



Trade and Biodiversity Statistics

Methodological approach

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ACKNOWLEDGEMENTS	I
ACRONYMS AND ABBREVIATIONS	IV
1. INTRODUCTION	1
1.1. BACKGROUND	1
1.2. THE TRADE AND BIODIVERSITY (TRABIO) STATISTICAL TOOL	2
1.3. ABOUT THIS DOCUMENT	5
2. CONCEPTS AND DEFINITIONS	7
2.1. BIODIVERSITY AND BIODIVERSITY-BASED GOODS	7
2.2. THE HARMONIZED COMMODITY DESCRIPTION AND CODING SYSTEM	8
2.3. PRODUCT SELECTION – CRITERIA AND ASSUMPTIONS	10
2.4. THE TRABIO PRODUCT CLASSIFICATION	11
2.5. TIME-FRAME SELECTION	12
3. THE TRADE AND BIODIVERSITY (TRABIO) DATABASE	13
3.1. DESCRIPTION OF THE DATABASE	13
3.2. TECHNICAL CONSIDERATIONS	15
3.2.1. THE TRABIO DATABASE CREATION PROCESS	15
3.2.2. APPLICATION OF THE FORMULA BY CASE – A CONCRETE EXAMPLE	20
3.3. PILOT EXERCISE	22
4. BIODIVERSITY-BASED TRADE INDICATORS	24
4.1. TRADE BALANCE OF INDIVIDUAL ECONOMIES IN THOUSANDS OF US DOLLARS	24
4.2. BIODIVERSITY-BASED TRADE AS A PERCENTAGE OF TOTAL TRADE	25
4.3. BIODIVERSITY-BASED TRADE AS A PERCENTAGE OF GDP	25
4.4. BIODIVERSITY-BASED TRADE, GROWTH RATES	26
4.5. GROWTH RATES OF TRADE BALANCE OF INDIVIDUAL ECONOMIES	27
4.6. MARKET CONCENTRATION INDICES OF EXPORTS AND IMPORTS	27
4.7. PRODUCT CONCENTRATION INDICES OF EXPORTS AND IMPORTS	27
4.8. MARKET STRUCTURAL CHANGE INDICES OF EXPORTS AND IMPORTS	28
4.9. REVEALED COMPARATIVE ADVANTAGE INDEX	29
5. CONSIDERATIONS AND CHALLENGES	30
5.1. DATA AVAILABILITY LIMITS	30

5.2.	UNAVAILABILITY OF INFORMATION AT THE 6-DIGIT LEVEL OF DETAIL	30
5.3.	AVAILABILITY OF TRADE DATA ON SUSTAINABLY PRODUCED OR SOURCED PRODUCTS	31
5.4.	EXCLUSION OF BIODIVERSITY-BASED SERVICES	32
5.5.	DISPARITY IN DETAIL AT THE 6-DIGIT LEVEL	32
5.6.	DIFFERENCES IN REPORTING BEYOND THE SIXTH DIGIT LEVEL	33
5.7.	HARMONIZED SYSTEM REVISIONS	33
6.	CONCLUSION	35
	REFERENCES	37
	ANNEX 1 – PRIORITY PRODUCTS AND COUNTRIES IDENTIFIED BY BIOTRADE PARTNERS FOR THE SCOPE OF THE PILOT EXERCISE	39
	ANNEX 2 – LIST OF CONTROVERSIAL BIODIVERSITY-BASED GOODS THAT HAVE BEEN INCLUDED IN THE UNIVERSE OF BIODIVERSITY-BASED GOODS (HS 2017)	48
	ANNEX 3 – TRADE AND BIODIVERSITY (TRA BIO) PRODUCT CLASSIFICATION HIERARCHY	49
	ANNEX 4 – INVENTORY OF EXISTING AND AVAILABLE BIOTRADE AND TRADE AND BIODIVERSITY-RELATED INFORMATION	68

Acronyms and Abbreviations

CBD – Convention on Biological Diversity

CITES – Convention on International Trade in Endangered Species of Wild Fauna and Flora

CPA – Classification of Product by Activity

CPC – Central Product Classification

ETIM – Electro-Technical Information Model

GBF – Global Biodiversity Framework (or post-2020 global biodiversity framework)

GDP – Gross Domestic Product

HHI – Herfindahl-Hirschman index

HS – Harmonized Commodity Description and Coding System

ISIC – International Standard Industrial Classification of All Economic Activities

MEA – Multilateral Environmental Agreement

NGO – Non-Governmental Organization

NTL – National Tariff Line

P&C – (BioTrade) Principles and Criteria

RCA – Revealed Comparative Advantage

SECO – State Secretariat for Economic Affairs (Switzerland)

SDG – Sustainable Development Goal

SITC – Standard International Trade Classification

TraBio – Trade and Biodiversity

UEBT – Union for Ethical BioTrade

UNCTAD – United Nations Conference on Trade and Development

UNSD – United Nations Statistics Division

UNSPSC – UN Standard Products and Services Code

VSS – Voluntary Sustainability Standard

WCO – World Customs Organization

1. Introduction

1.1. Background

According to the Convention on Biological Diversity (CBD, 1992), the term biodiversity encompasses the variety of life on Earth. This definition includes the wide range of plants, animals, micro-organisms, the genetic variety within species and all different ecosystems.

As 2020 ushered in the last decade left to deliver on the commitments of the 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs), progress is being made in many areas. But overall, action to meet the SDGs has not been advancing at the speed or scale needed to achieve them. In fact, many areas require urgent attention. The natural environment is deteriorating at an alarming rate: sea levels are rising; ocean acidification is accelerating; the past four years have been the warmest on record; one million plant and animal species are at risk of extinction (IPBES, 2019); and land degradation continues to worsen (United Nations, 2019). Furthermore, goods and services extracted or derived from biodiversity are also widely traded – close to half of the world's gross domestic product (GDP) is directly dependent on biodiversity, ecosystems, and their services in a moderate or high manner (WEF, 2020) – and support the livelihoods of nearly half of the human population (CBD, 2018a). For instance, small-scale fisheries support over 90 per cent of the 120 million

Box 1: BioTrade Initiative

UNCTAD launched the BioTrade Initiative in 1996 to capture the opportunities provided by the conservation of biodiversity and the sustainable use and trade of biodiversity-derived products and services for economic development and the improvement of livelihoods.

In the pursuit of these goals, the BioTrade Initiative supports the objectives of several multilateral environmental agreements (MEAs), in particular the CBD and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Since its launch, the Initiative has developed a unique portfolio of global regional and country programmes as well as a network of partners and practitioners working in nearly 100 countries.

Broadly speaking, BioTrade refers to products or services sourced from biodiversity that are commercialized and traded in a way that respects people and nature. The BioTrade Principles and Criteria (P&C), developed by the Initiative, are a set of guidelines for businesses, governments, and civil society wishing to support the conservation and sustainable use of biodiversity as well as the fair and equitable sharing of benefits through trade. Today, they are implemented and fostered by government organizations, business associations, non-governmental organizations (NGOs) and companies in Asia, Africa, the Americas, and Europe.

More information available at www.biotrade.org

people engaged in capture fisheries globally, and an estimated 70 per cent of the world's poor depend directly on wild species and on businesses fostered by them (IPBES, 2022).

Biodiversity is at the centre of many economic activities. Resources originating from biodiversity provide for the livelihoods of nearly half the world's population, with many of the world's most vulnerable being directly dependent on biodiversity to satisfy their subsistence needs (CBD, 2018b). Similarly, trade in biodiversity-related goods is a crucial contributor to the SDGs and other environmental targets. In fact, according to the BioTrade Initiative of the United Nations Conference on Trade and Development (UNCTAD), BioTrade directly supports SDGs 1, 2, 8, 9, 12, 14, 15 and 17, as well as contributing to the post-2020 global biodiversity framework (GBF), which is to be adopted during the 15th Conference of the Parties to the Convention on Biological Diversity (CBD)¹.

1.2. The trade and biodiversity (TraBio) statistical tool

Trade-related data and statistics on biological resources have historically been scattered and heterogeneous, and no effort has yet been undertaken to establish a formal definition and classification of biodiversity-based goods. There are global databases related to species and/or their derived products, such as the CITES Trade Database (see Annex 4). However, these databases possess characteristics that limit their usefulness in terms of the objectives listed below. The CITES Trade Database for instance, lists trade flows in terms of species. Not only does this preclude the analysis of trade in products derived from biodiversity but also strongly limits the comparability with other sources of trade data. As of today, there is no comprehensive repository of information on global trade flows related to goods originating from biological resources nor a comprehensive biodiversity-based products classification, which provide comparable and updated information for public use.

The lack of such a broad database has several implications, including:

- The partial and/or sparse information and assessment of global and country specific trade statistics, which constrains the recognition of the crucial contribution of biodiversity, its conservation and sustainable use to economic sectors, and trade, livelihoods, wellbeing, global health, and the environment in general;
- a need for common understanding and definition of what biodiversity-based products are, which may lead to the proliferation of a wide array of competing and/or non-comparable definitions and classifications across sectors, regions, and organisations;
- the formulation, assessment and/or adoption of policies, strategies, and practices to sustainably produce biodiversity-based goods is made more difficult due to the unavailability of ready information, discouraging the sustainable development and strengthening of biodiversity-related sectors; and
- difficulty in conducting research with comparable, up-to-date, and harmonised information.

¹ For further information, please see the yearly SDG pulse report, available at: <https://sdgpulse.unctad.org/>

As a first step towards resolving this issue, the BioTrade Initiative and the UNCTAD Statistics Service developed a statistical tool with the goal to share and disseminate information and statistics at the intersection of the trade and biodiversity realms. The trade flow data and related indicators are expected to potentially contribute directly to reporting under the SDGs, Aichi targets and the GBF.

The result of the BioTrade and UNCTAD Statistics Service collaboration is a statistical tool built upon a new product classification – the Trade and Biodiversity (TraBio) classification of biodiversity-based products (see section 2.4: The TraBio product classification). It targets policymakers, businesses, researchers, and other stakeholders working on trade and environment, and particularly on biodiversity issues, with the aim to:

- Enable a better understanding of the significance of trade in goods with a biological origin;
- Provide access to a harmonised, comparable, and centralised source of information on trade in biodiversity-based products grouped under a dedicated product classification;
- Promote and mainstream the conservation and sustainable use of biodiversity and its contribution to the economy and related policies; and
- Gather information, report, and monitor progress on the achievement of national and international policies, development processes and targets.

The work undertaken goes in line with UNCTAD’s mandate, outlined in the Bridgetown Covenant - the outcome document of the Fifteenth Session of UNCTAD’s Ministerial Conference (UNCTAD15) in October 2021. Particularly to “continue to provide statistics, analytical work and technical assistance to developing countries, to promote structural transformation” (UNCTAD, 2021; paragraph 127.q) as well “to support developing countries in identifying relevant trade and investment policies to contribute to the attainment of the climate and environmental goals of the 2030 Agenda, with due cooperation with relevant international organisations” ((UNCTAD, 2021; paragraph 127.ii). Overall, this work contributes to UNCTAD’s aim to foster international cooperation and instruments to promote and mainstream biodiversity in policies, strategies, and practices of global value chains, and thus ensure the necessary conservation and sustainable use of biodiversity and ecosystems (UNCTAD, 2021; paragraph 73).

The TraBio statistical tool developed by the BioTrade Initiative and the UNCTAD Statistics Service is built on three main components (Figure 1):

Component 1: A product list and a product classification of biodiversity-based goods listed under the Harmonized Commodity Description and Coding System (in short, Harmonized System – HS) nomenclature.

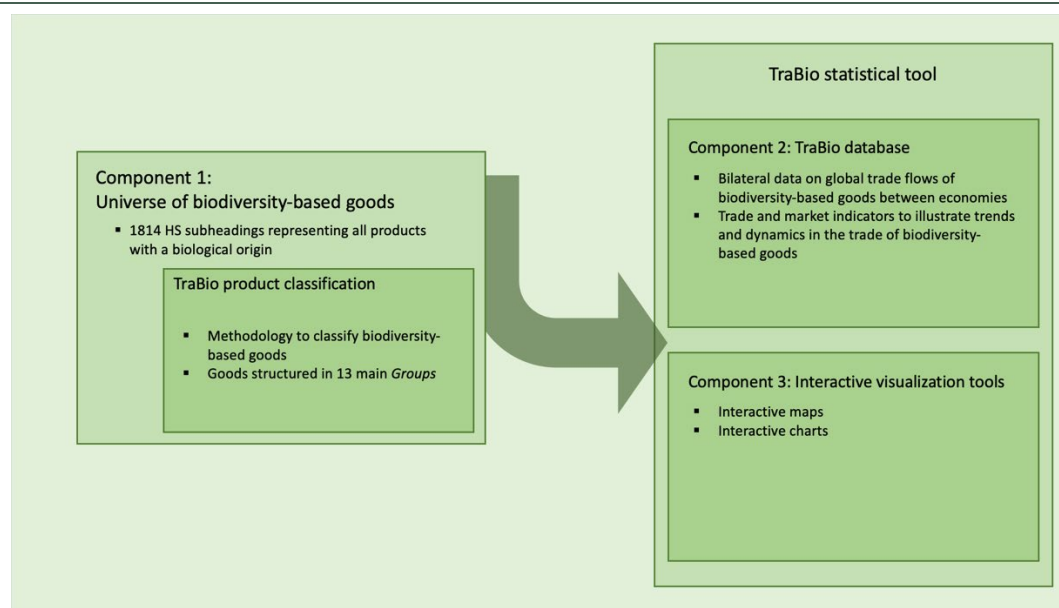
The product list and the product classification are the foundation upon which the statistical tool and all its elements are built. The former includes a list of 1,814 goods selected from the HS nomenclature and constitutes what we call *the universe of biodiversity-based goods* that are included in the TraBio statistical tool. The latter refers to the biodiversity-specific product classification or known as the Trade and Biodiversity (TraBio) product classification, which groups these goods into different categories and aggregated levels. Through this classification, UNCTAD aims to provide a logical structure that will better enable the analysis of biodiversity-related trade flows.

A more detailed explanation of the selection process of the products to be included in the universe of biodiversity-based goods is outlined in section 2.3 of this paper. For a more detailed description of the methodology as well as the TraBio product classification itself, please consult section 2.4 and UNCTAD (2022a).

