

# Instructions for Users of The Tool “Visualization of Biodiversity-Based Value Chains”

## 1. Purpose and Benefits

Throughout the world value chains play an important role in strategies and implementations of governments towards industrialization and economic development. Over the past decade, value chains based on the use of biodiversity have become more prominent. At international level, the use of genetic resources is regulated by the Nagoya Protocol, which came into force in 2014. One of the key components of the Nagoya Protocol is about the Access and Benefit Sharing (ABS). This means that in return for receiving access and the right to use a genetic resource the user must fairly and equitably share the benefits achieved from the products based on these resources with the local providers. For this reason, governments need to be aware of the players and processes of a value chain based on biodiversity.

However, value chains are often complex and include jurisdictions from the point of harvesting a genetic resource to the point of placing the consumer product on a market. To support governments of provider countries and other stakeholders in regulating and implementing complex value chains, the ABS Capacity Development Initiative has developed a tool on visualizing these value chains. The tool will provide a quick and clear **visual** overview of the stages, processes and players that are part of a specific value chain. To obtain this overview governments, Focal Points and others who are responsible in using the tool need to involve the key players, such as players from the private sector, communities and academia.

The tool provides information for decision making, to enable informed action and creates a catalyst for partnering conversations.

While the tool is in principle useful to anyone involved with biodiversity-based value chains, we are currently seeing five main benefits:

- **Administration and management of ABS systems:** Governments implement or design the necessary administrative and managerial steps to operationalize their ABS systems. The tool can be used to obtain an overview on the processes of a specific value chain, including the value adding activities at the international level. This can simplify the identification of trigger points related to permits, monitoring and the exchange with the clearing house and the check point, the evaluation of benefit-sharing agreements in particular regarding the benefits, the support for communities and other providers with regard to negotiations on the benefit-sharing, the required processes for export, required certificates, and other administrative requirements.
- **Negotiations on ABS agreements:** The tool can be useful for the negotiations between providers and users of genetic resources. Governments can assess ABS-relevant applications from the private sector - or even request the private sector to fill in the tool and provide an overview on the specific value chain processes and activities. In this way the outcomes of the tool could result in an additional basis for governments' decision making and approval of applications.
- **Analysis of biotrade value chains:** Governments can also use the tool for getting an overview on pure biotrade value chains, in which the genetic resources might not be covered by ABS regulations.

- **Triggering exchange between value chain stakeholders:** A crucial prerequisite of the tool to achieve its potential is that stakeholders, especially the involved players of the private sector or academia, need to be involved to fill it in by providing all details that are needed. The tool thus can be regarded as an instrument to also foster the exchange between the governments and the other stakeholders. An additional outcome could be that it provides clarity on the role(s) of the various actors.
- **Inputs for discussions on the development and support of local providers:** The overview on value chains obtained by using the tool can trigger further discussions on building up local capacities, local processing and the creation of structures such as sector associations, cooperatives, business associations, etc.

Summarized, the tool will enable users of the tool to gather information on aspects, such as:

- Involved stakeholders throughout the whole value chain;
- Steps of (considerable) value addition;
- Trigger points providing an overview on administrative activities required for which type of value chain and at which point;
- Activities, processes, stakeholder involvements and value addition at the stages of the ingredient level, manufacturing level and product level;
- The percentage of value of the genetic resource in relation to the total consumer product that will be sold on the market;
- Markets for which the local genetic resource plays a role; and
- The variety of product options for which the genetic resource can be used.

The tool is based on experiences from about 20 value chains in four different African countries.

## 2. How the Tool can fit into the Work of ABS Structures

This tool can be applied to support the work and decision-making of ABS Competent National Authorities (CNA) and ABS Focal Points at any chosen point in the treatment of access demands.

For example, once a user of the tool has filed an access demand with the authority in charge, the tool can be used to develop scenarios that support the CNA in its analysis. Such scenarios may be prepared by the person receiving the demand to inform discussions in the broader committee in charge of assessing the demand. In the further process, the applicant can be addressed to add missing information to fully develop and visualize a value chain showing the steps of value addition throughout until the product's finalization. The tool can also assist with identifying gaps of information and formulating questions to the applicant to gain a better comprehension of what the value chain will look like. It can thus assist with inquiries and help build a common understanding of the value chain and its elements.

