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CHAPTER ONE

OVERVIEW OF THE VALUE-CHAIN APPROACH:

An interface between science on natural resources and action on sustainable consumption and production

VALUE CHAINS: AN INTERFACE BETWEEN SCIENCE ON NATURAL RESOURCES AND ACTION ON SUSTAINABLE CONSUMPTION AND PRODUCTION

For insights on management of natural resources and raw materials to support pathways towards sustainable consumption and production and delivery of Agenda 2030 for Sustainable Development, it is necessary to understand natural resources in relation to economic activities and its related cycle of consumption and production.

The value chain offers the lens required to reach this understanding, by including all activities that provide and receive value throughout the life cycle of a product or a service, from supply to disposal after use and including aspects such as business models, investments and stakeholders.

The value-chain approach considers the entire value chain of economic activities, by understanding what is happening at different stages of the value chain as well as how the value chain operates as part of a system (Figure 4).

Adopting a value-chain approach helps to identify strategic intervention points and shape corresponding actions that improve natural resource management and achieve multiple sustainability objectives simultaneously.

By being specific (type of resource, type of impact, stage of the life cycle) and by engaging all stakeholders, this approach also generates solutions that are actionable at different levels by different actors.

As such, the value-chain approach provides a practical interface between the science and data on natural resource use and environmental impacts, and the actions that stakeholders can take towards SCP and Agenda 2030.

