
3) The implications of the findings for policy and/or practice

We will write the **final output for Task 1** (providing answer on "what approaches can improve biodiversity outcomes of businesses? And how do we know these approaches work / are effective in improving biodiversity outcomes and over what timeframe") with a systematic map of evidence on the portfolio of different approaches we have identified during the Quick Scoping Review. The final output will be the input for the first phase of the qualitative comparative analysis.

Figure 3: Quick Scoping Review for the project (adapted from Collins et al., 2015)



In the next step, we are asked to identify the most promising approaches for regulators, and to identify conditions within which these approaches may work better or worse. To do so, we plan on building on the database created by the QSR and applying a number of techniques that lead up to implementing a Multi-Criteria Analysis. In a first step, we will combine a streamlined qualitative comparative analysis of the identified literature with a Delphi process to arrive at appropriate criteria that will then be applied in the MCA.

c. Qualitative Comparative Analysis (QCA)

This step is crucial to both Task 2 and Task 3, as the quality of the multi-criteria analysis for Task 2 (subsequent step d), as well as the insights on conditions of success, is directly linked to the capacity to identify lessons learned from the literature review. Therefore, adding this analytical step will allow us to increase the consistency of the multi-criteria analysis as well as prepare our conclusions on Task 3 in a streamlined manner, given that the heterogenous pool of studies and contexts would otherwise make it complicated to identify the whole range of conditions and factors linked to successful practices.

The Qualitative Comparative Analysis (QCA) method was originally proposed by Rudel (2008) as a meta-analytical technique for environmental studies to incorporate information focusing on a specific topic and based on a range of different sources, such as reported evidence based on heterogeneous variables and measures from different studies.

In the context of our project, we suggest considering the applications developed by Rudel (2008) and Scouvart et al. (2008) as a meta-analytical tool able to identify both *criteria* of success that should flow into the multi-criteria analysis of most promising approaches, and *conditions* of success that will flow into Task 3, from a range of heterogeneous case studies.

The target of the QCA **is to generate a *truth table* where the complexity of the collected information is reduced to a list of criteria and/or conditions of success.** That should help the analytical identification of specific combination of factors that are related to a particular condition and to a specific objective of analysis.

There are different phases to a qualitative comparative analysis:
1) Identify relevant cases (as done in the Quick Scoping Review) and causal connections. For this we need to determine the outcome that we are looking for. Then we need to look for "positive" cases and "negative cases". From there we need to determine the causal relations that lead to the outcome.
2) Construct the truth table and resolve contradictions. A truth table "sorts cases by the combinations of causal conditions they exhibit. All logically possible combinations of conditions are considered, even those without empirical instances" (Ragin 2009).
3) Analyse the truth table.
4) Evaluate the results.

In a nutshell, the QCA is used to support an analytical identification of specific combination of factors that are related to a particular condition and to a specific objective of analysis.

Strengths:

- Provide a rigorous method for reducing the complexity of available information and –hence- a more focused analysis in the subsequent steps
- May suggest "hidden" factors of success that are not evident at first sight

Limitations:

- Time consuming
- Not all papers fit, there should be a "case" description and the possibility to find reasons/factors of success or failure

Here following is a brief example based on 3 papers.

Step 1: identify the statements in the papers.

	Objective	Region	Remain in a voluntary framework	Label protection	Enhance regulatory capability	"corporative" watering down rules	Conventionalization	Social normative transformation	"monopolistic" effect	Coexistence with private higher more stringent private standards	Strict biodiversity protective legislation	Businesses reporting	Science-based analytics	Reporting benefits for society	Financial report only	Promoting ethical an moral understanding and awareness	"Cheap" label	Strong control by downstream firms	Certification premium below opportunity costs	Seeking to support for smallholders and inclusive	Promoting consumerism choices	Providing "precise" indicators	External control	Consider landscape-level scale (e.g. ecological corridors)	Bias towards corporative farming	Room for strategic behaviour	Top-down approach
Ruysshaert 2016	Impact of palm oil certification RSPO	Global (palm oil producers)																									
Arcuri 2015	Impact of "publicization" on organic regulation	Europe USA																									
Khan 2014	Biodiversity accounting framework	Indonesia (Kalimantan)																									

Biodiversity accounting framework

Step 2: identifying the least common denominator. The statements are revised and "clustered" until a satisfying configuration is found. For each statement "+" means that the statement is considered to be a factor of success; "-" is considered a factor of failure or a limitation; "?" means no evidence provided.

	Biased towards corporative business	Seeking to support smallholders	Link with moral and ethical values (e.g. anti-consumerism)	Provide "precise"and comprehensive reporting (indicators)	"Precise" regulatory capability, not leaving room for strategic behavior	Leave room for coexistence of more stringent certifications	Low certification cost but covering opportunity costs	Label protection	Voluntary framework
Ruysschaert 2016	-	+	+	+	+	+	+	?	?
Arcuri 2015	-	?	+	?	+	+	?	+	+
Khan 2014	?	?	+	+	+	?	?	?	?

From the basic example, it is clear that providing a clear "strict" regulation and linking with moral/ethical values are relevant. The importance of informative reporting of impacts, and the attention to facilitate the involvement of smallholders is also highlighted.