The visualization based on the tool can also be used to prepare local communities and TK holders for their negotiations with users of genetic resources. Making the different components of a value chain visible in a structured manner, it can promote communities' understanding of complex value chains and help identify possible benefits that can be shared.

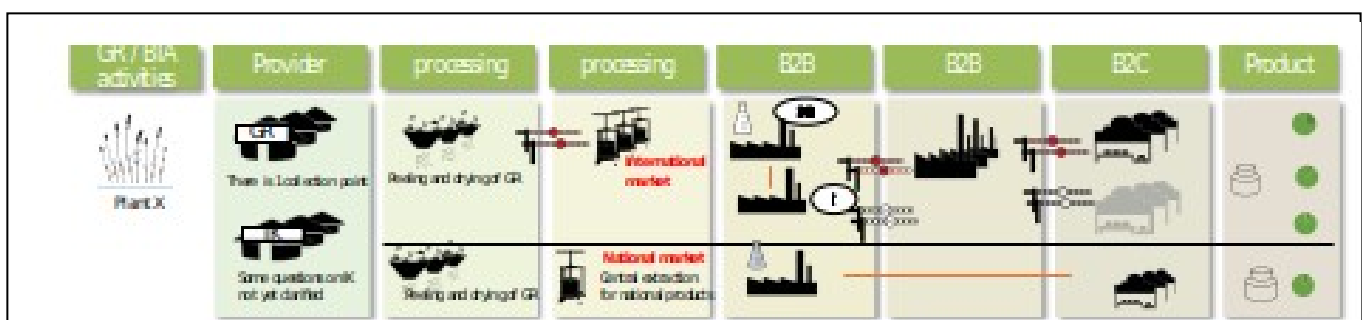
The tool is **not** intended to replace existing ABS procedures or to create a parallel structure. Users of the tool, such as ABS Focal Points and CNAs, determine whether, at what time and in what form the tool is to be used.

### 3. Overall Approach

In order to have a broader reach and thus being able to assist more stakeholders involved in value chains at the global level, we have designed the tool as a **self-learning tool**. Stakeholders, in particular those responsible for administration of ABS-related value chains of genetic resources can obtain an overview of a value chain interactively using the tool. Based on the knowledge of the user of the tool and on knowledge exchange with other key stakeholders, a value chain can be automatically developed in a step by step-modus.

By selecting answer options that correspond to questions around the processes of an entire value chain, users of the tool will create a visualization of a value chain for traditional genetic resources. The visualization is projected on a matrix based on a PowerPoint slide. To obtain the full picture of the value chain the user of the tool needs to open a set of questions and multiple-choice answers. The answer options are linked to icons (1 answer option = 1 icon). These icons, which are shown and explained in the chapter “How does the Tool work?”, will automatically pop up in the value chain matrix once an answer option was selected by the user of the tool. Once for each of the questions answer options will have been selected, the matrix will show the full process of a value chain – from the collection of a genetic resource to the final consumer product.

Often, it is possible that several answers can be selected. In the case the answer options do not properly reflect the actual situation or activity, the user of the tool can also integrate short comments in a Comment Box which will then pop up together with the relevant icon(s). The figure below shows a fictive example of a filled in matrix after having selected the answer options.



The questions and multiple-choice answer options will cover the various stages of a value chain. It starts with the provision of the resource (raw material), and continues to show the primary and secondary processing, the processes at the ingredient level (in - possibly - various countries), the Business-To Business (B2B) level and the Business-to-Consumer (B2C) level.

It is recommended to use **one Questionnaire for each single product development** and the downstream products. It should be avoided that the same questionnaire is used for several product developments as processes to develop these products might differ significantly.

The filling in of the question and answer-section will require information and participation of other involved stakeholders, especially those from the private sector. It is possible that differing viewpoints will be expressed regarding the supply of the resources, the processing, value additions or key activities. An example: The private sector might regard the provision of the genetic resource as a sector approach (= only 1 provider). For example, in the case of Rooibos in South Africa, the private sector and the providers have concluded one agreement, only, which covers the deliveries and benefit sharing for the whole sector. On the other hand, governments might emphasize the provision of a genetic resource by many different providers (= several providers).