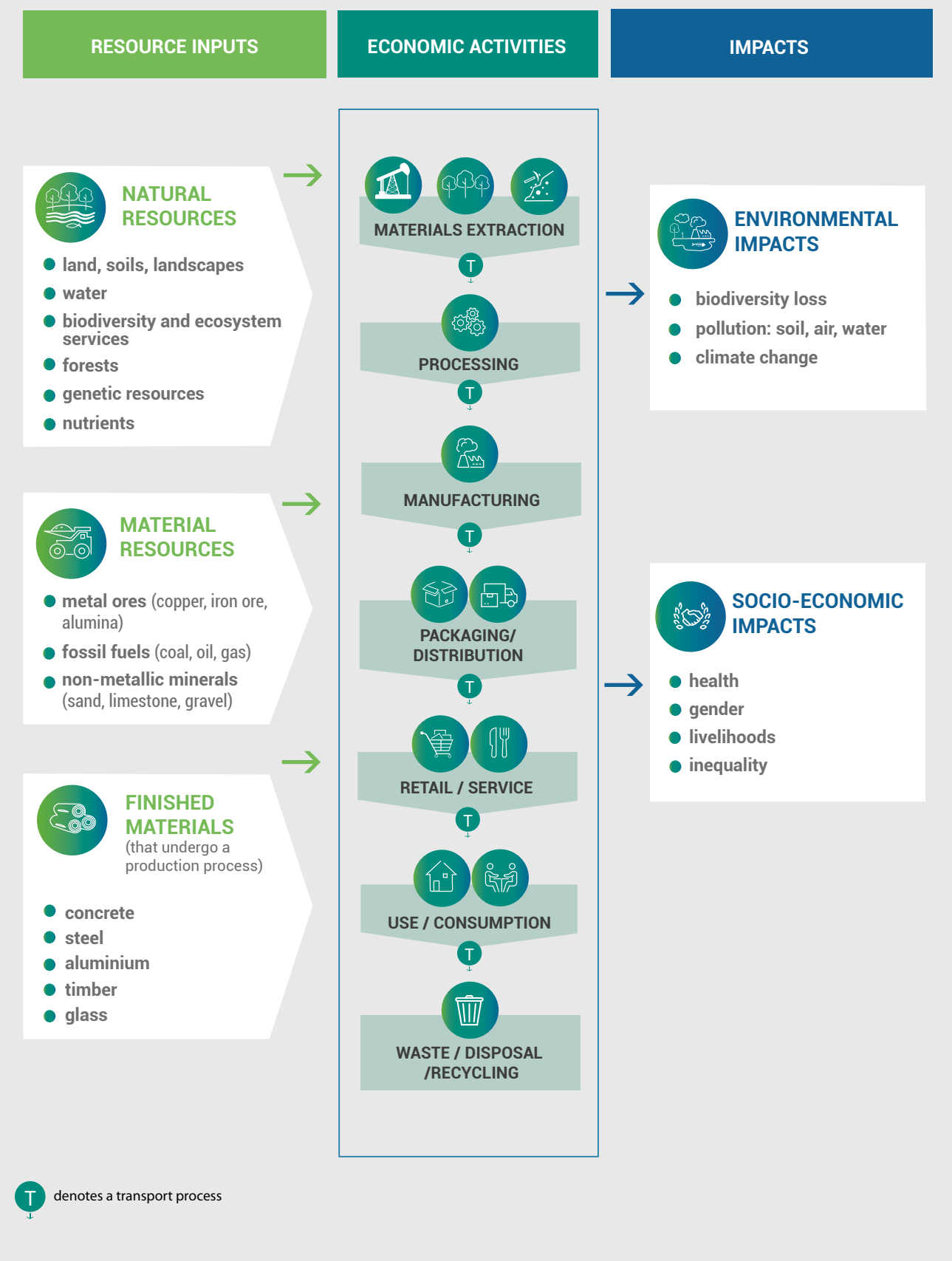

Figure 3: Economic activities of production and consumption in relation to natural resources and the environment (acknowledging that this visualisation is a simplifcation).

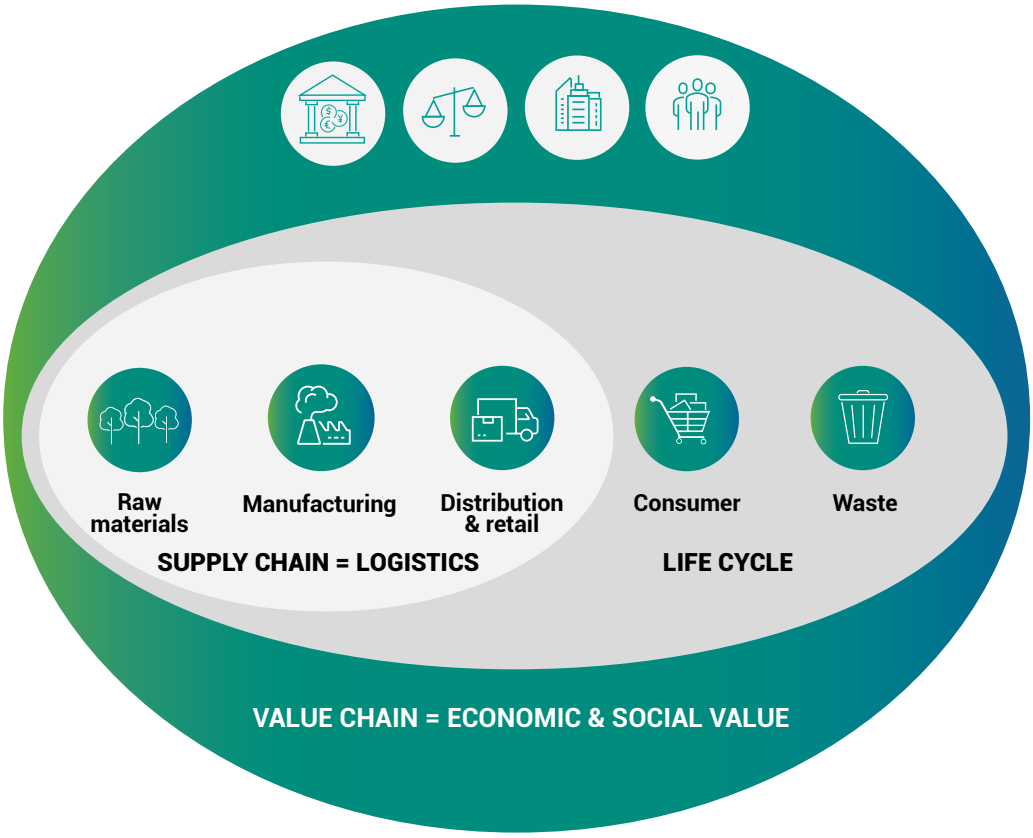

Figure 4: The value chain, in relation to supply chains and lifecycle. (Adapted from UNEP 2017a p.16)