We intend to use this method in the following way: Once we have arrived at a core set of literature from the Quick Scoping Review, each member of the Expert Working Group will be given a share of the identified articles and requested to undertake a simplified QCA, using the following two guiding questions:

1. What criteria (e.g. uptake, cost effectiveness, impact, ...) can be identified that constituted advantages or disadvantages of the intervention for the policy-maker in question? Use these criteria to categorize the interventions (+/-/?) as described above.
2. What conditions (see Task 3 for examples) contributed to the (broadly defined) success or failure of the interventions? Use these conditions to categorize the interventions (+/-/?) as described above.

The results of guiding question 1 will then be aggregated across the experts' QCAs and constitute the pool of possible criteria, derived from the literature, that may be used for the Multi-Criteria Analysis (MCA). Given the limited number of criteria that MCA is able to handle, as well as the importance of including stakeholder voices into the selection of criteria, we intend to introduce a simplified Delphi process at this step of the process to finalize the criteria used in the MCA.

The results of guiding question 2, in turn, will constitute the baseline evidence that will be incorporated into the final report on supportive or hindering conditions for policy success, with a focus on the approaches that are identified as most promising within the MCA.

d. Delphi Process

The Delphi technique is a method used for enabling a group of individuals to collectively address a complex problem through a structured group communication process. The Delphi technique comprises two or more rounds of structured anonymous questionnaires, each followed by aggregation of responses and anonymous feedback to the participants (Martin et al., 2012; Mukherjee et al. 2015):

We plan to follow the structure of a simplified Delphi process as follows:

Preparation of first round of the questionnaire (questionnaire may be unstructured, i.e. with open-ended questions to gather opinions, so that participants can elaborate on and discuss the issues being addressed). We would use this questionnaire to both present the criteria identified in the QCA and ask participants to rank these criteria in order of their perceived importance. A subsequent question will allow them to suggest other criteria we may have overlooked.

Selection and invitation of respondents (from 7- 50 persons). We are planning to include the experts that have been contacted by EKLIPSE to set up the call and Document of Work, and expand on this pool based on our own networks as well as the snowballing method. Given that the policy request comes from the Scottish Environment Protection Agency, the inclusion of stakeholders particularly from the United Kingdom is highly desirable.

Collection and analysis of the completed questionnaire for the first round. Participants answer to the questionnaire and the results are compiled into a short report, which is used as the basis for the second questionnaire round.

Preparation and analysis of second round of questionnaire. The collated responses of the first round are used to prepare a structured questionnaire used in the second round. In our case, this questionnaire would include the aggregated ranking of the criteria from the first round, as well as a presentation of extra criteria that participants have suggested. Participants will be asked to provide their final ranking of all criteria in view of this additional information.

On the basis of the final outcome, we will select the most highly ranked criteria as criteria that will be compared and contrasted in the Multi-Criteria Analysis (below) to arrive at the most promising approaches for environmental regulators to support small and medium-sized enterprises in improving their biodiversity impacts.

e. Multi-Criteria Analysis

Multi-Criteria Decision Analysis (MCDA) evaluates the performance of alternative courses of action with respect to criteria that capture the key dimensions of the decision-making problem, considering the preferences and judgments of the decision-makers (Belton and Stewart, 2002). MCDA comprises a family of tools which were developed in the context of Operations Research to provide a formalized method to assist decision-making in complex situations that involve multiple criteria. However, MCDA has been increasingly used in a wide range of other fields, including environmental planning, management and policy advice (Mendoza and Martins, 2006).
Multi-criteria decision-making methods have several advantages in dealing with complex decision problems:

1. They allow for the investigation and integration of interests and objectives of multiple actors and stakeholders, since the use of multiple criteria and weights

accounts for the quantitative and qualitative input of each actor;
2. They provide output information that is consistent, comparable, and ordered in a simple format, which makes it easy to communicate to stakeholders;
3. And they allow for objectivity and inclusiveness of different perceptions and interests of actors without being energy- and cost-intensive (Mateo, 2012; Tsoutsos et al., 2009).

One can differentiate between two broad groups of MCDA tools: *Multi-objective decision-making methods* (which are used during multi-objective planning problems when the range of final design solutions is a priori infinite, but constrained by the decision variables) and *multi-attribute decision-making methods*, where a small number of discrete alternatives are compared and evaluated against a set of attributes that are frequently difficult to quantify, and the most appropriate is chosen based on the ranking and/or aggregation method chosen (Mateo, 2012; Mendoza and Martins, 2006). Given our goal of identifying the most promising approaches to be used by regulators on the basis of our scoping review and qualitative comparative analysis, multi-attribute decision-making methods appear most appropriate for our purposes.
It should however be acknowledged that even within this group, there exist a number of different methods which are based on different axiomatic and model assumptions in terms of the construction and aggregation of preferences, and which are not directly comparable. Broadly, one can distinguish value measurement models (in which numerical scores are constructed in order to represent the degree to which one decision option may be preferred to another; e.g. the Analytic Hierarchy Process); goal, aspiration, or reference level models (which seek to discover options which are closest to achieving previously determined desirable goals or aspirations; e.g. the goal programming method); and outranking models (in which alternative courses of action are compared pairwise, initially in terms of each criterion, and finally in aggregation, to determine strength of evidence favoring selection of one alternative over another; e.g. the ELECTRE or PROMETHEE methods) (Belton and Steward, 2002; Mendoza and Martins, 2006). Given the close familiarity of one of the EWG's members with the Analytic Hierarchy Process, alongside this method's low need for data, intuitive set-up that makes it easy to understand for policy-makers, and widespread usage, the expert working group settled on using the Analytic Hierarchy Process as its aggregation method.