Component 2: A **database** containing trade flows in biodiversity-based products as well as several trade and market indicators and indexes.

The database is the core of the statistical tool. It contains data on annual bilateral trade flows for all product aggregates that form the TraBio product classification (see Annex 3). In addition to trade flows, the database also contains nine trade indicators: five analytical ones and four related to the composition and structure of trade flows and markets (see section 4). Some of the selected indicators, in addition to the raw data on trade flows itself, are being considered as monitoring elements in the ongoing negotiations related to the post-2020 GBF and are highlighted in section 4. The database covers the universe of biodiversity-based goods and all countries for which data is publicly available, starting from 2010 up to the most recent time period available. The database is updated annually, and its data is freely available online for users to access, use or download from UNCTAD's statistics portal UNCTADstat.²

Figure 1 - Components of the Trade and Biodiversity (TraBio) statistical tool



Additionally, the database also contains detailed information on 137 subheadings at the 6-digit level of the HS. These subheadings were identified as priority products by BioTrade partners in Africa, Asia, and Latin America as during the first phase of the creation of the TraBio statistical tool. These include for instance species that have been promoted by partners, as well as products prioritised as

² <https://unctadstat.unctad.org/EN/>

part of national development strategies. The list of priority products and their respective HS subheadings is presented in Annex 1.

Component 3: a set of interactive visualisation tools such as maps and charts to help the user visualise of the information contained in the database in a more user friendly and intuitive way. The visualisation tools are hosted on a dedicated web page on UNCTADstat's data exploration section and, together with an overview of the TraBio statistical tool and its components, include:

- A treemap showing the magnitude of imports and exports of total biotrade and at the Group level of the classification
- A trade flow map, showing the top three traded goods between a selection of countries in the form of arrows
- A map showing the details of imports and exports for any country selected for every year included in the statistical tool
- A map allowing for a country- and product-based analysis of the indicators continued in the database.

The BioTrade-UNCTAD Statistics Service collaboration, particularly the development of the product classification, expects to be the first step towards the longer-term goal of establishing an **internationally accepted statistical framework for trade in biodiversity-based products**. The latter will provide a common understanding of the concepts of biodiversity and biodiversity-based goods to facilitate the analysis of the dynamics underpinning the international trade of biodiversity-based products.

1.3. About this document

This document presents the methodology set out by UNCTAD's BioTrade Initiative and the UNCTAD Statistics Service in the development of the TraBio tool, a comprehensive statistical tool on trade flows and related information on biodiversity-based goods. The methodology draws upon a review of existing literature, reports and data sources, the customs classification of goods based on the Harmonised Commodity Coding and Description System, e-surveys, and discussions with relevant stakeholders, including national, regional, and international partners of the BioTrade Initiative and organizations implementing the BioTrade P&C. The e-survey results contributed to building an inventory of existing and available BioTrade and biodiversity-related trade information that enriched the UNCTAD BioTrade-Statistics Service work, but also provided inputs to UNCTAD and BioTrade partners' contributions to the post-2020 global biodiversity framework (See Annex 4 for the inventory information).

This methodology was enriched by lessons learned and experiences from a pilot conducted by UNCTAD's BioTrade Initiative and Statistics Service on a selected number of countries and products from September 2019 to February 2020. Finally, this document also benefited from the feedback

provided by participants to two UNCTAD webinars on trade and biodiversity statistics conducted in June 2020.³

Following this introduction, section 2 briefly covers the concepts and definitions at the base of the TraBio statistical tool, section 3 describes the database and the process to establish it and section 4 illustrates and explains the indicators that are included in the database. Section 5 covers the few challenges and limitations encountered before concluding in section 6.

This work has been conducted under the Global BioTrade Facilitation Programme: Linking trade, biodiversity and sustainable development, funded by the Swiss State Secretariat for Economic Affairs SECO.

³ For further details and additional documentation from the webinars please consult <https://unctad.org/meeting/webinar-biodiversity-and-trade-statistics-mekong-region-india-and-europe> (English) and <https://unctad.org/meeting/seminario-web-sobre-estadisticas-de-comercio-y-biodiversidad> (Spanish).

2. Concepts and definitions

2.1. Biodiversity and biodiversity-based goods⁴

For the scope of this statistical tool, the CBD's (1992) definition of biodiversity has been taken. The latter defines biodiversity as the variety of life on Earth, including the wide range of plants, animals, micro-organisms, the genetic variety within species and the different ecosystems. This definition also encompasses some traded human parts, such as hair and/or blood (traded only with the full consent of title holders). While the concept of biodiversity could be easily used interchangeably with the concept of *nature* or *natural*, they are considered explicitly separate in this methodology. In fact, products with a mineral origin could arguably be considered as being *natural*, while they are not part of the 'variety of life on Earth', as defined above. In this understanding, water as well as goods produced or derived from the extraction of minerals, ores or metals, such as sands, oil and gas, are not considered biodiversity-based goods (UNCTAD, 2020a).

As for biodiversity-based goods, they are understood as all goods with a biological origin, including plant and animal species found on land, water and air (UNCTAD, 2020b) that meet at least one of the following criteria:

- They are intrinsically and integrally based on biodiversity itself at a non- or low-processed stage (e.g., whole pineapples or ground coffee);
- When processed, they solely or principally use biodiversity-based ingredients or products as inputs in their production processes (e.g., cotton shirts, wooden furniture, or chocolate bars); and
- When they are derivatives, they are derived mainly from biodiversity-based products (e.g., glycerol from natural oils and fats).

This definition of biodiversity-based goods may be considered as a *first tier* of classification. Further included within this basket are a subset, or *second tier*, of sustainable trade in goods such as the trade of species listed under CITES or those certified or produced in compliance with VSSs, and a *third tier* that includes biodiversity-based goods that are certified to a standard or standards in accordance with the BioTrade P&C. An illustration of this three-tier classification is provided in Figure 2.

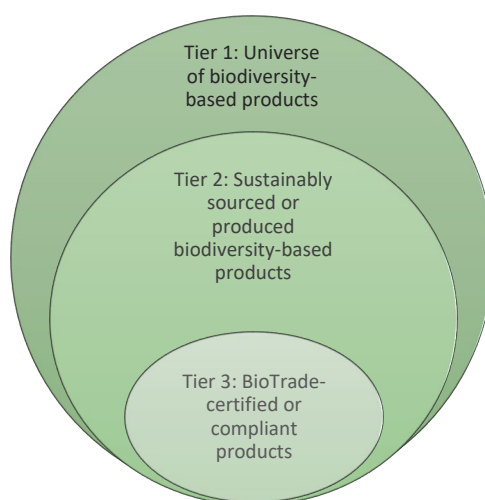
Within the scope of this report and of the TraBio statistical tool more broadly, the distinction is made between the concepts of 'biotrade' and 'BioTrade' (with a capitalized B and T). The former is often used in reference to the production and trade of biological resources without any specific consideration of the impact of these activities on the conservation and sustainable use of biodiversity.

⁴ Within the scope of this definition and throughout this report, the terms *biodiversity-based good* and *biodiversity-based product* are used interchangeably. Neither of these terms includes services, unless otherwise specified.

The capitalisation in BioTrade, however, reflects a fundamental difference. In fact, BioTrade products and activities are characterised by respect for environmental, economic, and social criteria. For instance, BioTrade activities must maintain and restore the ecosystems and habitats of the species being collected or cultivates, and incomes should be distributed to all actors along their value chains. More specifically, BioTrade products and activities are understood to be those respecting the BioTrade P&C in their implementation.

The data in the TraBio statistical tool, being based on the HS, does not allow us to distinguish between trade in ‘biotrade’ and in ‘BioTrade’ products (see next section). Hence, all data – as well as the terms ‘biodiversity-based goods’ and ‘goods with a biological origin’ – refers to ‘biotrade’ products, although it also contains goods produced as ‘BioTrade’ to a certain, unknown extent.

Figure 2 - Biodiversity-based Goods: A Three-Tiered Approach



2.2. The Harmonized Commodity Description and Coding System

The United Nations Statistics Division (UNSD) defines an international statistical classification as a “set of discrete, exhaustive and mutually exclusive observations that can be assigned to one or more variables to be measured in the collation and/or presentation of data” (United Nations, 2013: 5). In addition to providing standardized definitions, descriptions, and categories through a common framework for grouping, organizing, and disseminating information, international statistical classification systems also allow the comparability of data across countries, sectors, and economic activity and over time. In addition to its primary statistical purpose, information from these classification systems can also serve to support institutional and private-sector decision-making, monitor resources, and assist evaluation and assessment studies. Classification systems can be used as they are or can be adapted to specific country requirements.

There are many classification systems in international trade that serve different purposes, whether it is the use for customs procedures or analytical purposes that are the objective. The Harmonized Commodity Description and Coding System (in short, Harmonized System – HS) was created and detailed for international transportable goods, whereas the Standard International Trade Classification (SITC) was designed more with an analytical focus in mind. The Central Product

Classification (CPC) and the Classification of Product by Activity (CPA) go further in detail in terms of scope and classify products by the production, trade and consumption of products and services, while the Electro-Technical Information Model (ETIM) and the UN Standard Products and Services Code (UNSPSC) have been created to facilitate trade and make finding different products easier (Bühning, 2019). Finally, the International Standard Industrial Classification of All Economic Activities (ISIC) is constructed following a production-oriented or supply-based concept (Sorrenti, 2017).

However, the three major classification systems used for the collection and dissemination of data on production, trade and economic activities are the HS, the CPC, and the ISIC (Sorrenti, 2017). Both the HS and CPC make it difficult to draw distinctions between goods based on the method of production such as ‘wild-collected’ or ‘cultivated’ goods. On the other hand, while the ISIC clearly distinguishes between the two activities of gathering non-wood forest goods and growing crop goods, it is not appropriate for analysing goods at a detailed level given lack of one-to-one correspondence between activities and specific goods. A review of the three classification systems reveals that the HS provides for the greatest details in terms of product specification including for biodiversity-based products.

The HS is a multipurpose international product nomenclature developed by the World Customs Organization (WCO). It comprises about 5,000 commodity groups; each identified by a six-digit code, arranged in a legal and logical structure, and is supported by well-defined rules to achieve uniform classification. The universe of classified goods is divided in twenty-one very generic sections, which in turn are divided into ninety-seven chapters identified by the first two digits of the code. Beyond that, the classification is further divided into more detailed groups called headings and subheadings, defined at the four-digit and six-digit level respectively (WCO, 2016). The list of commodity groups is updated every five years to accommodate for changes in trade volumes, trade dynamics, technology, or environmental concerns, generating different revisions, or editions, of the HS. The most recent revision dates from 2017 and the next one is expected to be in 2022. The system is used by more than 200 countries and economies as a basis for their customs tariffs and for the collection of international trade statistics. Over 98 per cent of the merchandise in international trade is classified in terms of the HS (WCO, 2022).

The HS contributes to the harmonization of customs and trade procedures and the non-documentary trade data interchange in connection with such procedures. It is also extensively used by governments, international organizations and the private sector for many other purposes such as internal taxes, trade policies, monitoring of controlled goods, rules of origin, freight tariffs, transport statistics, price monitoring, quota controls, compilation of national accounts, and economic research and analysis.

The HS has been selected as the goods classification method for this exercise as it does not only provide the greatest level of detail in product specification, but also because it is a universally accepted economic language and code for goods, widely used across a wide range of applications, from customs procedures to academic research and reporting, and despite some inevitable limitations (c.f. subsection 5.b) has therefore been preferred to other classification methods.

In order to extend the analytical power of the tool to distinguish between different modes of production (e.g., wild or cultivated, etc.) in the future without losing the benefits of the HS, it could be undertaken to create linkages between different classifications. An option would be, for instance, to create a correspondence between the ISIC, which classifies productive units, or sectors, and the HS. In fact, there is a direct correspondence between the ISIC and the CPC, but linkages to the HS could potentially be achieved through triangulation. As such, it would allow linking products to industrial sectors and therefore identifying the sectors that benefit the most from biotrade-related products.

2.3. Product selection – criteria and assumptions

To establish the list of products that forms the foundation of the TraBio statistical tool, all subheadings respecting the criteria outlined in subsection 2.1 had to be selected from the HS. This was achieved with varying challenges and degrees of difficulty based on the type of good and its composition. A list of 1,814 subheadings of the 2017 edition of the HS nomenclature (HS 2017) was established, roughly 35 per cent of all subheadings:⁵ *the universe of biodiversity-based goods*.

For certain goods the choice was straightforward and entire sections or chapters of the HS could be included or excluded simply based on their definitions. For instance, sections I (Live animals and animal products) and II (Vegetable products), as well as chapters 18 (Cocoa and cocoa preparations) and 52 (Cotton) could be included. Similarly, sections such as section V (Mineral products) and chapters such as chapter 54 (Man-made filaments) were excluded by definition.

For several other cases, the choice was not as straightforward. Many sections (e.g., section XI: Textiles and textile articles) or chapters (e.g., chapter 96: Miscellaneous manufactured articles) would allow for both biodiversity-based and non-biodiversity-based goods in their definition, and the selection had to be made on a one-by-one basis.

An additional challenge was posed by the fact that close to none of the manufactured products in the HS classification are made exclusively of biodiversity-based inputs, but rather contain one or more biodiversity-based ingredients or components to a varying extent. Some have separate subheadings differentiating whether goods are natural or man-made, like in the case of clothing and apparel with natural and man-made fibres. However, that is not always the case. For example, upholstered seats with a wooden frame (9401.61), while undoubtedly having a wooden frame, can also be expected to contain non-biodiversity-based inputs such as synthetic fabric and filling for the upholstery, as well as metal screws or nails. Similarly, predominantly non-biodiversity-based goods such as cars (under personal vehicles, 87.03), can also safely be expected to contain certain biodiversity-based components such as grease with animal origins in the engine or leather seats.

To overcome this challenge a conservative approach was taken in the selection of uncertain products. Desk research was conducted by the UNCTAD BioTrade Initiative and goods that could not reasonably be expected to be made predominantly of biodiversity-based inputs were automatically

⁵ The complete list of selected products and their classification is accessible in the section “Product classification” on <https://unctadstat.unctad.org/EN/Classifications.html>

discarded. Furthermore, where desk research was not sufficient to determine the extent to which goods contained biodiversity-based inputs, experts were consulted to define whether to include them in the universe of biodiversity-based goods based on their origins – as was the case for certain organic chemicals – or composition, such as in the case of certain musical instruments.