Definition of value chains

(United Nations Environment Programme [UNEP] 2020a):

"The value chain is comprised of all the activities that provide or receive value from designing, making, distributing, retailing and consuming a product (or providing the service that a product renders), including the extraction and provision of raw materials, as well as the activities that are involved with the textile after its useful service life. In this sense, the value chain covers all stages in a product's life, from supply of raw materials through to disposal after use, and encompasses the activities linked to value creation such as business models, investments and regulation. At all stages in the value chain, and in the transport of intermediate and finished products between the value chain stages, raw materials and energy are required and emissions to the environment are produced. In addition, the value chain is also comprised of the actors undertaking the activities and the stakeholders that can influence the activities. The value chain thus incorporates not only the physical processes, such as farms and factories, but also the business models and the way products are designed, promoted and offered to consumers."

THE VALUE-CHAIN APPROACH: A METHODOLOGY TO ORGANISE INFORMATION AND DATA TO SHAPE IMPACTFUL ACTION

The value-chain approach aims to identify hotspots and shape corresponding actions built on existing knowledge and available data. It provides a framework applicable to different sectors, products and geographical scales. As an action-oriented approach, its key outcomes are: identifying where the greatest opportunity for improvement occurs, which actions need to be promoted to take advantage of these opportunities, what enabling conditions are needed and which stakeholders should lead such actions.

Whereas no standard or formal methodology currently exists for this approach, extensive knowledge material and guidance is available from a variety of sources. In particular, from the work undertaken in this area by UNEP and the Life-Cycle Initiative (including for example UNEP 2017a and UNEP 2017b). This guidance enables an overall framing of the value-chain approach, while ensuring the needed flexibility to cater for the complexity of the sectors addressed by the task group and the overall request of the Resolution to provide insights on natural resource management in the context of Agenda 2030.

For the work of this task group on catalysing science-policy action, the source of data and information is primarily the International Resource Panel and the One Planet network, complemented by other sources. While many data sources exist and a number of key global sources have been considered by the task group, a detailed review of all relevant information available is beyond the scope of this task group. This information is analysed and discussed under three key steps: 1) Understanding the value chain and identifying the key hotspots, 2) Consolidating existing action and identifying opportunities to address the identified hotspots, 3) Defining a common agenda and prioritising action to address identified gaps. As indicated by the International Resource Panel achieving sustainable transitions will not happen spontaneously, but rather requires well-designed and concerted policy packages (IRP 2019).

Photo by Christopher Burns on Unsplash

The ambition is that the common agenda will guide all actors in a holistic way towards the desired sustainability, including through structural shifts and circular models. For this common agenda to be truly holistic it is however necessary to undertake all other steps of the value-chain approach to inform its definition. **An overview of the different steps to be undertaken in applying this methodology is provided on the next page.**