In this case, the different answers should be stated in the comment box. The welcoming effect: needs for clarification through regulations, permits and benefit sharing approaches become more obvious.

## 4 How does the Tool work?

The automated tool assists the user in creating a visualization of a value chain. It is based on the exchange with governments and private sector representatives of about 20 value chains in Africa. In these discussions, we jointly analyzed the various processes and players for the differing steps (stages). By using all the inputs from the key stakeholders, we have designed the tool in such a way that the user responds to a set of questions by selecting answer options. Through the clicking on answer options icons will pop up automatically in the relevant field (=stage) of the value chain.

However, we have also learned from the above exchange that each value chain is individual and has its own specific dynamics. In a value chain, there are known and unknown players as well as known and unknown processes and products and those that still might be developed or emerge during further Research and Development (R&D). As unforeseen processes and also products may derive in complex value chains, a fully automated tool will soon reach its limits and result in unsatisfactory results. For this reason, the tool also provides options for the user to manually bring in specific dynamics of a value chain. For example, the user of the tool can insert specific comments at each stage of the value chain. Additional arrows can be used to highlight more complex interactions, for example when the ingredients are being sent to a third country for further analysis and then will be sent back either to the provider or user country for the processes required.

### 3.1. Directions for use

A PowerPoint Matrix is used to visualize processes, activities and stakeholders of value chains, each of these focusing on 1 resource and its possible downstream products. Once filled in by selecting question options and possibly adding comments in the comment box, the matrix will provide an overview based on icons. The matrix will show:

- Name and picture of the genetic resource;
- Provider of the genetic resource and provider of traditional knowledge (if applicable);
- Primary processing of the resource (such as peeling, drying, fermentation);

- Secondary processing of the resource (such as extraction, blending, filtering, etc.);
- Processes and processing at the “ingredient level” (such as analysis of biochemical composition of the genetic resource);
- Involvement of Research & Development (R&D);
- Activities between businesses at the international Business to business (B2B) level;
- Activities between B2B companies and Business to Consumer (B2C) company, the latter producing the consumer product;
- Sector(s) of the product such as cosmetics, food and beverages, pharmaceuticals; and
- Estimated value of the genetic resource as a part of the final consumer product.

GR / BIA activities	Provider	processing	processing	B2B	B2B	B2C	Product
Name of used genetic resource							
Picture of the plant							

The PowerPoint matrix for value chains can be developed by the user of the tool for:

- Products based on processing a genetic resource
- Biotechnological products which are based on synthetization
- Products based on Digital Sequence Information (DSI), which can include the modification of DNA, RNA proteins, etc.; and
- A mix of the above production processes.