Finally, including some of the goods complying with the definition stated in 2.2.1 above may generate controversies. Examples of these are human glands and organs (30.01) and blood (30.02) used for therapeutic and pharmaceutical ends, human hair (67.03) for wigs or the like, or plants-based derivative substances associated with narcotic drugs such as the coca leaf (1211.30) and opium extracts (1302.11). The inclusion of these goods is by no means a statement or judgement behind their use or origin, but simply for methodological coherence. The potentially controversial goods are listed in Annex 2.

2.4. The TraBio product classification

One of the challenges that emerged after the product selection process was at the level of product aggregation. In fact, the objectives behind the establishment of the HS nomenclature differ from those of the TraBio statistical tool in that the HS nomenclature was developed to harmonize trade and custom procedures for the entirety of existing traded goods. The TraBio on the other hand, aims to provide a consistent source of trade-related information specifically catered around biodiversity and the political processes linked to it. Consequently, product subheadings in the HS are grouped according to a logic that is not relevant to the needs of the TraBio, and goods with a biological origin are often scattered across very different groupings. For instance, textile goods with a biological origin are present in different categories related to embroidery, clothing, footwear, headwear, etc.

The TraBio product classification is an attempt to overcome these limitations of the HS classification. It is built on the availability and detail of the HS's structural unit – the 6-digit HS code, the subheading, describing each product or group of products in the greatest detail – but categorizes the subheadings according to their use, such as in the case of agricultural inputs, composition (e.g., wood and derived products) or considering their possible contribution to biodiversity-related political processes, such as in the case of the natural ingredients group and the medicinal plants subgroup for the post-2020 GBF. Furthermore, it is built on and aligned with classifications made by UNCTAD for the Ocean Economy (UNCTAD, 2021) and for selected biodiversity-based products and HS codes for the personal care, food and phytopharma sectors.

Not unlike many other classification systems, the TraBio product classification is also structured in a tree-like way. It is divided into four levels, with each category of a level branching out into one or more subcategories on the next level. The first level of the classification is divided into 13 highly aggregated groupings, called *Groups*. Groups are then divided into 86 *Subgroups* for an additional level of detail. Subgroups are in turn split into 230 *Categories* and, in cases where it is needed, into *Subcategories*. HS subheadings are normally found at the Category and Subcategory levels, but in some cases can already appear in very specific Subgroups. The Groups level of the classification is set out in Table 1, while the complete conceptual tree, comprising all four levels of the classification, is

illustrated in Annex 3. For a more detailed explanation of the rationale and methods behind the TraBio product classification please consult the report entirely dedicated to it, UNCTAD (2022).

Table 1 - Groups of the Trade and Biodiversity (TraBio) product classification

Group	Name
A	Live animals and plants
B	Food and beverages
C	Agricultural inputs
D	Natural ingredients
E	Perfumery, cosmetics, personal care, and room care preparations
F	Pharmaceutical products
G	Hides, skins, leather, furskins, and products thereof
H	Natural fibres and articles thereof
I	Wood and derived products
J	Vegetable plaiting materials and articles thereof
K	Other products of animal origin
L	Other products of plant origin
M	Miscellaneous

2.5. Time-frame selection

One of the primary purposes of the TraBio statistics tool is to provide information that is useful for tracking progress of targets set under the SDGs, the Aichi Biodiversity Targets and any post-Aichi targets defined under the post-2020 GBF. Therefore, 2010 was chosen as the database's "year zero" to encompass all these processes, the earliest of which being the Strategic Plan for Biodiversity beginning in 2011.

3. The Trade and Biodiversity (TraBio) database

The core component of the TraBio statistical tool is the database containing data and indicators on biodiversity-based trade flows. Since the database is based on the HS, it only contains information related to goods from tier 1, biodiversity-based goods. UNCTAD are currently exploring ways to extend the availability to information related to tier 2, sustainable trade in biodiversity-based goods, and tier 3, BioTrade compliant or certified goods, in the future.

All data used for the construction of the database is extracted from the United Nations International Trade Statistics Database, Comtrade.⁶ This database, maintained by UNSD, compiles, and presents detailed trade data as reported directly by countries.

3.1. Description of the database

The TraBio database contains data on annual bilateral trade flows for all product aggregates of the TraBio product classification (see Annex 3). Trade data at the 6-digit level of detail of the HS is only available for 137 subheadings that were identified as priority by BioTrade partners in Africa, Asia, and Latin America (see Annex 1). Further details on the choice to subdivide the information on the database in this way are given in subsection 5.2. In addition to the data on trade flows, nine trade indicators are also included in the database and are outlined in detail in Section 4. The database is freely available to access and use on UNCTAD's statistics portal UNCTADstat.⁷ The data can also be downloaded for local use in IVT, XLSX or CSV format, as well as visualized online.

The database covers all countries, contains data from 2010 up to the most recent time period available and is updated annually. This is since, while it is true that some countries publish monthly or quarterly trade data, this is rarely reported with the level of detail and coverage in which the data is presented in the database. Not unlike for the broader UNCTADstat databank, users of the TraBio database can select relevant aggregate groups of countries and of products. This includes regional aggregates for countries, such as by continent or region (e.g., Middle East), aggregates at the development level such as Small Island Developing States (SIDS) or Least Developed Countries (LDCs), and for multilateral agreements such as, for example, the CBD, CITES and the Nagoya Protocol, or economic communities (e.g., the African Union or the European Union). Furthermore, a specific aggregate containing all countries in which the BioTrade P&C are being implemented, be it at the national level or by the private sector, is also available.⁸

⁶ <https://comtrade.un.org/>

⁷ The TraBio database can be accessed at: <https://stats.unctad.org/biotrade>.

⁸ A detailed description of the country aggregates used in UNCTADstat can be found on its Classifications web page: <https://unctadstat.unctad.org/EN/Classifications.html>.

The database is structured around twelve tables, like the one illustrated in Figure 3: two tables related to trade flows (one for the TraBio classification products and one for the 137 priority subheadings, containing data on both imports and exports) and ten related to trade indicators.

The data in the two tables on trade flows is presented along five dimensions at the intersection of which each data point is defined. These dimensions are: i) FLOW, allowing to select either exports or imports, ii) ECONOMY, which refers to the country reporting the data; iii) PARTNER, which refers to reporter's trading partner; iv) YEAR, meaning the year in which the reported trade flow takes place; and v) PRODUCT, the concerned good. In addition, only in the table containing the trade flows for the 137 priority subheadings, the trade balance can also be selected under the FLOW dimension. The data relates to annual trade flows and is expressed in thousands of US dollars.

The user can freely download the data for local use, either in bulk or specifically related to any country, product group, or aggregate of interest. In addition, the raw data can also be visualised online directly on UNCTADstat. The database offers an interactive interface, and parameters can be toggled around to visualise (and subsequently download, if necessary) data specific to a country, group of commodities, year, etc.

Figure 3 – South African exports to World, by product, 2010-2020

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Source: (UNCTAD, 2022b)

Figure 3 illustrates how the first few rows of data on exports of each product from South Africa to the world for the years 2010 to 2020 looks like on UNCTADstat. The user can toggle the five dimensions – FLOW, ECONOMY, PARTNER, YEAR AND – to be displayed as columns or as rows, so as to visualise the information in a way that is relevant to them.

In addition to the raw data on imports and exports of biodiversity-based goods, ten tables have been included with analytical indicators to support the analysis and understanding of the data included in the database (nine different indicators, one of which is presented in two tables: one for

the products of the TraBio classification and one for the priority subheadings). The nine indicators are: trade flow growth rates, trade balance, trade balance growth rates, indicators of the magnitude of biodiversity-based trade with respect to total trade and gross domestic product (GDP), as well as indices of market and product concentration and of structural change, and trade patterns (for a more detailed explanation of each indicators see Section 4). Their objective is to summarize relevant information related to biodiversity-based trade as well as providing a consistent tracking tool for progress of institutional processes linked to biodiversity, most notably the post-2020 GBF.

While the TraBio database is the core component of this statistical tool, trends and patterns underlying the data are nevertheless complex to read in table format, especially in the case of several thousand entries. For this reason, a dedicated web page is hosted on UNCTADstat's Data Exploration section, containing a brief description of the database and, more importantly, data visualization tools such as interactive maps and charts.⁹

The aim of the visualisation tools is to help the user to visualise information on trade flows and indicators that is relevant to them through interactive maps and charts. It is possible to toggle different parameters such as the year, trade flow, or indicator through dials or by simply clicking on the maps, to visualise information on top trading partners, the traded value, magnitude, and composition of any product or product aggregate for up to 15 countries.

3.2. Technical considerations¹⁰

3.2.1. The TraBio database creation process

Several changes in the classification of goods occur between one edition of the HS and the next. For instance, subheadings can be added or removed between one revision and another, or they can be merged, split, or see changes in scope to accommodate for variations in trade patterns and volumes (see section 5.5). A methodology has been developed to account for these changes. This methodology is broadly comprised of three main steps:

1. the translation of the universe of biodiversity-based goods list into each of the HS classification editions in which trade flows in the database have been reported, based on *correlation tables* developed by the WCO that describe changes that may have occurred between subsequent revisions of the HS;¹¹

⁹ <https://unctadstat.unctad.org/EN/Biotrade.html>

¹⁰ This section was prepared based on inputs and examples provided by Fernando Cantú-Bazaldua, former UNCTAD STATISTICS SERVICE Senior Statistician, and Sonia Bouali, Consultant, UNCTAD.

¹¹ Accessible at <http://www.wcoomd.org/en/topics/nomenclature/instrument-and-tools/tools-to-assist-with-the-classification-in-the-hs/hs-online.aspx>

2. establishing so-called *transposition trees* describing the logical relationship of a product expressed in one revision with the product(s) as expressed in a previous one based on the *correspondence tables* developed by UNSD;¹² and
3. the definition and application of a mathematical formula based on the transposition trees and expressing the quantitative changes in terms of trade value between subsequent editions for each single subheading in order to obtain the trade value of any trade flow reported in any HS revision in equivalent terms to its most recent one.

The first step has been to translate the list of subheadings that make up the universe of biodiversity-based goods into previous editions of the HS, taking into account all changes from one edition to the next, as described in the *correlation tables* published by the WCO.¹³ These tables illustrate all changes (creation and deletion of new subheadings, mergers, splits) between one edition and the next of the HS and contain remarks briefly specifying the nature of the goods transferred as well as eventual references to amended legal provisions.

For example, between HS 2012 and HS 2017 the scope of subheading 0301.93 – *Carp* has been expanded to include other main species of carp, such as the Catla (*Catla catla*) and the Roho Labeo (*Labeo rohita*) carps, previously listed under subheading 0301.99 – *Other live fish*. Subheadings can be created, deleted, merged, or split, and the goods included under their scope shifted to other subheadings. Furthermore, more than one of these changes can be simultaneously applied to any subheading between editions of the HS.

In addition to the initial list of biodiversity-based subheadings, expressed in the most recent edition of the HS at the time – which came to be in 2017 and is therefore abbreviated as HS 2017 –, additional lists have been established for HS 2012, HS 2007, and HS 2002. A list was established for HS 2002 even though the dataset begins in 2010 because in 2010 some countries still reported their trade flows using the 2002 edition of the HS.

As the second step, once the list of biodiversity-based goods was established in all classifications, the relationship of any product with itself as expressed in previous editions of the HS was described with the help of the UNSD's *correspondence tables*. These tables describe the logical relationship any product in any HS edition has with itself in previous editions: from HS 2017 to HS 2012 and earlier, from HS 2012 to HS 2007 and earlier, and so forth.

There are four distinct types of relationship that can occur between a subheading and itself (or more subheadings) in previous versions of the HS:

- 1) The subheading is correlated with one and only one subheading in the previous HS, meaning no changes have occurred. This is referred to as a **1:1** relationship.

¹² Accessible at <https://unstats.un.org/unsd/trade/classifications/correspondence-tables.asp>

¹³ Accessible for HS 2017 at <http://www.wcoomd.org/en/topics/nomenclature/instrument-and-tools/hs-nomenclature-2017-edition/correlation-tables-hs-2012-to-2017.aspx>. Correlation tables for other editions of the HS can also be found on the same website.

- 2) The subheading is the result of a split of one subheading in the previous classification into several subheadings. This is referred to as a **n₁:1** relationship.
- 3) The subheading is the result of a merger of several subheadings in the previous classification into one. This is referred to as a **1:n₂** relationship.
- 4) The subheading is the result of a split and merge of several subheadings in the previous classification. This is referred to as a **n₁:n₂** relationship.

Table 2 shows the structure of the correlation table between HS 2017 and previous HS versions according to the type of relationship between the subheadings. Please note, the numbers in Table 2 apply to all existing subheadings in HS 2017, not just the ones based on biodiversity.

Table 2 - Types of relationships between subheadings in the HS 2017 and previous HS versions

Relationship	HS 2012	HS 2007	HS 2002	HS 1996	HS 1992
1:1	4744	4418	3967	3660	3333
n ₁ :1	578	799	948	1153	1332
1:n ₂	44	124	508	560	644
n ₁ :n ₂	775	983	1651	2096	2554

Source: UNSD (2017)

Based on the relationship of each product with itself expressed in the *correspondence tables* a final transposition algorithm – which has been called the *transposition tree* – linking each biodiversity-based good to itself in previous HS versions, was built. In simpler terms, the transposition tree allows us to “read” how the composition of the different subheadings has changed across various editions of the HS. Figures 4 and 5 visually illustrate a simple and a complex transposition tree for two different products between HS 2017 and HS 2012.

Figure 4 - Example of a simple transposition tree: 0301.93 - Carp



Figure 5 - Example of a more complex transposition tree: 1211.90 – Plants and parts of plants (including seeds and fruits), of a kind used primarily in perfumery, in pharmacy or for insecticidal, fungicidal, or similar purposes.