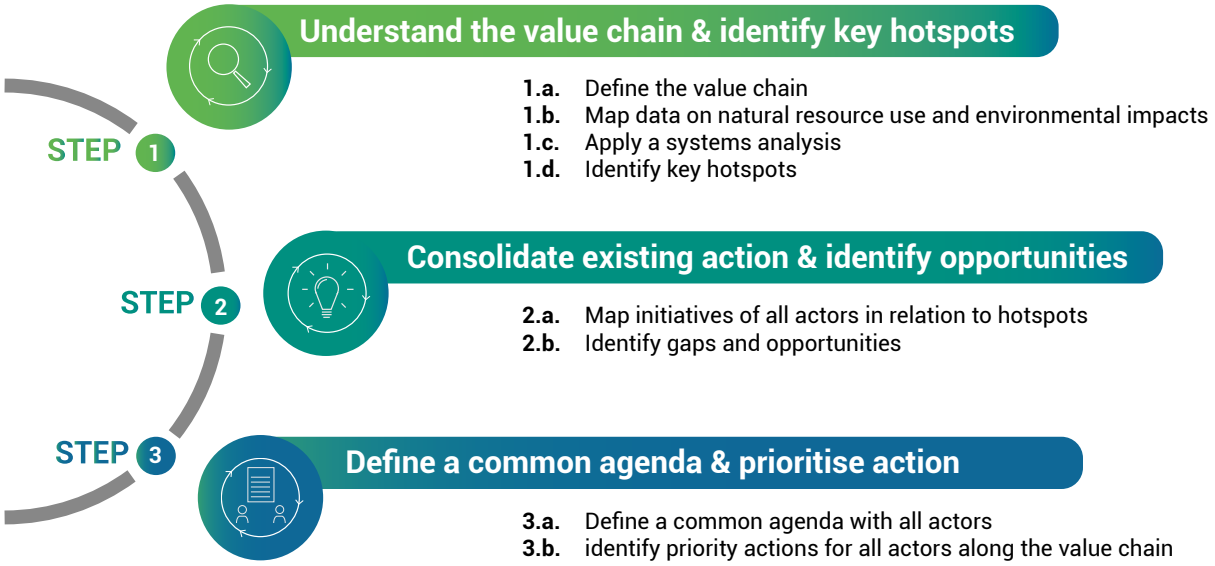

Figure 5: Overview of key steps of the value-chain approach

STEP 1.a.
Understand the value chain and identify key hotspots

Define the value chain, its key stages and key actors

The value chain covers all stages in a product's life, from supply of raw materials through to disposal after use, and encompasses the activities linked to value creation such as business models, investments and regulation. In addition, the value chain is also comprised of the actors undertaking the activities and the stakeholders that can influence the activities. The value chain thus incorporates not only the physical processes, such as farms and factories, but also the business models and the way products are designed, promoted and offered to consumers.

The value chain will typically include the following stages: natural resource extraction, production, processing/manufacturing, packaging, distribution, marketing, sale (retail & other), consumption, waste management, disposal and after use. However, there may be important variations between sectors, products and geographical locations.

It is therefore important for the next steps of this approach to ensure that the key stages of the value chain and their actors are captured. For the purpose and scope of the review of global value chains, simplification and generalisation on the stages of the value chain is necessary while acknowledging that these may vary between and within countries and regions.

Primary sources of information in this task group: multiple

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STEP 1.b.

Understand the value chain and identify key hotspots

Map data on natural resource use and impacts to the stages of the value chain

This identifies what is happening.

The mapping of available data and information to key stages of the value chain allows to filter and distil large volumes of information to identify where the greatest opportunity for improvement occurs. The mapping focused mainly on natural resource and material use, and environmental impacts, as well as known socio-economic impacts. The mapping of data and information included the following:

Natural resources: land, soils, landscapes, water, biodiversity and ecosystem services, forests (natural or commercial), genetic resources, nutrients.

Material resources: metal ores (copper, iron ore, alumina), fossil fuels (coal, oil, gas), non-metallic minerals (sand, limestone, gravel). Several significant limitations to the use of biomass as a metric have been identified (see chapter 3) and as such it is not mapped in this work.

Finished materials (that undergo a production process): concrete, steel, aluminium, timber, glass.

Environmental impacts: Data and information on the following environmental impacts were mapped: deforestation, biodiversity loss, water: reduced availability and pollution, soil: degradation and pollution, air pollution, greenhouse gas emissions

Known socio-economic impacts: When available, socio-economic impacts have also been mapped to the different stages of the value chain.

Primary sources of information in this task group: IRP data; other data as needed (e.g. UNEP, UN, LCA)

STEP 1.c.

Understand the value chain and identify key hotspots

Apply a systems analysis to the value chain to map feedback loops and interconnections

This identifies why it is happening.

While the mapping of resource use and impacts along the value chain shows "what" is happening at different stages of the value chain, applying a systems analysis to it shows "why" it is happening. By integrating an understanding of the systemic barriers and drivers along the value chain within the analysis, it is then possible to understand how to change the "what is happening". For instance, the mapping of data will have identified stages of the value chain where the majority of the natural resource use and impacts occur. However, it does not automatically follow that the solutions are only to be found at those stages of the value chain.

It is necessary to apply a systems lens to the analysis of a sector to move beyond a siloed and disconnected analysis, toward understanding how different drivers of a given sector shape the operations along the value chain. Drivers such as institutions, regulation, technology demographics, markets and other socio-economic and cultural factors shape the operations along the value chain. The drivers and the structure of the value chain determine the level of influence and power of certain actors, and thus their ability to contribute to the solutions. Each of the drivers contribute to shaping the sector and influencing the behaviour of the actors along the value chain and determining what options are available to them. Equally, each of these drivers are possible points of intervention to positively shape the way the sector works and the behaviour of actors along the value chain.