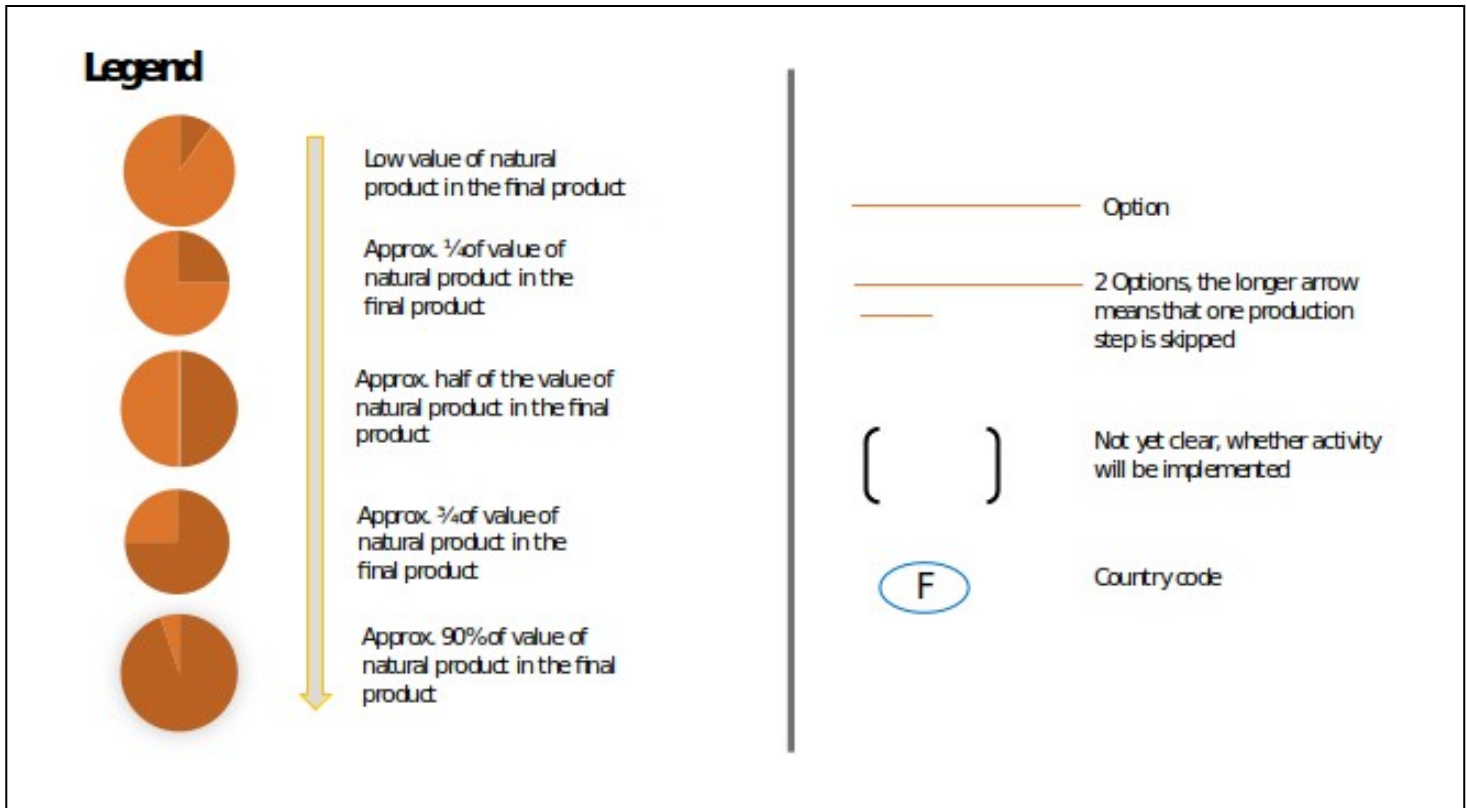
The tool will start with some yes/no questions to ensure that the user of the tool will only be guided to the segments that (s)he needs.

As above, answer options are connected with an icon (1 answer option = 1 icon). These icons are placed next to the answer options and thus are visible to the user of the tool when selecting an answer. When the user clicks on an answer the icon will pop up in the PowerPoint Matrix being **automatically** placed in relevant phase within the value chain. The icons can be found in the below legend.

## Legend

Purpose	Commercial	Non-Commercial						
Provider level	1 provider of GR (e.g. 1 community or cooperative)	Several providing communities	IK	1 knowledge holder (e.g. 1 community)	Knowledgeholders from several communities	Government	Research Institutes	DSI from (public) databank
Primary processing	Primary processing at central place	Primary processing at various places	Primary processing at central place possible		Primary processing at various places possible	10%	National market	National market(s) possible
Secondary processing	Extraction/ (ingredient) at one SME	Extraction/ (ingredient) at several SME	Extraction/ (ingredient) at one SME possible		Extraction/ (ingredient) at several SME possible		Export country known	Export country unknown
	R&D	R&D possible		Aggregating/ Shipping	Aggregating/ Shipping possible		Regional market	Regional market(s) possible
B2B level	Ingredient	Ingredient processing	Ingredient		Ingredient processing	GR send to third country		GR send back from third country