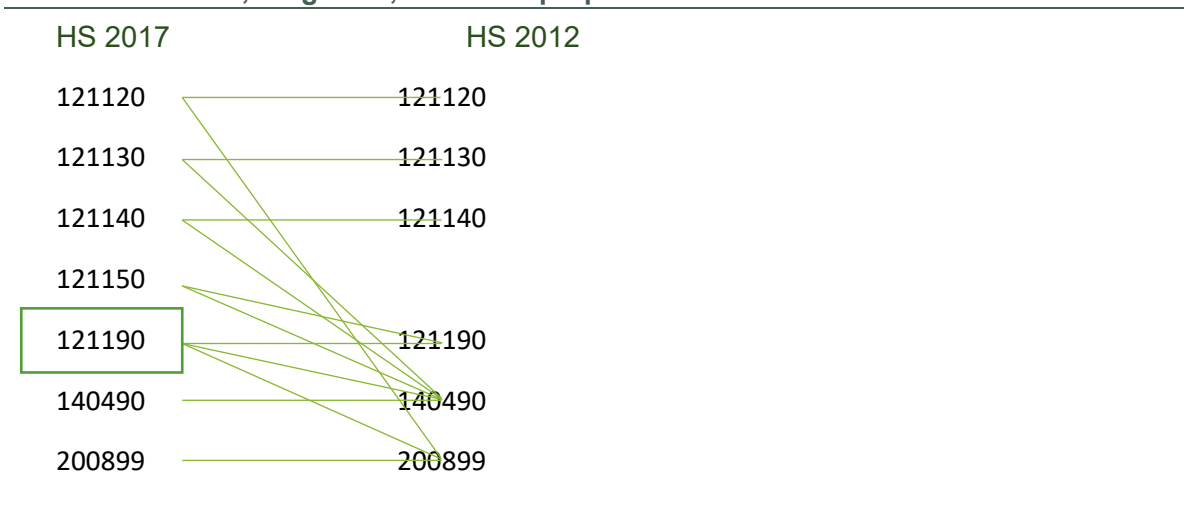


Figure 4 illustrates the example of the expansion of scope mentioned above, in which the scope of the subheading related to carps (0301.93) was expanded to accommodate additional species. The two subheadings remain unchanged between HS 2012 and HS 2017 (i.e., no subheadings are created or deleted), however a number of goods (carp species) that were listed under 0301.99 in HS 2012 are listed under 0301.93 in HS 2017. The scope of 0301.93 has thus increased between HS 2012 and HS 2017 while the scope of 0301.99 has decreased. Similarly, figure 5 illustrates a more complex tree for subheading 1211.90, with interlinked changes in scope for several subheadings and the creation of a new subheading, 1211.50 that did not exist in HS 2012.

A similar tree allowing for the types of changes mentioned above was created for each good, linking it to itself in previous versions of the HS. However, an additional step was necessary to describe these changes in quantitative rather than logical terms. In other words, a formula had to be developed in order to express trade flows reported in past HS editions in the current one *in monetary value*.

As the third and final step of this process, UNCTAD developed a methodology to mathematically describe not only the logical relationship between subheadings from one edition of the HS and another (the *transposition tree*), but also to estimate the quantitative changes in the underlying data. For instance, in the first example above, the change in scope of the concerned subheadings – the re-assignment of certain carp species from one subheading to the other – had to be expressed in terms of trade value. In order to convert the value of trade flows reported in older HS versions into their value expressed in HS 2017, the following generic formula was applied:

$$V(\text{year}_0, HS_x, \text{code}) = \frac{V(\text{year}_t, HS_x, \text{code})}{\sum_{i=1}^{n_1} V(\text{year}_t, HS_x, \text{code}_i)} * \sum_{j=1}^{n_2} V(\text{year}_0, HS_p, \text{code}_j)$$

Where

year_0 = the year from which the value is being extrapolated

$year_t$ = the most recent year for which data is available

HS_x = the most recent HS version available, such as for instance HS 2017, HS 2012, etc.

HS_p = the HS version in which trade flows were reported in $year_0$

$code$ = the six-digit HS code relative to the specific product

$V()$ = the trade value based on the parameters specified between the brackets

This formula allows us to estimate the trade value of any trade flow reported in any past edition of the HS classification in terms of HS 2017, by effectuating a weighted average of the trade values based on the number of “branches” of the transposition tree for each product, meaning the number of subheadings related to each other between two different editions of the HS ($1, n_1, n_2$). Differently put, in the case of a split of a subheading into more than one, the allocation of value to each product is weighted according to the distribution of value used for the years that the economy reported its trade flows in HS 2017. However, it is important to note that for those cases where no trade flow was yet reported by an economy – for example, because it is still reporting its trade in an older version of the HS – an equal distribution is used.

For example, subheading 2204.22 was created in HS 2017 to accommodate for an additional separate type of wine product, which was previously contained in 2204.29. To convert the value of 2204.22 and 2204.29 before 2017, say in 2012, into HS 2017, see the following two cases:

Case A: The country has already reported present trade flows in HS 2017

The allocation of value to 2204.22 and 2204.29 is made by the **weighted distribution** of value in HS 2017 as follows:

Subheading	Value in 2017	Value in 2012	Value in 2012 presented in HS 2017
2204.10	a	w	w
2204.21	b	x	x
2204.22	c		$y \cdot c / (c+d)$
2204.29	d	y	$y \cdot d / (c+d)$
2204.30	e	z	z

Case B: The country has not yet reported present any trade flows in HS 2017

The allocation of value to 2204.22 and 2204.29 is made according to an **equal distribution** as follows:

Subheading	Value in 2017	Value in 2012	Value in 2012 presented in HS 2017
2204.10	a	w	w
2204.21	b	x	x
2204.22			y/2
2204.29	c	y	y/2
2204.30	d	z	z

As a note, this relates only to those cases in which additional subheadings were created in HS 2017 with respect to a previous edition of the HS. If subheadings remained unchanged or were deleted, this approximation is not necessary.

While the possibility to report trade flows in the newly established HS 2022 revision will be available starting from 2022, realistically, due to the timespan that occurs between the collection of data and it being cleaned and published (see section 5.1), it is not expected to be available in the database before the end of 2023, or even 2024. Furthermore, only a minority of countries normally adopt the new version of the HS on the first year it comes out, due to adjustment needed in their data collection and reporting systems. Since estimations in the transpositions are more precise when done according to a weighted distribution and the latter can only be done when a country has already reported in the HS revision used in the database as mentioned above, HS 2017 will continue to be the version used for the database until it is estimated that a sufficient number of countries have adopted HS 2022 for it to be worthwhile to switch to it.

3.2.2. Application of the formula by case – A concrete example

In this section, the assumption is made for illustrative reasons that the present year is 2022 and that the country in question has adopted and uses HS 2017 as the latest HS revision. The objective is to express data from 2015, which was reported in the latest HS version available at that time – HS 2012 – in HS 2017. Nevertheless, the principle remains the same if countries use another edition (HS 2012, HS 2007 or HS 2002) as their latest classification. The assumptions are as follows:

- $year_0 = 2015$
- $year_t = 2022$
- $HS_x = \text{HS 2017}$
- $HS_p = \text{HS 2012}$

First case: 1:1 relationship

The HS 2017 subheading is correlated with one and only one previous HS 2012 subheading. This is called a 1:1 relationship, meaning $n_1=1$ and $n_2=1$ as shown below with the example of the trade value of subheading 0210.12 in 2015

HS 2017	HS 2012	Correlation	Trade value in HS 2017 of 0210.12 in 2015
021012	021012	1:1	$V(2015, HS2017, 021012) =$ $V(2022, HS2017, 021012) / V(2022, HS2017, 021012)$ $* V(2015, HS2012, 021012)$

Second case: $n_1:1$ relationship

The HS 2017 subheading results from a division of a subheading of the previous classification into several subheadings. This is called a $n_1:1$ relationship, as shown below with the example of trade value of subheading 2204.22 in 2015, for which $n_1=2$.

HS 2017	HS 2012	Correlation	Trade value in HS 2017 of 2204.22 in 2015
220422 220429	220429	$n_1:1$	$V(2015, HS2017, 220422) =$ $V(2022, HS2017, 220422) / [V(2022, HS2017, 220422) +$ $V(2022, HS2017, 220429)] * V(2015, HS2012, 220429)$

Third case: $1:n_2$ relationship

The HS 2017 subheading results from the merger of several subheadings of the previous classification into one, or what is called a $1:n_2$ relationship. It should be noted that the majority of subheadings having a $1:n_2$ relation simultaneously also have a second $n_1:n_2$ relationship. A good example of this is the case illustrated in figure 4, in which the number of subheadings concerned did not change between HS 2012 and HS 2017, but only their scope did. In this case 0301.93 in HS 2017 has a $1:n_2$ relationship with itself in HS 2012, and simultaneously has a $n_1:n_2$ with the other originating subheading 0301.99. For this last specific case: $n_1=n_2=2$.

HS 2017	HS 2012	Correlation	Trade value in SH 2017 of 0301.93 in 2015
030193	030193	$1:n_2$	$V(2015, HS2017, 031093) =$
030199	030199	$n_1:n_2$	$\{V(2022, HS2017, 030193) / [V(2022, HS2017, 030193) +$ $V(2022, HS2017, 030199)]\} * [V(2015, HS2012, 030193) +$ $V(2015, HS2012, 030199)]$

Fourth case: $n_1:n_2$ relationship

The HS 2017 subheading results from a split and merger of several subheadings from the previous classification, or what is called a $n_1:n_2$ relationship. We take as an example the case illustrated in figure 5 of subheading 1211.90, for which $n_1=7$ and $n_2=6$.

HS 2017	HS 2012	Correlation	Trade value in HS 2017 of 1211.90 in 2015
121120	121120	$n_1:n_2$	$V(2015, HS2017, 121190) =$
121130	121130		$V(2022, HS2017, 121190) / [V(2022, HS2017, 121120) +$
121140	121140		$V(2022, HS2017, 121130) + V(2022, HS2017, 121140) +$
121150	121190		$V(2022, HS2017, 121150) + V(2022, HS2017, 121190) +$
121190	200899		$V(2022, HS2017, 200899) + V(2022, HS2017, 140490)] * [V(2015, HS2012, 121120) + V(2015, HS2012, 121130) +$
200899	140490		$V(2015, HS2012, 121140) + V(2015, HS2012, 121190) +$
140490			$V(2015, HS2012, 200899) + V(2015, HS2012, 140490)]$

Once the three-step process described above was completed, we obtained a database that provides information on trade flows for all biodiversity-related goods in a consistent and comparable way, despite changes in the HS versions used for reporting trade data. Data quality was subsequently reviewed by the UNCTAD Statistics Service, correcting potential errors and outliers before publication.

3.3. Pilot exercise¹⁴

A pilot project was developed to test the feasibility of such a database on a smaller scale for the period 2010 to 2018. The main goal of the pilot was to establish and test the correspondence between the selected subheadings from HS 2017, HS 2012, and HS 2007, and to see whether it is possible to “follow” the evolution of specific subheadings over time. The results of the pilot project informed the possibility and challenges of creating a biodiversity-based database at the global level and provided useful data for BioTrade partners.

The list of countries and subheadings for the pilot project was selected via a survey to partner organizations of the UNCTAD BioTrade Initiative. In it, they were requested to put forward a list of priority products and countries that are of particular interest for their activities. Based on the prioritized list of species and products defined by BioTrade partners, several countries and products were selected, and the correspondence tables were established.

The pilot was conducted for 14 countries – Botswana, Colombia, Ecuador, Eswatini, Lao People’s Democratic Republic, Malawi, Mozambique, Myanmar, Namibia, Peru, South Africa, Viet Nam, Zambia, and Zimbabwe – as well as 142 HS 2017 HS codes at the six-digit level. This list included certain

¹⁴ The pilot exercise was developed by UNCTAD (Fernando Cantú-Bazaldua and Lorena Jaramillo, UNCTAD, from September 2019 to February 2020, with the support of BioTrade partners (see Annex 1).

country-specific products, i.e., products that were prioritized for a specific country (see annex 1 for the list of priority products).

The outcome of the pilot project, a smaller database regarding only the priority countries and products for the period studies, was considered satisfactory and ready to be upscaled to the global level. Moreover, important lessons learned were obtained and enabled the enhancement of the correspondence tables and the tree.

4. Biodiversity-based trade indicators

A significant share of the information contained in the database are indicators illustrating relevant information related to trade in biodiversity-based goods. One of their objectives is to provide a consistent and reliable tracking tool for progress on institutional processes linked to biodiversity, most notably the post-2020 GBF.

The criteria for the selection of the indicators were:

- Measurability, as the indicators need to provide quantifiable information on progress;
- The possibility to aggregate and disaggregate the data either geographically or by product;
- Satisfactory data availability and a robust methodology for data selection and revision; and
- The indicators are easily aligned with the goals and measurements in place within other institutional reporting processes.

Based on these criteria, the selected indicators are:

- a) Trade balance of individual economies in thousands of US dollars;
- b) Biodiversity-based trade as a percentage of total trade;
- c) Biodiversity-based trade as a percentage of GDP;
- d) Biodiversity-based trade, growth rates;
- e) Growth rates of the trade balance of individual economies;
- f) Market concentration indices of exports and imports;
- g) Product concentration indices of exports and imports;
- h) Market structural change indices of exports and imports; and
- i) Revealed Comparative Advantage index

The selected indicators are ensured to meet the selection criteria in some cases by their very nature (they are measurable and can be aggregated/disaggregated), in others by relying upon data from well-established databank such as Comtrade and by adopting the HS classification, widely used for targets and other goals under institutional processes.

Currently, UNCTAD and its BioTrade partners are proposing some of these indicators as well as the trends in the trade flows to be considered as monitoring elements in the ongoing negotiations related to the post-2020 GBF (See UNCTAD, ITC, et al. (2020a); UNCTAD, CITES, et al. (2020)).

4.1. Trade balance of individual economies in thousands of US dollars

A country's trade balance is the difference between the value of its exports and its imports for a given period, usually a year. It is the largest component of a country's balance of payments, indicating whether the country has a trade surplus or a trade deficit. In our analysis, the trade balance indicator is limited to the trade of biodiversity-based goods. Its main interest lies in the fact that it indicates whether the country has been a net importer or a net exporter of these goods for the period analysed. If a country's trade balance takes on a positive value, it means its exports of biodiversity-based goods

exceed its imports and it is therefore a net exporter. Similarly, if the value is negative, the country is a net importer.