The findings of natural sciences are complemented by drawing on social sciences and the humanities - including political economy, sociology and anthropology - to understand the drivers and barriers along the value chain and to anchor natural-resources use in socio-economic reality.

Primary sources of information in this task group: IRP data; other data as needed (e.g. global reviews of UN, World Bank, private sector associations, etc)

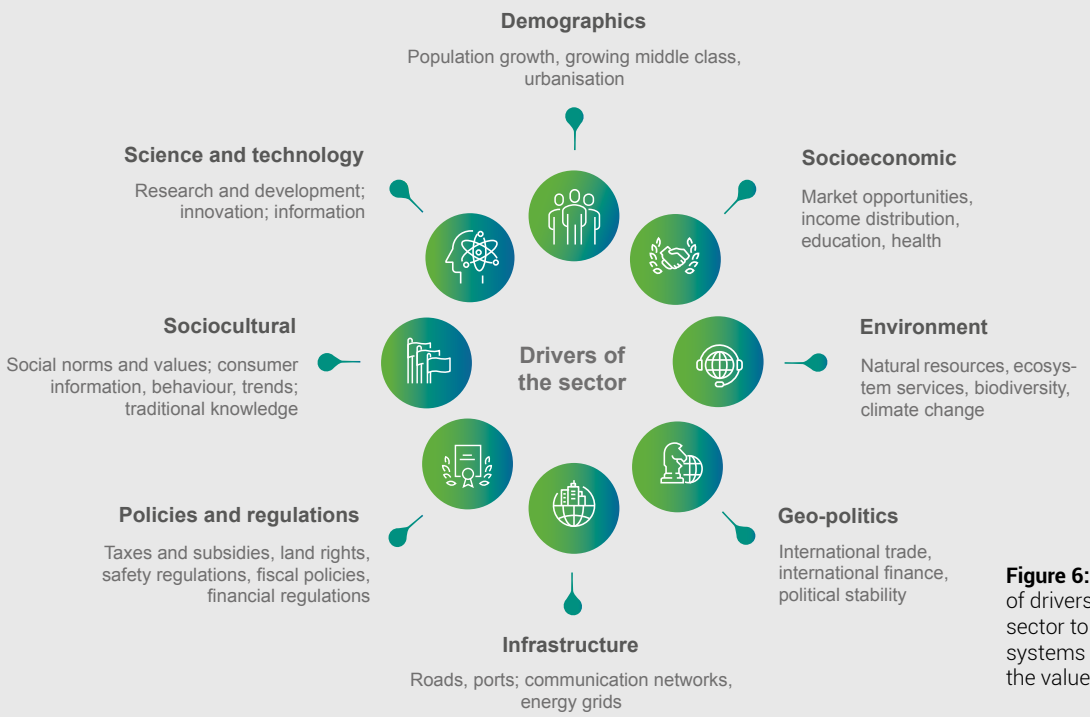

Figure 6: Example of drivers in a given sector to apply a systems analysis to the value chain.

STEP 1.d.

Understand the value chain and identify key hotspots

Identify key hotspots of natural resource use and environmental impacts

This identifies where to act.

The mapping of natural resource use and environmental impacts along the value chain and application of a systems lens in steps b and c provide an overview of what is happening and why it is happening in a given sector. This forms the evidence-basis to pose the question "Where to act?" thereby identifying key intervention points or hotspots along the value chain. A hotspot is regarded as a component of the system that directly or indirectly contributes to natural resource use and its associated impacts either as a driver of unsustainable practices or a barrier to sustainable practices, and that can be acted upon to mitigate it (UNEP 2020b).

The question "Where to act?", in the context of natural resource management, can be split into: What resources are being used and/or causing impact? Where are they being used (which stage of the value chain, which location, or which actors?) How are they being used? Why are they being used?

The overview in a given sector of data and information on the value chain and system may also highlight key information gaps, that are equally important to take into account in the formulation of priority actions.