In general, a multi-criteria decision-making process involves the following steps to be followed (Mateo, 2012):

1. Identifying the objective/goal of the decision making process, defining the problem, identifying decision-making actors, and defining constraints and the degree of uncertainty.
2. Establishing the evaluation criteria/parameters/factors.
Criteria must be coherent with the decision, independent of each other, represented in same scale, quantitatively or qualitatively measurable, and not unrelated to the alternatives.
3. Selecting the alternatives that will be evaluated in the process. This corresponds to the policy alternatives to support businesses in improving their biodiversity impact.
4. Selecting the weighting method which will determine the relative importance of criteria in the multi-criteria problem under consideration, and assign criteria weights. Here we will use the Analytic Hierarchy Process.

5. Constructing the evaluation matrix, which in its simplest form consists of alternatives, criteria, their weights, and the corresponding evaluation of each criterion. This can be expressed in matrix form as follows (Mateo, 2012):

Criteria: C_1, C_2, C_3, … C_N
Weights: W_1, W_2, W_3, … W_N

$$\begin{bmatrix} \square_1 \\ \square_2 \\ \square_3 \\ \dots \\ \square_\square \end{bmatrix} \begin{bmatrix} \square_{11} & \square_{12} & \dots & \square_{1\square} \\ \square_{21} & \square_{22} & \dots & \square_{2\square} \\ \square_{31} & \square_{32} & \dots & \square_{3\square} \\ & & \dots & \\ \square_{\square 1} & \square_{\square 1} & \dots & \square_{\square\square} \end{bmatrix}$$

where x_{ij} is the evaluation given to alternative *i* with respect to criterion *j*, w_j is the weight of criteria *j*, *n* is the number of criteria and *m* is the number of alternatives. In an extended form of the policy analysis, if requested, it may also be possible at this step to construct different scenarios with different stakeholder weights to showcase the underlying normative underpinnings of different societal trade-offs.

6. Selecting the appropriate multi-criteria method of aggregation in order to rank alternatives. The appropriateness of the final method chosen will depend inter alia on the final data availability and the degree of uncertainty both of the decision-makers' preferences (in which case outranking methods or the use of sensitivity analyses may be considered) and of the likely outcomes (in which case probability-based, stochastic, or fuzzy logic methods might be chosen).

7. Finally, the aggregation method is applied, alternatives are ranked, and the recommended solution alternatives are presented based on the aggregation results.

This concludes the overview of analytical tools used to construct the report as planned by the EWG. The members of the EWG will write the final report, addressing Tasks 1 – 3, on the basis of the overview of existing evidence gathered in the Quick Scoping Review, the ranking of alternatives and their advantages and disadvantages (by criteria chosen through the Delphi Process) arrived at during the Multi-Criteria Analysis, and the knowledge of external conditions of success identified during the Qualitative Comparative Analysis.

f. Review of the Draft Report

Feedback on the findings presented in a draft report will be sought from a range of stakeholders using the following engagement process:

1) External expert review of the report – approximately five external reviewers will be invited by EKLIPSE to review the draft report on its content and structure. Reviewers will represent different backgrounds (academia, policy and practice).
2) The draft report will be distributed among the participants of the Delphi Process, who will be asked for their feedback and input on the content and conclusions.
3) Public consultation on the draft report – the draft report will be placed on the EKLIPSE website allowing members of the public to comment on it over a one-month period. The EKLIPSE EWG will formally respond to the comments made by

each of these five reviewers, as well as the most important issues raised by the public consultation.

g. Final Reporting

The final report will be submitted to the Scottish Environmental Protection Agency alongside an Executive Summary that highlights the most important insights and policy recommendations. If requested by the Agency, members of the EWG will make an oral presentation of the report and its conclusions to members of EKLIPSE, SEPA and key stakeholders as part of a workshop/conference organised by the requesters of the work.

4. EXPECTED OUTPUTS AND FORMATS

a. Outputs and Formats

There will be three outputs of this work:

1) A peer - reviewed report providing the key findings related to the three main steps taken in the review.

2) An Executive Summary which can be used in the awareness-raising process.

3) A PowerPoint presentation to members of EKLIPSE, SEPA and key stakeholders as part of a workshop/conference organised by the requesters of the work.