It is mathematically defined as:

$$TB_j = \sum_{i=1}^n (x_{ij} - m_{ij})$$

Where

TB_j = Trade Balance of country j

x_{ij} = export value of biodiversity-based product i for country j

m_{ij} = import value of biodiversity-based product i for country j

n = number of biodiversity-based products traded by country j in a given year

4.2. Biodiversity-based trade as a percentage of total trade

This measure indicates the size of the trade of biodiversity-based goods of a country or region relative to its total trade, including all goods beyond the biodiversity realm. It is, simply put, the percentage biodiversity-based goods represent of total exports and imports for a country or group of countries. It is defined as follows:

$$I_j = \frac{\sum_{i=1}^n (x_{ij} + m_{ij})}{\sum_{i=1}^N (x_{ij} + m_{ij})}$$

Where

I_j = index value for country j

x_{ij} = export value of product i for country j

m_{ij} = import value of product i for country j

n = number of biodiversity-based products traded by country j in a given year

N = total number of products traded by country j in a given year

The index, comprised between 0 and 1, indicates the magnitude biodiversity-based trade has with respect to total trade. Similarly, this formula relates to the trade of biodiversity-based products in its entirety. An identical index relative only to exports or imports can be extrapolated by including only the pertinent parameter, x or respectively m .

4.3. Biodiversity-based trade as a percentage of GDP

This indicator is a measure of the size of trade in biodiversity-based goods as defined in this methodology with respect to the size of economic activity within a country. It is defined according to the formula:

$$I_j = \frac{\sum_{i=1}^n (x_{ij} + m_{ij})}{GDP_j}$$

where

I_j = index value for country j

x_{ij} = export value of biodiversity-based product i for country j

m_{ij} = import value of biodiversity-based product i for country j

n = number of biodiversity-based products traded by country j in a given year

GDP_j = country j 's nominal GDP for that same year.

The formula represents a country's sum of exports and imports of biodiversity-related products as a share of the country's GDP. When applied on all traded products, biodiversity-based and not, it gives a measure of the openness to trade of a country by illustrating the proportion of its trading activity with respect to its economic activity. However, by applying this formula only to biodiversity-based products, the indicator does not provide any information regarding trade openness since a country could, for instance, simply have a small biodiversity-based sector and be very open in other sectors.

Nevertheless, within the broader goal of providing reliable country-based trade in biodiversity-based products data and information, this indicator is of particular interest for it allows the user to compare the size of the trade of biodiversity-based products of a country with that of its whole economy, as well as to compare these values between countries. There are several potential applications for such an index for instance in research or policy making.

4.4. Biodiversity-based trade, growth rates

Another useful indicator is the development of a country's exports and imports over time. Similarly as for the economy as a whole, this is illustrated by a rate of growth between one time period and the next. The result indicates how much the exports or imports of a country or group of countries have grown or shrunk for the selected product or group of products. It is expressed by the following formula:

$$g_{j,t} = \frac{\sum_{i=1}^n x_{ij,t} - \sum_{i=1}^k x_{ij,t-1}}{\sum_{i=1}^k x_{ij,t-1}}$$

Where

$g_{j,t}$ = the growth rate of country j 's trade in period t

$x_{ij,t}$ = trade flow value of biodiversity-based product i for country j in time period t

$x_{ij,t-1}$ = trade flow value of biodiversity-based product i for country j in time period $t-1$

n = number of biodiversity-based products traded by country j in time period t

k = number of biodiversity-based products traded by country j in time period $t-1$

The growth rate g indicates by how much trade of a country has varied between one year and the previous. If the rate is positive, the absolute magnitude of trade in biodiversity-based goods is increasing, if it is negative the value is decreasing.

The data on the growth rates of biodiversity-based trade is presented in two separate tables in the database, one for the products of the TraBio classification (Annex 3) and one for the 137 priority subheadings (Annex 1).

4.5. Growth rates of trade balance of individual economies

This indicator is exactly the same, conceptually as well as according to the formula, to the previous one. Only, instead of measuring variations between periods of trade flows, it measures changes in the trade balance (indicator a) of an economy for any product or group of products.

4.6. Market concentration indices of exports and imports¹⁵

The market concentration index is a measure of the degree of concentration of trade, meaning whether the composition of exports and imports for any specific product are concentrated around few markets or whether this product is traded more homogeneously by a large number of countries. It is based on the Herfindahl-Hirschman Index (HHI) and is defined as follows:

$$HHI_i = \frac{\sqrt{\sum_{j=1}^n \left(\frac{x_{ij}}{X_j}\right)^2} - \sqrt{\frac{1}{n}}}{1 - \sqrt{\frac{1}{n}}}$$

Where

HHI_i = index value for a specific product i

x_{ij} = value of exports or imports for country j and product i

$$X_j = \sum_{i=1}^n x_{ij}$$

n = number of individual markets (countries) in which product i is traded

An index value closer to 1 indicates that exports or imports for the analysed product are highly concentrated around few markets. On the contrary, a value closer to 0 reflects a more homogeneous distribution of market shares among countries.

Further information on this index can be found on the *Indicators explained* sheets on UNCTADstat.¹⁶

4.7. Product concentration indices of exports and imports

¹⁵ Further information on this and the following index can be found on the *Indicators explained* sheets on UNCTADstat: <https://unctadstat.unctad.org/EN/IndicatorsExplained.html>

¹⁶ <https://unctadstat.unctad.org/EN/IndicatorsExplained.html>

Similarly to the market concentration index, the product concentration index is also based on the HHI. It is a measure of the degree of concentration of trade, meaning whether the composition of biodiversity-related exports and imports of an economy are concentrated around few products or more homogeneously distributed. The market concentration index is defined as:

$$HHI_j = \frac{\sqrt{\sum_{i=1}^n (\frac{x_{ij}}{X_j})^2} - \sqrt{\frac{1}{n}}}{1 - \sqrt{\frac{1}{n}}}$$

Where

HHI_j = index value for a country or country group

x_{ij} = value of exports or imports for country j and product i

$$X_j = \sum_{i=1}^n x_{ij}$$

n = number of biodiversity-based products traded by country j in a given year

An index value closer to 1 indicates that the country's exports or imports are highly concentrated around a few products. On the contrary, values closer to 0 reflect exports or imports more homogeneously distributed among a series of products.

From a technical standpoint the mathematical formulas for the product and the market concentration index are identical. The difference is the variable n that relates to the number of markets (countries) that trade the product analysed. This means that, for the market concentration index, a value close to 1 indicates that exports or imports for the analysed product are highly concentrated around few markets. On the contrary, a value closer to 0 reflects a more homogeneous distribution of market shares among countries.

Further information on this index can be found on the *Indicators explained* sheets on UNCTADstat.

4.8. Market structural change indices of exports and imports

The structural change index is a measure of changes in the market structure of a product with respect to a base year. More specifically, it describes how the distribution of imports and exports in a specific product among markets (countries) has changed over time. A value close to 1 for a product indicates a significant change in the market shares among exporters (or importers), compared to a reference year.

It is defined by the following formula:

$$I_i = \frac{\sum_{j=1}^n |S_{ij}^1 - S_{ij}^0|}{2}$$

Where

I_i = index value for product i

S_{ij}^0 = share of trade of product i for country j for the chosen reference year

S_{ij}^1 = share of trade of product i for country j in the concerned year

n = number of individual markets (countries) in which product i is traded

4.9. Revealed Comparative Advantage Index

Revealed comparative advantage (RCA) is based on Ricardian trade theory, which posits that patterns of trade among countries are governed by their relative differences in productivity. Although such productivity differences are difficult to observe, an RCA metric can be readily calculated using trade data to "reveal" such differences. The metric can be used to provide a general indication and first approximation of a country's competitive export strengths. However, it should be noted that applied national measures which affect competitiveness such as tariffs, non-tariff measures, subsidies and others are not considered in the RCA metric (UNCTAD, 2019a). When a country has a revealed comparative advantage for a given product ($RCA > 1$), it is inferred to be a competitive producer and exporter of that product relative to a country producing and exporting that good at or below the world average. A country with a revealed comparative advantage in product i is considered to have an export strength in that product. The higher the value of a country's RCA for the analysed product, the higher its export strength in that product.

The RCA index is defined as follows:

$$RCA_{Ai} = \frac{\frac{X_{Ai}}{\sum_{j \in P} X_{Aj}}}{\frac{X_{wi}}{\sum_{j \in P} X_{wj}}} \geq 1$$

Where

P = the set of all biodiversity-based products (with $i \in P$)

X_{Ai} = country A's exports of product i

X_{wi} = the world's exports of product i

$\sum_{j \in P} X_{Aj}$ = country A's total exports of all biodiversity-based products $j \in P$

$\sum_{j \in P} X_{wj}$ = the world's total exports of all biodiversity-based products $j \in P$

5. Considerations and challenges

The TraBio statistical tool provides valuable information for policymakers, businesses, civil society, and researchers. However, it has some limitations that are listed below.

5.1. Data availability limits

The data used for this database is directly taken from the United Nations' Comtrade trade database, which collects data on trade flows for all goods since 1962. Comtrade data is reported yearly by all countries in the world for each of the HS subheadings and subsequently verified, cleared, and compiled into a comprehensive and easily accessible database. However, it is worth noting that there are some limitations linked to this process.

A first limit is the necessary time for the countries to collect the data, do a first round of revisions, report it to UNSD, and then the time necessary within UNSD to verify, clean and compile the data. This may result in significant delays between the moment the information is reported and the time it is published in Comtrade. In fact, the data for the most recent year begins to be available after six months at best and there can be significant further delays at a more detailed level or for countries with more limited data collection and processing capacity. Furthermore, in certain cases, for certain commodities and/or countries there can be significant amounts of missing data, even spanning back several years. Nevertheless, this is necessary to ensure the good quality of the available data.

Another important limitation is the fact that trade flows have been historically reported in their corresponding US\$ value, giving little insight about traded volumes, especially in the absence of price-related information. While this is changing and countries are making increasing efforts to report trade flows in both traded value and traded volume, to this day the information on volumes remains sparse. As such, the information does not give a comprehensive picture, especially if aggregated regionally or across several commodities. For this reason, the choice has been made to avoid displaying information on traded volumes in the statistical tool. If the availability of data on volumes increases to a sufficient extent, it can be considered at a future stage.

5.2. Unavailability of information at the 6-digit level of detail

The initial idea behind the statistical tool was to include bilateral trade flow data for each of the 1814 HS subheadings that make up the universe of biodiversity-base goods in addition to the product aggregates of the TraBio product classification. This would have allowed for a greater analytical power for the database since it would have been possible to track imports and exports of each country or groups of countries for each of the subheadings separately. Nevertheless, this was not possible due to the sheer magnitude of information this would have entailed, as well as to technical constraints on the size of each of the tables that can be contained in the database; the total number of data points would have exceeded one billion.

Several options were explored to face this constraint, and trade-offs had to be made. It was necessary to find a workable balance between the availability of sufficient useful information to not excessively impact the analytical power of the tool on the one hand and keeping the number of tables related to trade flows low enough to not compromise user-friendliness too much on the other.

As a consequence, the decision was made to present the data on bilateral trade flows only for the product aggregates that are part of the TraBio product classification, with the exception of the 137 priority subheadings that were put forward as products of particular interest by BioTrade partners during the pilot phase of the project outlined in section 3.3.¹⁷ Two separate tables were created to present information on trade flows: one for the product aggregates and one for the priority subheadings. This way, the analytical power of the tool was not negatively impacted to a great extent since the level of detail provided by the more disaggregated product aggregates – Categories and Subcategories – is largely sufficient for the analysis of most goods, and for priority products it is still possible to zoom-in to the 6-digit level. Simultaneously, only one additional table was created to stay within the technical constraints of UNCTADstat's informatic platform, thus not heavily impacting user-friendliness with respect to the original plan.

UNCTAD are exploring a switch to a new informatic platform to host UNCTADstat in the medium term, where technical constraints of this kind are much less stringent. If that were to become the case, information on all 1814 subheadings of the universe of biodiversity-based products individually could potentially be included in the TraBio statistical tool in the future.

5.3. Availability of trade data on sustainably produced or sourced products

Differentiating whether goods are sustainably produced, sourced, or traded is impossible through use of the HS (e.g., *tier 2: sustainable trade in biodiversity-based goods*, and *tier 3: BioTrade certified or compliant goods*, in Figure 2). For instance, there is no separate 6-digit subheading to capture niche segments of commodity crops such as speciality cocoa, for which subheadings are defined according to its level of process rather than its quality or sustainability (Cocoa and cocoa preparations are grouped under chapter 18).

Great efforts would be required to enable systematic data collection, especially on trade, for VSS-certified goods that is comprehensive as well as comparable at a regional and/or global level. This is due to numerous reasons, including issues such as the proliferation of voluntary standards as well standard-setting organizations across the globe, often with significant variation in the number of active VSS across different country-product-markets, the large number of heterogeneous actors involved along biodiversity-related value chains leading to non-harmonised and un-coordinated means of data collection, lack of trade-data on certified goods in general, or the confidential and sensitive nature of certain types of data.

With regards to *tier 3: BioTrade certified or compliant goods*, this information is available with UNCTAD and BioTrade partners, including national, regional, and international partners that support

¹⁷ The list of all priority subheadings and the goods they refer to can be found in annex 1.

and monitor companies, associations and projects or other relevant stakeholders in the implementation of the BioTrade P&C. For example, the Union for Ethical BioTrade (UEBT) developed its Ethical BioTrade standard (UEBT standard) based on UNCTAD's BioTrade P&C. The standard is used to certify natural ingredient supply chains in the food, cosmetic and natural pharmaceutical sectors in nearly 100 countries. The UEBT standard is periodically revised through an inclusive and participatory development process involving a full range of stakeholder groups, adhering to the ISEAL Code of Good Practice for Setting Social and Environmental Standards.¹⁸

An additional way to assess compliance with BioTrade P&C of goods and ingredients, as well as of economic and political entities, is by tracking their implementation based on information provided by UNCTAD BioTrade partners as they implement independent or country specific initiatives. This information could include turnover, number of companies or associations implementing BioTrade P&C or the UEBT standard, the number of beneficiaries, the area under BioTrade P&C or the UEBT standard, any favourable BioTrade-related policies and programmes as well as qualitative information on the impact of BioTrade P&C and/or the UEBT standard.