**For example**, in the matrix field “Provider”, the tool poses the question:

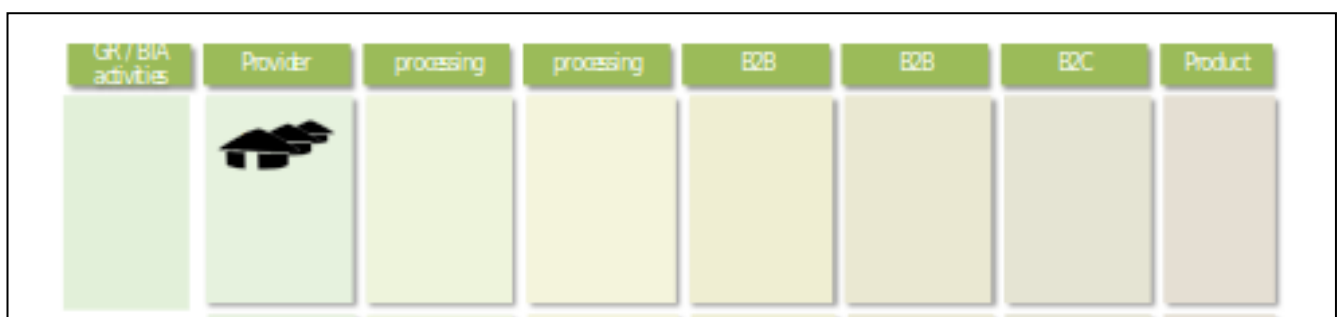
“How many providers of the genetic resource (GR) are involved?”

It provides the following answer options:

- One provider (e.g. 1 community / cooperative / farmer / landowner, etc.)
- Several providers (several communities, cooperatives, farmers, landowners, etc.)
- GR originates from a protected area / national park

It is also possible to select multiple answers options. In this example this could be “1 provider” and “Protected area/national park”.

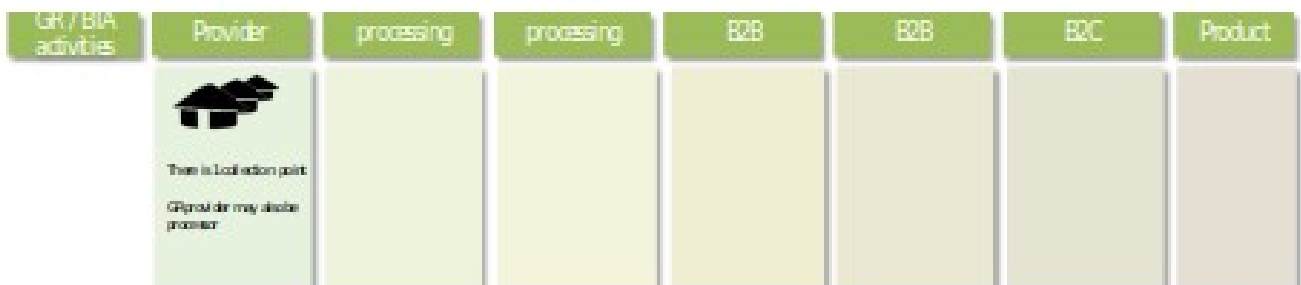
In the figure below, the fictive user of the tool has selected the answer option “several providers”. The icon symbolizes several providers delivering the genetic resource (GR).



If the answer option is not precise enough, the user of the tool can add a short comment in the Comment Box. He or she user can also choose from pre-formulated comments if they fit



his/her needs. These have been collected from various practical cases.



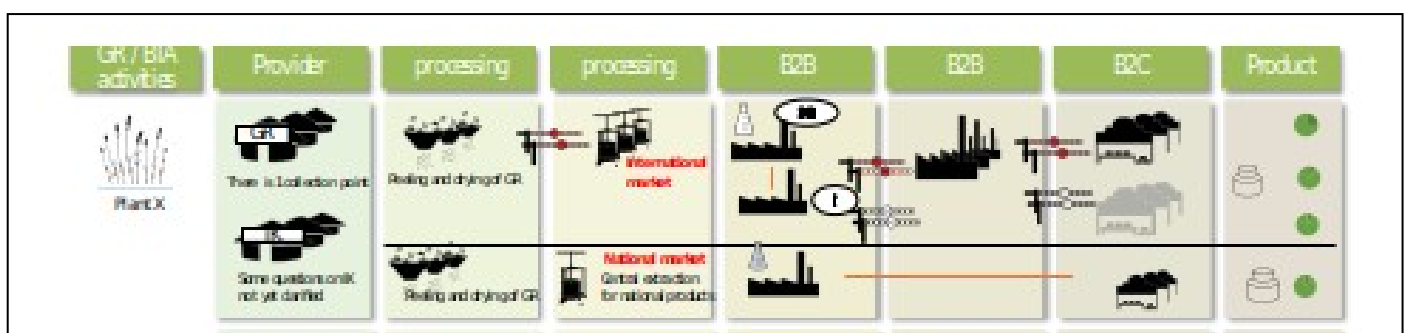
provided by several knowledge holders in several communities, (4) however, some questions regarding the indigenous knowledge are not yet clarified.