We are not ruling out the possibilities for members of the group to publish academic papers partly grounded in the working group's work.

b. Limitations of the expected conclusions

At this stage of the process, the members of the EWG anticipate the following limitations of the expected conclusions, given the time frame and resources available for this request:

- Given the impossibility of gathering primary evidence, the conclusions will be limited by existing evidence on policy interventions that have been carried out or could be carried out in the future. The EWG anticipates that this evidence base, particularly for the target group of SMEs in the food and drink sector in Europe, may be limited, particularly regarding the proven biodiversity outcomes such interventions may achieve.
- There exists a wide range of different circumstances within which environmental regulators may address biodiversity in food supply chains, both regarding the different stages of the supply chain as well as sectoral and national differences. While the EWG will take into account all existing evidence on the topic matter at hand, the expected conclusions of this report will necessarily have to concentrate on a subset of such circumstances, for instance through highlighting a number of scenarios within which we may recommend optimal policy options.
- The depth of engagement both with the literature and with experts within the Delphi process will need to be adjusted subject to time constraints of the request

as a whole and of the contributing experts.

c. Expected recommendations

While our primary objective is to provide recommendations to the requester, the Scottish Environment Protection Agency, we hope to be able to address a number of stakeholders with this report and its expected recommendations. This includes both other regional, national and supranational environmental regulators in Europe, as well as business practitioners and scientists who work on related issues. This goal also defines our expected outputs. The Executive Summary is intended inter alia to be a practical and easily accessible resource that can be used to raise awareness on possible avenues for biodiversity-improving management options among businesses and other stakeholders alike. As regards reaching out to scientists, we anticipate the possibility of collaborating on an academic paper that may highlight both the existing evidence and continuing research gaps regarding the impacts of SMEs' business activities on biodiversity, as well as regulatory options to address these, and provide concrete recommendations where to focus future research.

d. Intended timeline

December 2017	Kick-off meeting
December 2017-May 2018	Work on methodological protocol Gather literature, case studies
February 2018	In-person meeting
April 2018	Submit methodological protocol
May 2018	Agreement on the methodological protocol
June 2018	Respond to and integrate the results of extended peer review on the methodological protocol
May to July 2018	Collating and assessing existing knowledge relevant for the request with the help of a research assistant
June 2018	In-person meeting
July-September 2018	Qualitative Comparative Analyses
September 2018	In-person meeting
October 2018	Delphi Process
October-December 2018	Multi-Criteria Analysis
December 2018	Draft report including recommendations for potentially effective measures across Europe concerning policy, management and research
January 2019	Extended peer review of the draft report by scientists (selected by EKLIPSE), participants in the Delphi process as well as the requester and stakeholders (via open consultation, organised by EKLIPSE)
February 2019	Respond to and integrate the results of extended peer review on the final report
February 2019	Disseminate final report and its results as required

References

Belton, V. and Stewart, T., 2002. *Multiple criteria decision analysis: an integrated approach*. Springer Science & Business Media.

Collins, A., Coughlin, D., Miller, J. and Kirk, S., 2015. The production of quick scoping reviews and rapid evidence assessments: a how to guide. NERC.

ECNC. 2005. Biodiversity and the Food Sector - An initial review of the extent to which biodiversity is protected through food standards in Europe. Tilburg: European Centre of Nature Conservation.

Food & Biodiversity. 2017. Recommendations to provide biodiversity protection in policy and criteria of food standards and sourcing requirements of food companies and retailers. http://www.business-biodiversity.eu/en/recommendations-biodiversity-in-standards

Geva-May, I. and Pal, L.A., 1999. Good fences make good neighbours: policy evaluation and policy analysis–exploring the differences. *Evaluation*, 5(3), pp.259-277.

IPES-Food. 2016. From uniformity to diversity: a paradigm shift from industrial agriculture to diversified agroecological systems. International Panel of Experts on Sustainable Food Systems.

IPES-Food. 2017. Too big to feed: Exploring the impacts of mega-mergers, concentration, concentration of power in the agri-food sector. International Panel of Experts on Sustainable Food Systems.

TEEB. 2015. TEEB for Agriculture & Food: an interim report, United Nations Environment Programme, Geneva, Switzerland

IPBES. 2016. The assessment report of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services on pollinators, pollination and food production. S.G. Potts, V. L. Imperatriz-Fonseca, and H. T. Ngo, (eds). Secretariat of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, Bonn, Germany.

Martin, T.G., Burgman, M.A., Fidler, F., Kuhnert, P.M., Low-Choy, Samantha, McBride, M. and Mengersen, K., 2012. Eliciting expert knowledge in conservation science. *Conservation Biology*, *26*(1), pp.29-38.

Mateo, J.R.S.C., 2012. *Multi criteria analysis in the renewable energy industry*. Springer Science & Business Media.

Mendoza, G.A. and Martins, H., 2006. Multi-criteria decision analysis in natural resource management: a critical review of methods and new modelling paradigms. *Forest ecology and management*, *230*(1-3), pp.1-22.

Mukherjee, N., Huge, J., Sutherland, W.J., McNeill, J., Van Opstal, M., Dahdouh-Guebas, F. and Koedam, N., 2015. The Delphi technique in ecology and biological conservation: applications and guidelines. *Methods in Ecology and Evolution*, *6*(9), pp.1097-1109.

Natural Capital Coalition. 2016. Natural Capital Protocol – Food and Beverage Sector Guide. (Online) Available at: www.naturalcapitalcoalition.org/protocol

PBL Netherlands Environmental Assessment Agency. 2014. How sectors can contribute to sustainable use and conservation of biodiversity. CBD Technical Series No. 79.