5.4. Exclusion of biodiversity-based services

In addition to goods, there are also many services that originate from biodiversity, normally referred to as ecosystem services. As an example, forest ecosystems provide the world with clean air through photosynthesis, and clean water through filtration. While these may not always have a direct economic price, it is undeniable that they carry potential economic implications to the point that a complete system of environmental and ecosystem accounting has been developed to value ecosystem services and assets (UNDESA, 2021).

Furthermore, in addition to services provided by ecosystems, several services are also based around biodiversity, such as for instance wildlife tourism. Not unlike for goods, biodiversity-based services can also carry sustainability considerations and are instrumental in the achievement of economic as well as environmental and social goals and targets, as well as supporting the livelihoods of countless communities.

Nevertheless, the HS classification system only includes information related to trade in commodities and goods. Information on trade in services linked to biodiversity could therefore not be included in the TraBio statistical tool.

5.5. Disparity in detail at the 6-digit level

The level of specification for biodiversity-based goods within the HS varies widely at the 6-digit level. Some goods such as different species of edible nuts (e.g., macadamia (0802.60), areca nuts (0802.80), almonds (0802.10), or cashew nuts (0801.30)) as well as spices such as ginger (0910.10) and turmeric (0910.90) have their own subheadings at the 6-digit level. In other cases, products are classified under very broad 6-digit subheadings. For example, certain types of fresh fruits or fruit

¹⁸ For more information on UEBT, see <https://www.ethicalbiotrade.org/>

preparations have been classified under the generic 6-digit subheading of “Other Fresh Fruits” (0810.90). For other niche goods such as Panama hats (made from the leaves of *Carludovica palmata* (Toquilla palm), they are classified generally under the very broad sub-heading 6504.00 (hats and headgear made of any material).

The identification of niche goods (including those related to certain unique species) at the 6-digit subheading is desirable as it easily facilitates global comparison of trade flows, however it may be difficult to implement. The WCO sets a trade volume threshold of US\$ 50 million for a product group to obtain a 6-digit subheading, and a US\$ 100 million threshold to obtain a 4-digit heading. In previous review recycles of the WCO, exceptions have been made for social and environmental reasons. There have also been additions and amendments of categories and subheadings to help countries comply with their obligations under MEAs to combat illicit trafficking in endangered species.¹⁹

Similarly, this disparity also means that, in most cases, subheadings do not allow to distinguish between species of animals and plants. Determining the level of trade in particular species would be desirable to understand the contribution of trade to biodiversity loss or conservation, for it is necessary to know which elements of biodiversity are the most affected. With this goal in mind, efforts could be undertaken in the future to map the subheadings that constitute the university of biodiversity-based goods against the items of a separate classification structured around species such as, for instance, the CITES Trade database.

5.6. Differences in reporting beyond the sixth digit level

One solution for the non-specificity of subheadings in terms of capturing niche goods and species at the 6-digit subheading level is the analysis at the level of National Tariff Lines (NTLs) beyond the 6-digit subheading. Countries can create new NTLs at the level for goods based on its priority biodiversity species.

However, the NTL codes and its descriptions differ from country to country beyond the 6-digit level. This is challenge for carrying out inter-country comparisons of NTL data. Harmonization of NTL descriptions for biodiversity-based goods to the extent feasible, starting with regional initiatives could be one option to facilitate eventual country-comparison of data. Using NTLs to specify distinct species may also have the advantage of enabling national tracking of data on legal trade-flows related to specific species including those that may be endangered.

5.7. Harmonized System revisions

¹⁹ E.g., new text was added to subheading 0106.12 to identify separately not only whales and dolphins, but a new group of endangered marine mammals requiring close monitoring (i.e., seals, sea lions and walruses). WTO, Committee on Market Access: Minutes of the Meeting Held on 29 April 2010. G/MA/M/51, 26 May 2010. <https://docs.wto.org>

Since its creation in 1992, the HS has undergone several revisions and since 2002 it is updated every five years by the WCO. This update either eliminates headings and subheadings describing commodities for which trade has reached significantly low levels, or to create headings and subheadings that address changes such as technological advancements and environmental concerns for instance. To reflect changes in trade patterns and volumes, headings can also be merged, split or changed its scope – the products contained in a subheading – from one HS edition to the next. The most recent edition of the HS in use dates back to 2017 and a new edition will enter into effect for trade flows from 2022.

For HS-related time series data compilation and reporting for goods that stretch across several years it is important to ensure that products identified match the corresponding HS subheadings across earlier versions of the HS. This is certainly true for this database and priority-based goods and, as mentioned in Section 3, UNCTAD used correlation and conversion tables plus a three-step transposition process to address this challenge.

Additionally, countries typically adopt new editions of the HS as they come out and are expected to report their trade data in the most recent version available, until a new revision comes out. However, there are significant differences in the speed with which countries adopt revised editions of the HS. As of today, certain countries are still using three previous editions of the HS (HS 2012, HS 2007 and even HS 2002). As a consequence, these tables are of crucial importance not only to harmonize data stretched over a certain timespan but also geographically.

6. Conclusion

The BioTrade-UNCTAD Statistics Service collaboration, and the consequent effort to establish a freely available online database and additional statistics tools on trade in biodiversity-based goods, were born out of the desire to provide a solution to the lack of a coherent and coordinated gathering and reporting on data relative to biodiversity-based trade. Better gathering and reporting of biodiversity-related statistical trade data can help track and better understand progress towards the achievement of the SDGs as well as Aichi and any post-Aichi targets.

The aim of this collaboration is to provide an automated tool containing harmonized and easily comparable and updated data to inform decision makers in a diverse range of contexts. Examples of potential applications include impact assessment analysis and policy making, as well as providing a base for researchers to structure research and reporting related to biodiversity and the trade of biodiversity-based products. Thus, the TraBio statistical tool hopes to contribute to advancements in the understanding and management of biodiversity resources.

The need for coherent and comparable data related to the trade of biodiversity-based goods is made even more urgent as we entered a decade that has been hailed as a *decade of action* if the SDGs are to be met and the worst effects of a climate and biodiversity in crisis are to be averted (United Nations, 2020). The biodiversity and trade sectors both play a central role in the achievement of the SDGs as well as climate change adaptation and mitigation, meaning it is crucial to have a reliable source of data related to the area in which their effects overlap.

To supplement these gaps and to address these needs, throughout the process of building this database and its connected analytical products, a greater longer-term goal has emerged – the vision of a **harmonized and internationally accepted statistical framework for trade in biodiversity-based goods**. Such a framework, building on the definition of biodiversity of the CBD (1992), should include an internationally agreed definition of biodiversity-based products and international trade on such products, as well as a commonly accepted classification of biodiversity-based goods as applied to international trade flows. The framework should also identify the main data sources, and areas where significant data gaps remain, propose indicators to monitor trade in these goods and measure progress in relation to internationally agreed goals. Finally, it should clearly identify the links between trade in biodiversity-based products and areas such as sustainability in production and consumption, inclusiveness in economic opportunities, and national planning.

This statistical framework, of which the establishment of the TraBio statistical tool is the first step, would require extensive consultation and agreement by both the biodiversity and the statistics communities. This way, it would contribute to achieving the commitments established under the SDGs, the Aichi and the post-2020 GBF and other development processes. Moreover, it hopes to facilitate the discussion about trade in biodiversity-based goods and its economic importance to countries and its impacts, as well as fostering a better understanding of the dynamics underpinning trade in biodiversity-based products. Given its expertise in this area and its convening power, UNCTAD

and its partners can play an important role in enabling these discussions and reaching an international agreement.

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Annex 1 – Priority Products and countries identified by BioTrade partners for the scope of the Pilot exercise

The following partner institutions have contributed to the pilot project:

- Ministry of Environment of Peru
- Ministry of Environment and Water of Ecuador
- Ministry of Environment and Sustainable Development of Colombia
- PromPerú
- Helvetas Swiss Intercooperation
- ABS Capacity Development Initiative
- PhytoTrade Africa

Priority countries	
Botswana Colombia Ecuador Eswatini Lao People's Democratic Republic Malawi Mozambique Myanmar Namibia Peru South Africa Viet Nam Zambia Zimbabwe	
Priority products	
Primary product	Related HS subheading
Achiote (<i>Bixa orellana</i>)	1404.90
	3203.00
	3205.00
African sour plum (<i>Ximenia americana</i> , <i>X. caffra</i>)	1515.90
Aguaje (<i>Mauritia flexuosa</i>)	0810.90
	1106.30
	1211.90
	1515.90
	2106.90
Aguaymanto (<i>Physalis peruviana</i>)	0810.90
	0811.90
	0813.40
	2008.99

Ají amarillo (<i>Capsicum baccatum</i>)	0709.60 0710.80 0904.21 2005.99 2103.90
Algarrobo (<i>Prosopis pallida</i>)	1102.20 1106.10 1302.39
Aloe ferox (<i>Aloe ferox</i>)	1302.19 2009.89
Andean blueberry – Mortiño (<i>Vaccinium meridionale</i>)	0810.90
Arracacha (<i>Arracacia xanthorrhiza</i>)	0910.99 1106.20
Baobab (<i>Adansonia digitate</i>)	0813.40 1515.90
Barbasco (<i>Deguelia utilis</i>)	1211.90 1302.19
Benzoin gum (<i>Styrax tonkinensis</i>)	1301.90
Betel leaf (<i>Piper Betle. L</i>)	3301.29
Buchu (<i>Agathosma betulina, A. crenulate</i>)	3301.29
Bulbine (<i>Bulbine frutescens</i>)	3003.90 3004.90
Caigua (<i>Cyclanthera pedata</i>)	0709.99 0710.80 0712.90 1211.90 2106.90
Camu Camu (<i>Myrciaria dubia</i>)	0811.90 1106.30 1211.90 2008.99 2009.89
Cañihua (<i>Chenopodium pallidicaule</i>)	1008.90 1102.90 1904.10 1904.90 2106.90
Cape camomille (<i>Eriocephalus punctulatus</i>)	3301.29
Cape gooseberry – Uvilla (<i>Physalis peruviana</i>)	0810.90

	0813.40
Cape mahogany – Mafura/Mafurra (<i>Trichilia emetica</i>)	1515.90
Cardamom (<i>Wurfbainia villosa</i> var. <i>xanthioides</i> ; <i>Zingiberaceae</i> ; <i>Amomum xanthioides</i> ; <i>Amomum longiligulare</i>)	0908.31 0908.32
Chancapiedra (<i>Phyllanthus niruri</i>)	0602.90 1106.30 1211.90 1302.19 2106.90
Chilli pepper (<i>Capsicum annum</i>)	0709.60 0904.21 0904.22 2103.90
Chirimoya (<i>Annona cherimola</i>)	0810.90 0811.90 2008.99
Chuchuhuasi (<i>Maytenus laevis</i>)	1211.90 1302.19 2208.40
Cinchona (<i>Cinchona officinalis</i>)	2939.20
Cinnamon (<i>Cinnamomum verum</i>)	0906.11 0906.20 3301.29
Cochinilla (<i>Dactylopius coccus</i>)	0511.99 3203.00 3203.00 3205.00
Cocoa (<i>Theobroma cacao</i>)	1801.00 1802.00 1803.10 1803.20 1804.00 1805.00 1806.10 1806.20 1806.31 1806.32 1806.90

Cocona (<i>Solanum sessiliflorum</i>)	0802.90
	0810.90
	0811.90
	2007.99
Coffee	0901.11
	0901.12
	0901.21
	0901.22
	0901.91
Copaiba (<i>Copaifera langsdorffii</i>)	1211.90
	1301.90
	1515.90
Copoazu (<i>Theobroma grandiflorum</i>)	1516.20
Diverse amazonian fruits	0810.90
Diverse handicrafts	4602.19
	4602.90
Essential oils	3301.29
	3301.90
Gac (<i>Momordica cochinchinensis</i> Spreng)	1518.00
	2007.99
	2009.89
	2106.90
Ginger (<i>Zingiber officinale</i>)	0910.11
	0910.12
	2101.20
Granadilla (<i>Passiflora ligularis</i>)	0810.90
	2202.10
	2202.99
	3302.10
Guanabana (<i>Annona muricata</i>)	0811.90
	1211.90
	1404.90
	2008.99
	2106.90
Guayusa (<i>Ilex guayusa</i>) – Mate tea	0903.00
Helichrysum (<i>Helichrysum</i> spp.)	3301.29
Hercampure (<i>Gentianella alborosea</i>)	1211.90
	1302.19
	2106.10
	2106.90

Honey	0409.00
Honeybush (<i>Cyclopia intermedia</i> , <i>C. genistoides</i>)	1211.90 1212.99
Huanarpo (<i>Jatropha macrantha</i>)	1106.20 1211.90 1212.99 1302.19
Ishpingo (<i>Ocotea quixos</i>)	2104.20 3301.29 3401.19
Jujube (<i>Ziziphus mauritiana</i> Lamarck)	0810.90 0811.90 1302.19 2009.79
Kalahari melon (<i>Citrullus lanatus</i>)	1515.90
Kiwicha (<i>Amaranthus caudatus</i>)	1008.90 1104.19 1104.29 1904.10
Lippia (<i>Lippia javanica</i>)	3301.29
Lucuma (<i>Pouteria lucuma</i>)	0811.90 1106.30 2008.99 2105.00
Maca (<i>lepidium meyenii</i>)	0714.90 1102.90 1106.20 1302.19 2106.90
Maiz Gigante del Cusco (<i>Zea mays</i>)	1005.90 1106.20
Maiz morado (<i>Zea mais</i>)	0703.20 0714.20 1005.90 1102.20 3203.00

Maracuya (<i>Passiflora edulis</i>)	0811.90 2007.91 2008.99 2009.89 2202.10
Marula (<i>Sclerocarya birrea subsp. Caffra</i>)	0810.90 1515.90
Mashua (<i>Tropaeolum tuberosum</i>)	0709.99 0710.10 0714.90 1102.90 1211.90
Molle (<i>Schinus molle</i>)	1211.90 1302.19 1518.00
Mongongo/Maketti (<i>Schinziophyton rautanenii</i>)	1515.90
Moringa (<i>Moringa oleifera</i>)	0712.90 1211.90 1515.90
Muña (<i>Minthostachys mollis</i>)	1211.90 2106.90
Namibian myrrh (<i>Commiphora wildii</i>)	1301.90
Natural cosmetic products	3304.99 3305.10 3305.90 3307.10 3401.19
Nueces del Brasil (<i>Bertholletia excelsa</i>)	0801.22 0802.42 0802.62 0802.80 1515.90
Orchids	0602.10 0602.90 0603.13
Organic fertilizer	3101.00