Primary sources of information in this task group: Conclusions derived from the sources above

STEP 2.a.

Consolidate existing action and define opportunities to address the identified hotspots

Map initiatives from all actors of the value chain in relation to identified hotspots

This identifies who is acting on what.

Different initiatives by different actors along the value chain are taking place in any given sector. The mapping is undertaken of available information on existing action of all actors along the stages of the value chain and in relation to the identified hotspots; these may include changes in practices, tools or resources, and initiatives. It will also include a mapping of the existing policies, in relation to their implications for key stages and actors of the value chain in relation to the identified hotspots.

Primary sources of information in this task group: One Planet network data; consultations

STEP 2.b.

Consolidate existing action and define opportunities to address the identified hotspots

Analyse mapping to uncover gaps and opportunities

The mapping of initiatives (policies, activities, resources) from all actors of the value chain addressing key hotspots provides a basis to identify a) what initiatives are already addressing key hotspots and that can be leveraged and further coordinated for greater impact, and b) major gaps in addressing or understanding key hotspots and trade-offs that deserve particular attention.

Primary sources of information in this task group: One Planet network data; consultations

STEP 3.a.

Define a common agenda and prioritise action to address gaps

Define a common agenda that enables alignment of all actors

This identifies a shared vision for change.

The common agenda aligns all actors to a shared vision for change, that includes a common understanding of the problem and a joint approach to solving it. This will be undertaken through a participatory process engaging different stakeholders across the value chain.

Moving towards the desired sustainability, including through structural shifts and circular models, requires a holistic approach involving players of all sizes and from all market segments. The participatory approach ensures tapping into the bodies of lay and practical knowledge that are collectively held among SCP practitioners, as well as ensuring their crucial buy in for the implementation of the common agenda.

Primary sources of information in this task group: consultations

STEP 3.b.

Define a common agenda and prioritise action to address gaps

Identify priority actions for value-chain actors based on the hotspots, opportunities, gaps and trade-offs identified

This identifies what to do, by whom and how

Based on the common agenda and the key hotspots which require further attention, multi-stakeholder consultations with actors across the value chain will enable prioritisation of actions for value-chain actors to implement. The value-chain approach will allow those recommendations to be specific (to the stage of the value chain, to the actor, etc) while having visibility of the consequences of such actions in other parts of the value chain and thereby considering trade-offs and avoiding burden shifting. While the co-creation of a common agenda and common solutions is encouraged, key priority actions will also be specific to a stakeholder group or a stage of the value chain whereby co-creation may not always be possible or advisable. Further to the specificity of stakeholders and stages of the value chain, the Life-Cycle Initiative recommends considering both what actions to take (i.e. interventions) and how these actions can be practically implemented (i.e. instruments) (UNEP 2020b).

Primary sources of information in this task group: consultations

The implementation of the holistic solutions and prioritised actions is the main expected next step following the analytical and consultative process outlined in this methodology. While implementation is outside the scope of this report, it is envisaged that their uptake can be further facilitated through consistent advocacy efforts and continued engagement of stakeholders.

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The value-chain approach applied by the task group is inspired by and adapted from existing approaches of the United Nations Environment Programme (UNEP) and of the Life-Cycle Initiative

UNEP's Eco-innovation approach:

Eco-innovation is a business approach which promotes sustainability throughout the entire life cycle of a product, while also boosting a company's performance and competitiveness. UNEP provides guidance for the implementation of eco-innovation within small and medium sized companies in developing and emerging economies. This includes a methodology to inform, guide and support companies to improve their sustainability performance as a strategy for developing new business models.

www.ecoinnovation.org

UN environment programme

Life cycle assessments and the Life Cycle Initiative:

Life Cycle Assessment studies underpin the hotspots identification in the value-chain approach. The Life Cycle Initiative ensures the best life cycle tools and approaches are applied in key decision- and policy-making context. It also hosts the "Global LCA Data Access" network which provides users with an interface to find and access life cycle inventory datasets from different providers. The Life Cycle Initiative is a multi-stakeholder partnership to foster the enabling conditions for global application of life cycle approaches.

www.lifecycleinitiative.org

Life Cycle Initiative

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