Ragin, C.C., 2009. Qualitative comparative analysis using fuzzy sets (fsQCA). *Configurational comparative methods*, *51*.

Rudel, T.K. 2008. Meta-analyses of case studies: A method for studying regional and global environmental change. *Global Environmental Change* 18, pp. 18–25.

Scouvart, M., Adams, R.T., Caldas, M., Dale, V., Mertens, B., Nédélec, V., Pacheco, P., Rihoux, B. and Lambin, E.F., 2008. Causes of deforestation in the Brazilian Amazon: a

qualitative comparative analysis. *Journal of Land Use Science*, 2(4), pp.257-282.
SEPA. 2016. One Planet Prosperity – Our Regulatory Strategy. Scottish Environmental Protection Agency. https://www.sepa.org.uk/media/219427/one-planet-prosperity-our-regulatory-strategy.pdf
Tsoutsos, T., Drandaki, M., Frantzeskaki, N., Iosifidis, E. and Kiosses, I., 2009. Sustainable energy planning by using multi-criteria analysis application in the island of Crete. *Energy Policy*, *37*(5), pp.1587-1600.

Appendix 1: Quick Scoping Review Protocol

Quick Scoping Review protocol to assess regulatory tools and criteria to improve biodiversity outcomes of small and medium-sized enterprises in the food and beverage sector in Europe

Prepared by the EKLIPSE Expert Working Group on biodiversity considerations for SMEs in the food and beverage sector

EWG members:

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Jane Glover (Birmingham Business School)
Stefan Hörmann (Head of Unit, Global Natura Fund)
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For further information about this scoping protocol, please contact: secretariat@eklipse-mechanism.eu

a. Introduction and background

The EKLIPSE Expert Working Group on biodiversity considerations for SMEs in the food and beverage sector (EWG) has been asked to respond to the following request for policy advice: How can environmental regulators support businesses to improve the outcomes of their operations for biodiversity, with a focus on small and medium-sized enterprises in the food and beverage sector in Europe? The policy request further asks the experts to develop a framework to analyse the different possible approaches and their effectiveness. From that framework, the most promising approaches will be identified and analysed to understand under which conditions they work well.
This request comes from the Scottish Environment Protection Agency (SEPA). SEPA is working to implement their new regulatory strategy 'One Planet Prosperity', which summarizes the agency's vision for ways they can work with Scottish businesses to enhance environmental sustainability. SEPA would like to find out which approaches they, and other European regulatory agencies, could use when working with businesses to achieve this vision, reaching from traditional compliance with environmental standards to going beyond compliance, and encouraging and promoting voluntary efforts at enhancing biodiversity outcomes of business operations. For more information on the original call for expertise and the constitution of the Working Group, please view the EWG's Document of Work. For more information on all methods used to respond to the call, please refer to the Methodological Protocol.
This protocol aims to provide practical guidance for implementing the first step of the EWG's methodological protocol: The Quick Scoping Review (QSR). A QSR aims to provide "an informed conclusion of the size and type of evidence available and a summary of what that evidence indicates with respect to the question/s posed" (Collins et al., 2015). It is defined as "a structured, step-wise methodology, preferably following an a priori protocol to collate and describe existing research evidence (traditional academic and grey literature) in a broad topic area, following a systematic map methodology but with components of the process simplified or omitted to produce information in a short period of time" (Dicks et al. 2017).

b. Objectives

The EWG aims to respond to the primary question ("How can environmental regulators support businesses to improve the outcomes of their operations for biodiversity, with a focus on small and medium-sized enterprises in the food and beverage sector in Europe?") through analyzing the following questions in turn:

- What approaches can improve biodiversity outcomes of businesses?
- How do we know these approaches work / are effective in improving biodiversity outcomes and over what timeframe?
- What are the advantages and disadvantages of existing (and potential) approaches?
- Which of the approaches identified in task 1 are most promising to be used by regulators?
- Which of these approaches work well under which conditions?

While the aim of the Quick Scoping Review is to identify written evidence that can

provide insights into all sub-questions, the strategy to identify appropriate literature to include into the overview that will constitute the first output will focus on the first two questions, which have been re-specified as follows:

1. What approaches can be taken by environmental regulators to improve the biodiversity outcomes of small and medium enterprises in the food and drink sector of Europe?
2. What evidence exists of their effectiveness (ranging from uptake to process changes to associated biodiversity outcomes, and including both short-term and long-term perspectives)?