Paiche or Piracucu fish (<i>Arapaima gigas</i>)	0301.99
	0302.89
	0303.89
	0303.99
	0304.49
	0304.59
	0304.89
	0304.99
Paja toquilla (<i>Carludovica palmata</i>)	6504.00
Pasuchaca (<i>Geranium delisianum</i>)	1106.20
	1211.90
	2106.90
Peach palm – Chonta (<i>Batrix gasipaens</i>)	0810.90
	0811.90
Prickly Ash (<i>Zanthoxylum rhetsa</i> (Roxb.) DC./Rutaceae)	0910.99
Quinoa (<i>Chenopodium quinoa</i>)	1008.50
	1102.90
	1104.29
	1904.10
	1904.90
Resurrection bush (<i>Myrothamnus flabellifolius</i>)	1211.90
	1212.99
Rose geranium (<i>Pelargonium graveolens</i>)	3301.29
Sacha inchi (<i>Plukenetia volubilis</i>)	1208.90
	1515.90
	2008.19
	2008.99
	2106.10
Sangre de drago (<i>Croton lechleri</i>)	1301.90
	1302.19
	1302.39
Sauco (<i>Sambucus peruviana</i>)	0403.10
	0811.90
	2007.99
Star anise (<i>Illicium verum</i>)	0909.61
	0909.62
	2102.20
	3301.29
Taccy nut (<i>Caryodendron arinocense</i>)	1515.90

Tagua (<i>Phytelephas aecuatorialis</i>)	4602.19 4602.90 5608.90 9606.29 9606.30
Tara (<i>Caesalpinia spinosa</i>)	1302.39 1404.90
Tea (<i>Camellia sinensis</i>)	0902.10 0902.20 0902.30 0902.40 2005.99
Thanakha (<i>Hesperethusa crenulata</i> (Roxb.) M. Roem)	1302.19 3304.91 4403.12
Tumbo (<i>Passiflora tripartita</i>)	0802.90 0810.90 0811.90
Tuna (<i>Opuntia ficus-indica</i>)	0810.90 0811.90 2008.99
Turmeric (<i>Curcuma longa</i>)	0909.62 0910.11 0910.30 2103.90 3203.00
Uña de Gato (<i>Uncaria tomentosa</i>)	1211.90 1302.19 3304.99 3305.10 3305.90
Ungurahua (<i>Oenocarpus bataua</i>)	3301.29 3305.10
Vaniulla (<i>Vanilla planifolia</i>)	0905.10 0905.20

Vicuña fibre (<i>Vicugna vicugna</i>)	5105.39
	5111.11
	5111.19
	5111.20
	5111.30
	5111.90
	5112.11
	5112.19
	5112.20
	5112.30
	5112.90
	6301.20
Waxes (vegetable waxes and beeswax)	1521.10
	1521.90
Yacon (<i>Smallanthus sonchifolius</i>)	1106.20
	1302.19
	1702.90
	2106.90
	2202.10

Annex 2 – List of controversial biodiversity-based goods that have been included in the universe of biodiversity-based goods (HS 2017)

HS 4-digit heading description	HS 6-digit subheading description	HS 6-digit subheading
Plants and parts of plants (including seed and fruits), of a kind used primarily in perfumery, in pharmacy or for insecticidal, fungicidal or similar purposes, fresh, chilled, frozen or dried, whether or not cut, crushed or powdered.	Coca leaf	1211.30
	Poppy straw	1211.40
Glands and other organs for organo-therapeutic uses, dried, whether or not powdered; extracts of glands or other organs or of their secretions for organo-therapeutic uses; heparin and its salts; other human or animal substances prepared for therapeutic or prophylactic uses, not elsewhere specified or included	Extracts of glands or other organs or of their secretions	3001.20
	Other	3001.90
Human blood; animal blood prepared for therapeutic, prophylactic or diagnostic uses; antisera, other blood fractions and immunological products, whether or not modified or obtained by means of biotechnological processes; vaccines, toxins, cultures of micro-organisms (excluding yeasts) and similar products	Malaria diagnostic test kits	3002.11
	Antisera and other blood fractions	3002.12
	Immunological products, unmixed, not put up in measured doses or in forms or packings for retail sale	3002.13
	Immunological products, mixed, not put up in measured doses or in forms or packings for retail sale	3002.14
	Immunological products, put up in measured doses or in forms or packings for retail sale	3002.15
	Other	3002.19
Human hair, dressed, thinned, bleached, or otherwise worked; wool or other animal hair or other textile materials, prepared for use in making wigs or the like	-	6703.00
Wigs, false beards, eyebrows and eyelashes, switches and the like, of human or animal hair or of textile materials; articles of human hair not elsewhere specified or included	Of human hair	6704.20

Annex 3 – Trade and Biodiversity (TraBio) product classification hierarchy

For a more detailed description of the classification, the rationale behind its development and the HS subheadings it contains please refer to UNCTAD (2022a). Alternatively, all classifications of UNCTADstat – including the TraBio product classification – are illustrated in UNCTADstat's Classifications web page: <https://unctadstat.unctad.org/EN/Classifications.html>.

Group	Subgroup	Category	Subcategory
A Live animals and plants	AA Live animals	AA01 Horses	
		AA02 Asses	
		AA03 Mules and hinnies	
		AA04 Cattle	
		AA05 Buffalo	
		AA06 Bovine animals other than cattle and buffalo	
		AA07 Swine	
		AA08 Sheep	
		AA09 Goats	
		AA10 Chickens	
		AA11 Turkeys	
		AA12 Ducks	
		AA13 Geese	
		AA14 Guinea fowls	
		AA15 Unspecified fowls other than chickens	
		AA16 Fish	AA17 Ornamental fish
			AA18 Other fish
		AA19 Other mammals	
		AA20 Reptiles	
		AA21 Other birds	

		AA22	Insects						
		AA23	Other live animals, n.e.s.i.						
	AB	Live plants	AB01	Live trees, shrubs, bushes, bulbs, tubers and similar products commonly supplied by nursery gardeners or florists					
			AB02	Cut flowers					
AB03			Foliage, branches and other parts of plants commonly supplied by nursery gardeners or florists						
B	Food and beverage	BA	Meat and edible offal	BA01	Of bovine animals	BA02	Fresh or chilled		
						BA03	Frozen		
						BA04	Salted, in brine, dried or smoked		
						BA05	Preparations		
								BA06	Fresh or chilled
								BA07	Frozen
								BA08	Fat, free of lean meat
								BA09	Salted, in brine, dried or smoked
								BA10	Preparations
								BA11	Fresh or chilled
								BA12	Frozen
								BA13	Fresh, chilled or frozen
								BA14	Frozen
								BA15	Fresh, chilled or frozen
BA16	Fresh, chilled or frozen								
BA17	Fresh, chilled or frozen								
						BA18	Fresh, chilled or frozen		

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		BB03	Frozen
		BB04	Flours, meals and pellets
		BB05	Dried, smoked, salted or in-brine
		BB06	Preparations
		BB07	Caviar and caviar substitutes prepared from fish eggs
	BB08	Crustaceans	
		BB09	Live, fresh or chilled
		BB10	Frozen
		BB11	Dried, smoked, salted or in-brine
		BB12	Other, n.e.s.i.
		BB13	Preparations
	BB14	Molluscs	
		BB15	Live, fresh or chilled
		BB16	Frozen
		BB17	Live, fresh, chilled, frozen and other
		BB18	Other, n.e.s.i.
		BB19	Preparations
	BB20	Aquatic invertebrates other than crustaceans and molluscs	
		BB21	Live, fresh or chilled
		BB22	Frozen
		BB23	Live, fresh, chilled, frozen and other

					BB24	Other, n.e.s.i.
					BB25	Preparations
	BC	Dairy produce	BC01	Milk and cream		
			BC02	Fermented or acidified milk and cream		
			BC03	Whey		
			BC04	Products consisting of natural milk constituents		
			BC05	Butter		
			BC06	Cheese and curd		
			BC07	Preparations		
	BD	Other edible products of animal origin	BD01	Birds' eggs		
			BD02	Natural honey		
			BD03	Other edible products of animal origin, n.e.s.i.		
	BE	Vegetables and derived products	BE01	Fresh or chilled		
			BE02	Frozen		
			BE03	Provisionally preserved		
			BE04	Dried		
			BE05	Fresh, chilled, frozen or dried		
			BE06	Flour, meal and powder		
			BE07	Flakes, granules and pellets		
			BE08	Starches		

			BE09	Fresh, chilled, frozen or dried, not specified			
			BE10	Preparations			
			BE11	Juices			
	BF	Nuts and derived products	BF01	Fresh or dried			
			BF02	Preparations			
	BG	Fruits and derived products	BG01	Fresh or dried			
			BG02	Frozen			
			BG03	Provisionally preserved			
			BG04	Peel			
			BG05	Flour, meal and powder			
			BG06	Preparations			
			BG07	Juices			
	BH	Stimulant crops and derived products	BH01	Coffee and coffee preparations	BH02	Coffee	
					BH03	Coffee preparations	
			BH04	Tea, mate, and tea and mate preparations	BH05	Tea	
					BH06	Mate	
					BH07	Tea and mate preparations	
			BH08	Coffee substitutes and preparations of coffee substitutes	BH09	Coffee substitutes	
					BH10	Preparations of coffee substitutes	

		BH11	Cocoa and cocoa preparations	BH12	Cocoa beans and parts thereof	
				BH13	Cocoa preparations	
	BI	Spices	BI01	Neither crushed nor ground		
			BI02	Crushed or ground		
			BI03	Unspecified level of processing		
	BJ	Cereals and derived products	BJ01	Cereals	BJ02	Wheat and meslin
					BJ03	Rye
					BJ04	Barley
					BJ05	Oats
					BJ06	Maize
					BJ07	Rice
					BJ08	Other cereals
			BJ09	Flours		
			BJ10	Groats, meals and pellets		
			BJ11	Pellets		
			BJ12	Grains otherwise worked		
			BJ13	Malt		
			BJ14	Starches		
			BJ15	Wheat Gluten		
			BJ16	Preparations	BJ17	Pasta
					BJ18	Couscous
					BJ19	Other prepared foods obtained from cereals or cereal products

				BJ20	Bread, pastry, cakes and other bakers' wares
	BK	Flours, meals and preparations of oil-bearing crops	BK01	Flours and meals	
			BK02	Preparations	
	BL	Sugar crops, sugar and derived products	BL01	Sugar crops	
			BL02	Sugar	
			BL03	Molasses	
			BL04	Sugar confectionery	
	BM	Beverages	BM01	Non-alcoholic beverages	
			BM02	Alcoholic beverages	
	BN	Miscellaneous food products	BN01	Hop cones and lupulin	
			BN02	Yeasts	
			BN03	Vinegar and substitutes	
			BN04	Mixed preparations	
C	CA	Bovine semen			
	CB	Seeds, fruits and spores of a kind used for sowing	CB01	Seeds of vegetables	
			CB02	Seeds of cereals	
			CB03	Seeds of oil-bearing crops	
			CB04	Seeds of sugar crops	

		CB05	Seeds of forage plants		
		CB06	Seeds of herbaceous plants cultivated principally for their flowers		
		CB07	Other seeds, fruits and spores of a kind used for sowing		
	CC	Straw and husks			
	CD	Feed	CD01	Forage plants and products	
			CD02	Flours, meals and pellets, unfit for human consumption	
			CD03	Cereals and derived products	
			CD04	Residues from cereal processing	
			CD05	Residues from sugar processing	
			CD06	Residues from the processing of oil-bearing crops	
			CD07	Vegetable residues, waste and by-products	
			CD08	Preparations	
	CE	Natural fertilizers			
D	DA	Medicinal plants			
	DB	Vegetable saps and extracts	DB01	Lac, natural gums, resins, gum-resins and oleoresins	
			DB02	Other vegetable saps and extracts	
			DB03	Pectic substances,	

			pectinates and pectates	
			DB04 Mucilages and thickeners derived from vegetable products	
	DC	Tanning extracts and colouring matter	DC01 Tanning extracts, tannins and derivatives	
			DC02 Colouring matter	
	DD	Essential oils, resinoids and extracted oleoresins		
	DE	Odoriferous substances		
	DF	Seaweed and other algae		
	DG	Locust bean		
	DH	Fruit stones and kernels		
	DI	Inulin		
	DJ	Glycerol		
	DK	Wine lees and argol		
	DL	Organic chemicals	DL01 Acyclic alcohols	
			DL02 Cyclic alcohols	
			DL03 Alkaloids and their salts	
			DL04 Fatty acids	
	DM	Casein, albumins, other protein substances and derivatives	DM01 Casein and derivatives	
			DM02 Albumins and derivatives	

			DM03	Other protein substances and derivatives	
	DN	Gelatin, gelatin derivatives, insinglass and other glues of animal origin			
	DO	Modified starches			
	DP	Enzymes			
	DQ	Alginic acid			
	DR	Oil-bearing crops and vegetable fats, oils and waxes	DR01	Oil-bearing crops	
			DR02	Fats and oils	
			DR03	Waxes	
	DS	Animal fats, oils, waxes and cleavage products	DS01	Fats and oils	
			DS02	Waxes	
			DS03	Cleavage products	
E	EA	Perfumes and toilet waters			
	EB	Cosmetic preparations			
	EC	Personal care preparations			
	ED	Room care preparations			
F	FA	Animal products used in the preparation of pharmaceutical products			