The other sub-questions will subsequently be answered by the members of the EWG by basing themselves on the identified literature and applying Qualitative Comparative Analysis and Multi-Criteria Analysis, as explained in greater detail in the Methodological Protocol.
Using the PICO (Population, Intervention, Comparator, and Outcome) model, the objective of this scoping review can be defined as follows:

Questions	- What approaches can be taken by environmental regulators to improve the biodiversity outcomes of small and medium enterprises in the food and drink sector of Europe? - What evidence exists of their effectiveness (ranging from uptake to process changes to associated biodiversity outcomes, and including both short-term and long-term perspectives)?
<u>Population</u> The subject or unit of study	Small and medium enterprises situated along the food and drink value chain (ranging from farmers/primary producers to retailers), with a focus on Europe (see Figure 1).
<u>Intervention/Exposure</u> The proposed management regime, policy or related intervention/exposure applied or investigated	Any strategy available to regulators in supporting businesses up to and beyond legal compliance, including but not limited to the use of traditional command-and-control regulation, incentive- and market-based approaches, the reduction of regulatory burdens or incentives that stand in the way of farmers' achievement of biodiversity outcomes, the support of voluntary and private standards and sourcing strategies, the utilization of public procurement as a demand driver, and the use of sector-wide engagement with other factors within the regulators' "influence map" (SEPA, 2016) such as consumer

	demands, industry bodies and NGO programs (see Figure 1).
Comparator The control with no intervention or an alternative to the intervention	The regulatory status quo without the intervention (as specified above) in place.
Outcome The effects of the intervention	Identified outcomes can range across the output – outcome – impact spectrum, including but not limited to the adoption/uptake of programs or standards by businesses; internal process changes or individual behaviour changes; measurable changes in sourcing, production, or consumption patterns; and (ideally and importantly) associated biodiversity impacts.

c. Scope and inclusion criteria

To identify and collect informative literature that is appropriate for the above methodological treatment, it is important to clearly define the scope of the scoping review as well as inclusion criteria. Literature that should be included into the scoping review will fit the following criteria:

Topical and geographic range: The scope of this review includes all and any evidence that may reasonably affect European SMEs in the food and drink sector along with their supply chains. Taking the example of biodiversity outcomes of organically certified coffee in Latin America, such evidence may be included if there is a reasonable link to Europe-based businesses (such as retailers which may stock such coffee). Ideally, the scoping review will work backward in identifying causal evidence chains from the environmental regulator's approach (focusing on European SMEs) to possible biodiversity outcomes, as the following figure illustrates:

Figure 1: Proposed scoping review mechanism to identify appropriate literature

Language: The QSR should be conducted in English.

Time period: The first round of the search should be contained to publications from the years 2010 – 2018. This time period can be adjusted in collaboration between the Research Assistant and the EWG on the basis of the evidence identified.

Types of evidence: The QSR will include both academic literature, as well as grey

literature (reports from private governance, working groups, public sector, NGOs..), unpublished work, and case studies and lessons learned to capture the variety of approaches used. A particular focus should be put on practice-based case studies and evaluative literature, as well as literature reviews, meta-analyses and summary reports on policy options. Purely theoretical work should not be included in this evidence review.

Inclusion criteria

On the basis of this presentation of objectives and scope, criteria for inclusion in the literature review include:

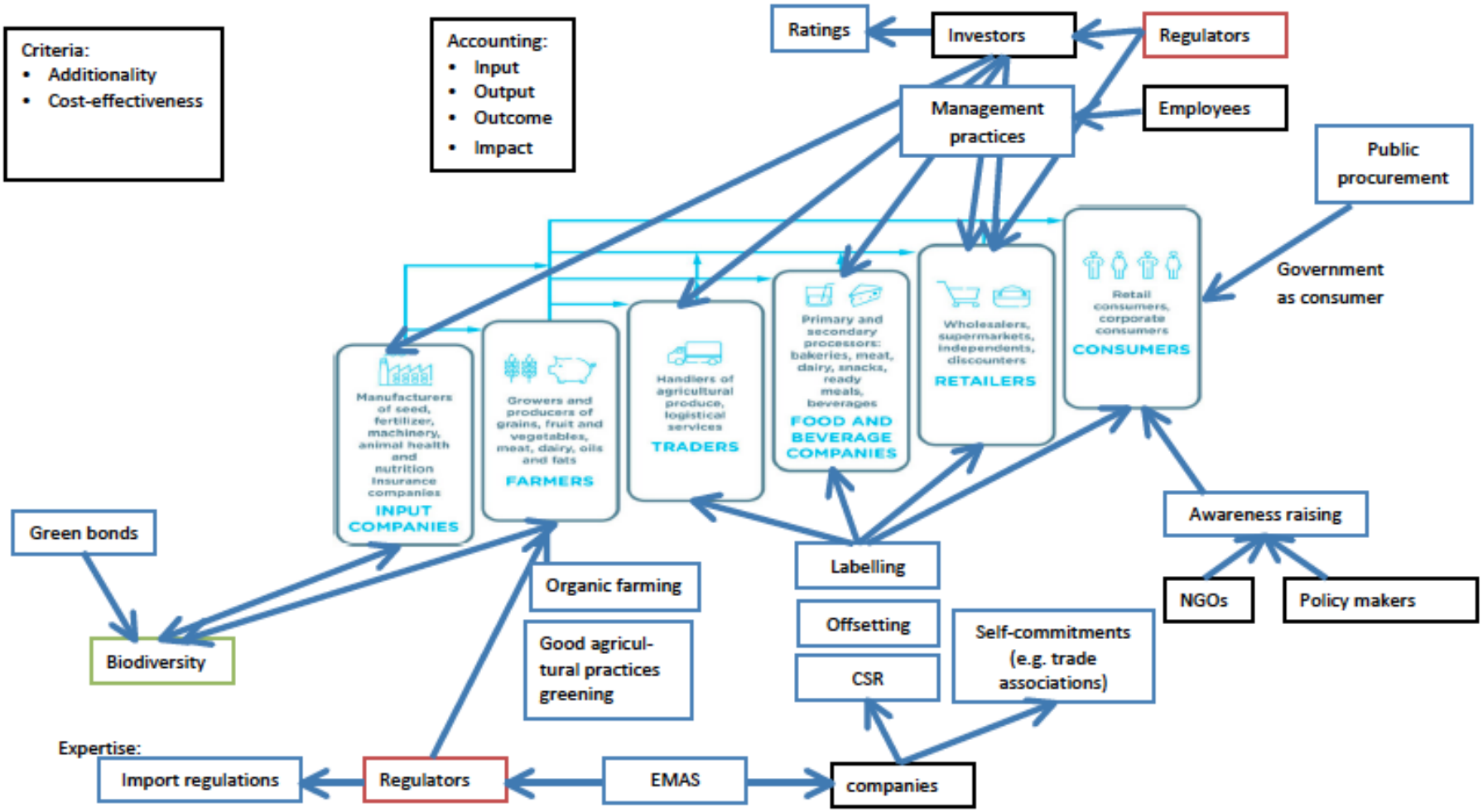
- Some aspect of biodiversity protection, conservation or enhancement as focal goal or impact of intervention
- A plausible impact or applicability for European SMEs
- A plausible impact or applicability to the food or drink value chain
- A plausible intervention potential for regulators (viewing regulatory actions in a broad and pluralistic way as explained above)