	FB	Pharmaceutical products		
G	GA	Hides and skins	GA01	Raw
			GA02	Tanned or crust
	GB	Leather and articles thereof	GB01	Leather
			GB02	Saddlery and harness for animals
			GB03	Travel goods, handbags and similar containers
			GB04	Apparel and clothing accessories
			GB05	Footwear
	GC	Furskins and articles thereof	GC01	Furskins
			GC02	Apparel and clothing accessories
H	HA	Silk and articles thereof	HA01	Silk
			HA02	Yarn
			HA03	Fabrics
			HA04	Articles of apparel and clothing accessories
	HB	Wool, animal hair and articles thereof	HB01	Wool and animal hair
			HB02	Yarn
			HB03	Fabrics
			HB04	Felt
			HB05	Carpets and other textile floor coverings

			HB06	Articles of apparel and clothing accesories	
			HB07	Blankets and travelling rugs	
			HB08	Headgear and parts thereof	
	HC	Cotton and articles thereof	HC01	Cotton	
			HC02	Yarn	
			HC03	Fabrics	
			HC04	Cotton linters and cotton linters pulp	
			HC05	Wadding	
			HC06	Articles of apparel and clothing accesories	
			HC07	Blankets and travelling rugs	
			HC08	Bed linen, table linen, toilet linen and kitchen linen	
			HC09	Curtains, interior blinds and valances	
			HC10	Other furnishings	
			HC11	Sacks and bags, of a kind used for the packing of goods	
	HD	Flax and articles thereof	HD01	Flax	
			HD02	Yarn	
			HD03	Fabrics	
	HE	Jute, other textile bast fibres and articles thereof	HE01	Jute and other textile bast fibres	
			HE02	Yarn	

		HE03	Fabrics	
		HE04	Sacks and bags, of a kind used for the packing of goods	
	HF Sisal, other fibres of the Agave genus and articles thereof	HF01	Twine, cordage, ropes, cables, fishing nets and other nets, and articles thereof	
	HG Other vegetable textile fibres, n.e.s.i., and articles thereof	HG01	Other vegetable textile fibres, n.e.s.i.	
		HG02	Yarn	
		HG03	Fabrics	
		HG04	Carpets and other textile floor coverings	
	HH Articles of unspecified natural fibres	HH01	Wadding	
		HH02	Nonwovens	
		HH03	Knotted netting of twine, cordage or rope; made up fishing nets and other made up nets	
		HH04	Fabrics	
		HH05	Articles of apparel and clothing accessories	
		HH06	Blankets and travelling rugs	
		HH07	Bed linen, table linen, toilet linen and kitchen linen	
		HH08	Curtains, interior blinds and valances	
		HH09	Other furnishings	

			HH10	Sacks and bags, of a kind used for the packing of goods	
			HH11	Tarpaulins, awnings and sunblinds	
			HH12	Tents	
I	Wood and derived products	IA	Wood		
		IB	Charcoal		
		IC	Articles of wood		
		ID	Pulp		
		IE	Paper, paperboard and articles thereof		
		IF	Furniture		
		IG	Prefabricated buildings		
		IH	Musical instruments	IH01	Pianos, harpsichords and other keyboard stringed instruments
				IH02	Other string musical instruments (for example, guitars, violins, harps)
				IH03	Percussion musical instruments
				IH04	Musical instruments, the sound of which is produced, or must be amplified, electrically (for example, guitars, accordions), excluding organs
				IH05	Musical boxes

					Fairground organs, mechanical street organs, mechanical singing birds, musical saws and other musical instruments not falling within any other heading of this Chapter; decoy calls of all kinds; whistles, call horns and other mouth-blown sound signalling instruments.	
					IH06	
					IH07	Parts and accessories of string instruments other than pianos
		II	Other products made of wood	II01	Pencils	
				II02	Smoking pipes and cigar or cigarette holders	
J	Vegetable plaiting materials and articles thereof	JA	Bamboo and articles thereof	JA01	Bamboo	
				JA02	Articles of bamboo	
				JA03	Furniture	
		JB	Rattan and articles thereof	JB01	Rattan	
				JB02	Articles of rattan	
				JB03	Furniture	
		JC	Vegetable plaiting materials other than bamboo and rattan, and articles thereof	JC01	Vegetable plaiting materials other than bamboos and rattans	
				JC02	Articles of vegetable plaiting	

K			materials other than bamboo and rattan	
			JC03 Furniture	
	KA	Hair and bristles	KA01 Unworked or simply prepared	
			KA02 Worked	
			KA03 Wigs	
	KB	Guts, bladders and stomachs of animals, other than fish	KB01 Unworked or simply prepared	
			KB02 Articles of gut, goldbeater's skin, bladders or tendons	
	KC	Feathers, down and articles thereof	KC01 Unworked or simply prepared	
			KC02 Worked and articles thereof	
	KD	Bones, horns, tortoise-shell, whalebone and whalebone hair, antlers, hooves, nails, claws, beaks, coral, shells, cuttle-bone, and articles thereof	KD01 Unworked or simply prepared	KD02 Bones and horncores
				Tortoise-shell, whalebone and whalebone hair, horns, antlers, hooves, nails, claws and beaks
				Coral, shells and cuttle-bone
			KD05 Worked and articles thereof	KD06 Worked bone, tortoise-shell, horn, antlers, coral, mother-of-pearl and other animal

					carving material, and articles of these materials
					KD07 Buttons
		KE	Ivory and articles thereof	KE01	Unworked or simply prepared
				KE02	Worked and articles thereof
		KF	Pearls and articles thereof	KF01	Pearls
				KF02	Articles of pearls
		KG	Other animal products or dead animals, unfit for human consumption		
L	Other products of plant origin	LA	Tobacco and tobacco substitutes	LA01	Unmanufactured
				LA02	Manufactured
		LB	Natural rubber		
		LC	Cork and articles of cork	LC01	Cork
				LC02	Articles of cork
		LD	Brooms and brushes of vegetable materials		
		LE	Other vegetable products, n.e.s.i.		
M	Miscellaneous	MA	Biofuels	MA01	Ethanol
				MA02	Biodiesel
		MB	Pet food		
		MC	Glues and adhesives		

	MD	Other n.e.s.i.	pulp,		
	ME	Products made of unspecified material or potentially from non-biological material		ME01	Footwear
				ME02	Headgear and parts thereof
				ME03	Worked vegetable or mineral carving material and articles of these materials; moulded or carved articles of wax, of stearin, of natural gums or natural resins or of modelling pastes, and other moulded or carved articles, not elsewhere specified or included; worked, unhardened gelatin (except gelatin of heading 3503) and articles of unhardened gelatin

Annex 4 – Inventory of existing and available BioTrade and trade and biodiversity-related information²⁰

I. Information available on baseline data to support the GBF (UNCTAD, CITES, et al., 2020):

- Baseline information on the implementation of BioTrade P&C that are publicly available with BioTrade partners, including UEBT, national and regional BioTrade Programmes and UNCTAD;
- Wildlife trade data from the CITES trade database (<http://trade.cites.org>);
- Cases of CITES review of significant trade process, which reviews the sustainability of selected CITES-related trade (<https://cites.org/eng/imp/sigtradereview>);
- Trade statistics related to legal trade of biodiversity-based products, available on UNCTADstat (<https://unctadstat.unctad.org/EN/>); and
- ITC's Sustainability Map (www.sustainabilitymap.org).

II: **Recommended indicators** listed in the documents prepared by BioTrade partners to the post-2020 global biodiversity framework for the "Review comments on the draft monitoring framework for the GBF" and "Contribution to the indicators for monitoring elements of the draft goals and targets" (UNCTAD, ITC, et al., 2020a, 2020b). This information was submitted jointly by UNCTAD, ITC; United Nations University Institute for the Advanced Study of Sustainability (UNU-IAS); Ministry of Environment and Water (MAAE) of Ecuador; Ministry of Science and Technology (MOST) from Lao People's Democratic Republic; PromPerú; CAF; UEBT; ABS I, FLEDGE:

- a. Value and trends in exports and imports of biodiversity-based products, including trends in the legal trade of medicinal plants
- b. Number of countries having used, adopted and/or aligned with an internationally agreed standard for biodiversity-based products
- c. Number of countries supporting Business Support Organizations (governmental Trade Promotion Organizations but also private sector association) in exporting products produced under sustainable criteria, such as BioTrade P&C
- d. Value and trends in exports and commercialization in biodiversity-based products that is sustainable (*for instance in line with BioTrade Principles & Criteria and/or CITES requirements*), including proportion of biological resources traded legally
- e. Number of biological resources harvested in line with BioTrade Principles and Criteria
- f. Number of supply chains that are implementing/aligned with BioTrade Principles and Criteria

²⁰ Prepared by Lorena Jaramillo, UNCTAD, based on the contributions of BioTrade partners to the post 2020 global biodiversity framework (UNCTAD, CITES, et al., 2020; UNCTAD, ITC, et al., 2020a, 2020b), information shared by BioTrade partners, and the internal document *Guidelines for a Methodology to facilitate collection and reporting of statistics related to biodiversity-based goods and services*, prepared by Mahesh Sugathan, consultant at TED, UNCTAD.

- g. Number of countries that have trade, export or other related strategies that foster the sustainable trade of biodiversity-based products and services,
- h. Number of countries that have incorporated the BioTrade Principles & Criteria
- i. Number of private incentives implemented by BioTrade partners
- j. Number of UEBT-certified ingredients', number of UEBT prioritized and certified supply chains, volumes of UEBT-certified ingredients
- k. Number of countries where UEBT members source ingredients from

Several of these indicators contribute to SDGs, such as bullets (a), (d), (g) for SDG Target 17.1; bullets (b) which encompasses the Nagoya Protocol relates to SDG Targets 15.6 and 15.9, as well as Aichi target 16. This is also visualized in the table below that links BioTrade with the Aichi Biodiversity Targets, the SDGs and the post-2020 GBF (to be completed once the GBF is adopted at the CBD COP-15 or once an advanced version of it is available) (UNCTAD, 2019b):

BioTrade's Relationship with the Aichi Biodiversity Targets	
Target	BioTrade's Contribution
1	The UEBT Biodiversity Barometer provides information on public awareness of biodiversity and how this affects purchasing decisions and business practices. It is linked to Aichi Target 1.
3	BioTrade is an already existing positive incentive for the conservation and sustainable use of biodiversity which is consistent and in harmony with the CBD and other relevant international obligations and takes into account national socio-economic conditions.
4	The BioTrade P&C and its use by governments, the private sector and civil society, promote the development of plans for sustainable production to keep the impacts of use of natural resources well within safe ecological limits.
6	The forthcoming Blue BioTrade P&C can help ensure that aquatic species are managed and harvested sustainably, legally and applying ecosystem-based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.
7	Use of the BioTrade P&C can help ensure that agriculture, aquaculture and forestry are sustainable, ensuring conservation of biodiversity
16	The BioTrade P&C help ensure an effective operationalization of ABS/the Nagoya Protocol through the development of clear national legislation that distinguishes between the sustainable use of biological resources and ABS.
20	BioTrade is supporting the mobilization of financial resources from non-state actors such as the private sector and trade-related organizations and building partnerships for the implementation of the objectives of the CBD.

BioTrade contribution to selected SDGs	
SDG	BioTrade contribution
12	BioTrade can help achieve the sustainable management and efficient use of natural resources, encourage companies, especially large and transnational companies, to adopt

	sustainable practices, and develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products, contributing to achieving targets 12.2, 12.6 and 12.B.
14	BioTrade in the marine and ocean realm (Blue BioTrade) can help sustainably manage and protect marine and coastal ecosystems and species, contributing directly to targets 14.2, 14.4, 14.7, 14. B, and 14.C.
15	BioTrade can help ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services in line with obligations under international agreements to halt biodiversity degradation and loss. It also promotes and provides practical implementation of ABS/the Nagoya Protocol and mobilizes financial resources from the private sector and the trade and biodiversity community. It can thus directly contribute to targets 15.1, 15.2, 15.6, 15A, 15B and 15C.
17	BioTrade can contribute to strengthening the means of implementation and revitalizing the global partnership for sustainable development by helping to: mobilize additional financial resources for developing countries; enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the SDGs; significantly increase the exports of developing countries; enhance policy coherence for sustainable development; build multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources to support the achievement of the SDGs; and, encourage and promote effective public, public-private and civil society partnerships. It can thus directly contribute to achieving targets 17.3, 17.9, 17.11, 17.14, 17.16, and 17.17.

Note: BioTrade also has links to other SDGs including 1, 2, 3, 5, 8, 9, 10, 13 and 16. Further information is available in publications, such as UNCTAD (2017, 2018, 2015), among others.

III. Description of selected information available by partners:

- **ITC's Sustainability Map** – provides access to wide ranging information related to sustainability initiatives, allowing businesses to gain a better understanding of sustainability standards that are relevant to their export markets and to connect with business partners (<https://www.sustainabilitymap.org>) (UNCTAD, ITC, et al., 2020b)
- **CITES database on wildlife trade data** – it provides information on a variety of variables regarding trade in wildlife species since 1975, including: (a) exporting and importing countries; (b) source of species or specimens traded (e.g. wild sourced or ranched); (c) purpose of the transaction (e.g. commercial or other); (d) trade term (e.g. live specimens, skins, etc.); and (e) taxon of interest (i.e. genus, species or subspecies). (<https://trade.cites.org/>)
- UEBT, through its **UEBT Monitoring and Evaluation Public System Report** (UEBT, 2019) provides information regarding its trading member as well as certificate holders, including the indicators shown below:

UEBT Trading Members

UEBT Certificate Holder

- | | |
|---|---|
| <ul style="list-style-type: none"> • Number of trading members (per country and geographic areas) • Number of trading members that adopted the certification program • Distribution of trading members per position in supply chain (%) • Prioritized natural ingredient supply chains (number) • Annual turnover in Euros (total and by sector: cosmetic, pharmaceutical, food) • Prioritized natural ingredients (per production system, country, geographic areas) (%) • First stage actors involved in the prioritized supply chains per production system (%) | <ul style="list-style-type: none"> • Certified natural ingredients (per production system, country, geographic areas) (%) • Certified natural ingredient supply chains (number) • Certified natural ingredients (per production system, country, geographic areas) (%) • First stage actors involved in the certified supply chains per production system (%) |
|---|---|
-
- **National and regional BioTrade partners and programmes** – BioTrade partners at the national and regional levels are compiling information from organizations that are implementing BioTrade P&C such as per centage of compliance with BioTrade P&C, value of sales, number of beneficiaries and type of organizations involved, including in some cases per sector such as personal care, phytopharma and sustainable tourism, among others.