Other types of scope conditions and inclusion criteria may be defined in due course and in collaboration with the Research Assistant.

d. Conceptual model

In its first meeting, the EWG created a conceptual model of the central interactions that should be the focus of the Evidence Review. This model is reproduced in Figure 2 (next page). Note that this figure is not exhaustive, but provides an overview both of the sectoral scope of the review – containing the entire food and drink value chain – and examples of the types of approaches members of the EWG expect to find in practice.

Figure 2: mind map exercise from EWG kickoff meeting. The food and beverage supply chain. Source : Trucost. 2016. Environmentally extended input-output (EEI-O) model; Natural Capital Coalition. 2016. «Natural Capital Protocol – Food and Beverage Sector Guide ».



e. Timeline and broad overview

Figure 3 (this page, across) presents a broad timeline and overview of the steps envisioned during the Quick Scoping Review. These steps will be further detailed in the next sections. Outputs of the Quick Scoping Review are expected at the end of July 2018, with the possibility of extending the synthesis of the evidence into August 2018, as agreed upon by the EWG and the Research Assistant.

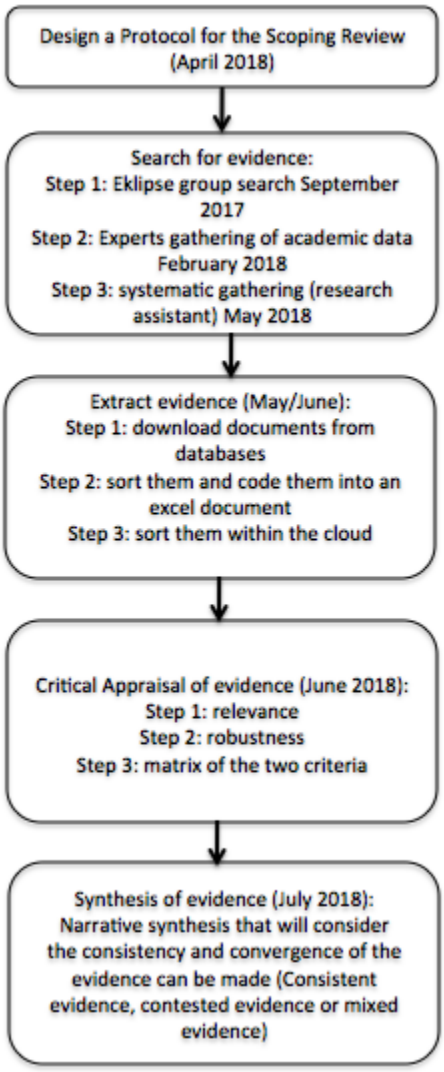


Figure 3: Timeline and overview

f. Precursory steps and existing literature

In preparing the call for experts and this protocol, a number of potentially relevant documents have been assembled both by the EKLIPSE team as well as the members of the EWG, who collected documents from their academic background based on their expertise from the conceptual map. All documents collected to present have all been uploaded to the Owncloud EKLIPSE server, to which the Research Assistant will receive access. Reviewing these documents will form the starting point for the classification and overview exercise of the QSP. The Research Assistant is expected to apply the inclusion criteria and appraisal methods, as outlined below, first to the existing number of documents before turning in a second step to conducting a broad literature scan to include further evidence. The methodological steps to be taken are detailed further below.

e) Methods

The following methods shall be applied in conducting the QSP.

Search strategy

The QSP will be built on a four-step search strategy.

1. In a first step, existing literature (as explained above) is submitted to a first appraisal, using inclusion and exclusion criteria listed below, and categorized in an overview Excel document (as detailed below).
2. In a second step, key journals are identified (applying an identification strategy described below), of which the table of contents of issues published during the time scope of analysis (2010 – 2018) are reviewed. The abstracts of articles whose titles appear to match the scope of the analysis are reviewed and the article, if relevant, downloaded, saved on the Owncloud and categorized in the

overview Excel document.

3. In a third step, relevant websites will be reviewed to extract appropriate grey literature and centrally collected publications.
4. In a fourth step, a keyword search will be conducted on Google Scholar to include both academic and grey literature. Literature appearing on the first 5 pages (50 results) of every combination of keywords will be reviewed by title and, if seemingly relevant, by abstract. If deemed relevant, this literature will be downloaded, saved on the Owncloud and categorized in the overview Excel document.

Identification of relevant key journals

The identification of relevant key journals is a further task of the Research Assistant. This task shall be executed as follows: Identify the 10 leading journals on each of the following topics: SMEs; Conservation/conservation biology; Food; Environmental Studies/management; Business Ethics/CSR; Regulation/Policy making; Agriculture/Agroecology; Environmental/ecological economics. Further review the articles that have been included from the existing literature in step 1 and find repetitions in their publication journal. Review these journals' aims and core foci to arrive at a list of maximum 40 journals that are most likely to include content that will meet the inclusion criteria. This list shall be submitted for review by the EWG before moving forward with the review of tables of contents and abstracts of these key journals.

Identification of relevant websites

Relevant websites for step three (such as https://www.conservationevidence.com/) will be collected based on the expertise of the members of the EWG as well as the Research Assistant. The list of relevant websites shall be submitted for review by the EWG before moving forward with their review.

Search keywords

It is recognized by the members of the EWG that the topical scope at hand is difficult to condense into a small number of keywords, given that very specific information is sought that however may cover an entire sector and outcome linkage. To conduct the fourth step of the literature review, we therefore suggest to use the below matrix of key word combinations as a starting point. When reviewing the already existing literature, one simultaneous task of the Research Assistant shall be to revisit and expand upon the below search keyword matrix, and submit the final matrix for approval by the EWG before starting the keyword search.

Agri-environment*	AND	Food	AND	Business
Biodiversity				Business organization*
Conservation				Farm
Ecosystem services				Regulat*
Environment*				SMEs

Strategy for extracting information

Literature that has been found to conform to the inclusion criteria (according to a scan of its title and abstract/executive summary) will be saved in a central folder of the Owncloud and logged in an Excel overview document that will include, at the least, the following categories/columns:

Author name(s); Title of publication; Year of publication; Journal name; Abstract (copy-paste).

If found in the abstract, the following categories should also be filled out:

Intervention type; Region; Specific SME focus? (yes/no); Outcome or impact assessment

Further useful categories for the overview document may be suggested by the Research Assistant in collaboration with the EWG. Such categories may include types of evidence, references, main research focus (topical, geographical, size, etc.), main research outcomes and insights, policy recommendations, as well as other categories as derived from the protocol and agreed upon by the EWG and RA.

This overview document will be considered **Output 1** of the Research Assistant, to be delivered at the latest by **July 31st 2018,** unless agreed-upon otherwise by the EWG and RA.

Strategy for critical assessment of the evidence

Once the scoping part of the Quick Scoping Review has concluded, the EWG, with support by the Research Assistant, will assess the relevance of the studies and robustness of the evidence collected by the scoping review. Under consideration will be:

- The relevance of the method used with respect to the scoping review question
- The relevance of the evidence with respect to the target subject/population
- The relevance of the intervention assessed
- The relevance of the outcome measured
- The quality of methods used.

As final outcome, the EWG, with support by the Research Assistant, will build a matrix wherein the weighting of relevance and methodological quality are combined to prove a combined weighting of the evidence (Collins et al., 2015).

Strategy for the synthesis of the evidence

The synthesis of the evidence will describe three aspects:
1) The volume and characteristics of the overall evidence base
2) What the evidence base indicates in relation to our question.
3) The implications of the findings for policy and/or practice

With support by the Research Assistant, we will write the **final output of the QSP** (providing answers on "What approaches can be taken by environmental regulators to improve the biodiversity outcomes of small and medium enterprises in the food and drink sector of Europe? And what evidence exists of their effectiveness (ranging from uptake to process changes to associated biodiversity outcomes, and including both

short-term and long-term perspectives)?"), including a systematic map of evidence on the different approaches. This corresponds to the solution scanning, "a structured, step-wise methodology to identify a long list of available actions, interventions or approaches, in response to a broad challenge" (Dicks et al. 2017). This final output will constitute our answer to Task 1 of the overall call and Document of Work. It will further be the input for the first phase of the qualitative comparative analysis. Its final, proofread and referenced version will be considered **Output 2** of the Research Assistant, to be submitted by **August 31st 2018** at the latest, unless agreed-upon otherwise by the EWG and RA.

References

Collins, A., Coughlin, D., Miller, J. and Kirk, S., 2015. The production of quick scoping reviews and rapid evidence assessments: a how to guide. NERC.