The user of the tool will go **step by step** through each phase of the value chain, clicking on one or several answer options for each question and possibly adding short comments.

### 3.2. Fictive Example for Interpretation of results of a fully filled in Matrix

Below a **fictive example** of a fully filled in PowerPoint matrix and the explanation of the visualization can be found.



The fictive example shows the value chain of a Plant X, which will be used for the production of cosmetics at the national market, and at the international level it will be an ingredient of products for the food and beverage sector and the flavor and fragrances industry. The results can be interpreted as follows:

1. **Provider level:** The genetic resource (Plant X) is delivered by several communities (or cooperatives, farmers, etc.). There is one collection point. The provision of the plant does include the use of indigenous knowledge from several indigenous knowledge holders (out of various communities), while some questions regarding the use of the indigenous knowledge require further clarification and / or regulation.
2. **Primary processing** of Plant X is implemented in the provider country. The primary processing includes peeling and drying of the plant, implemented by several processors in the country.
3. **National and international markets** for Plant X: In this specific example, it is already clear at the level of primary processing that there are both a national and an international market (divided by a black long line as, in this example, further processing are different for the product at the national and at the international markets).
4. **Secondary processing** (such as extracting) of Plant X is implemented both at international level, (implemented by several processing companies) and at national level, implemented by yet one (pioneer) company, only.
5. **Ingredient level (B2B Level 1):** At the **national** level, the processed Plant X is now analyzed further by one national company. This may, for example, include the analysis of the plant's biochemical composition. Research and Development (R&D) is **planned** for the near future, with R&D being symbolized by a grey conical flask.

At the **international** level, the ingredients of Plant X are further analyzed by a branch of the main user company. That branch of the main user company is located in Singapore (symbolized with an "SG"). The branch in Singapore also implements some R&D, symbolized by a white conical flask.

The results of R&D and the analysis are sent to the Headquarters of the main user company which is located in Italy (symbolized with an "I")

6. **Trade at B2B level (B2B Level 2):**  
At the national level, in this example, there is no further processing or R&D. Hence the ingredients (and the results of the envisaged R&D) are not sent to any other B2B company but directly sent to the B2C (Business to Consumer) company that will produce the final product.

At the international level, the ingredients of Plant X and the results of R&D are now sent to a variety of B2B companies for further processing and possible analyses. Several of these B2B companies are located abroad. When the ingredients of Plant X are exported to another country, this step is symbolized by using a border barrier icon. If the country to which the ingredient is or will be exported has already been identified, it is symbolized by a **red** border barrier icon. If there is more than one country to which the ingredient is exported and all these countries have been already identified, this will be symbolized by using two red border barrier icons. If the ingredients are / will be exported to a country or several countries that still have to be

identified, this will be symbolized with white border barrier icon. In the above example the ingredient is exported both more than one country that has already been identified and more than one country which have not yet identified.

**7. Business to Consumer (B2C) level:**

At the national level the processed ingredients of Plant X have already arrived at the (B2C) companies that produce the consumer product.

At international level, the further processed ingredients of Plant X are transported to a variety of B2C companies. Some of them are abroad and have already been identified by the main user company, while others are not, (symbolized by white border barriers).

**8. Product sectors:**

At the national level, the processed ingredients of Plant X are used for cosmetics.

At the international level, based on the diversification of the analysis and R&D, the processed ingredients of Plant X are used for products in the food and beverages sector, the flavor and fragrances sector and the cosmetics sector.

**9. Value of genetic resource (Plant X) in relation to value of final product:**

The value of the genetic resource as a part of final consumer product can vary significantly. This is mainly due to the diverse forms of their usage in final products - even within a sector. Hence the information provided by the PowerPoint matrix (the visualization of a value chain) can only be a very rough orientation. In addition, it needs to be noted that the value of a genetic resource can also be based on the marketing value (being promoted, for example as “healthy”, “exotic”, or “energizing”, etc. and thus providing a special value). For example, the value of the genetic resource ‘Rooibos’ is very high in Rooibos tea, the product is only bought by the customers because of the Rooibos in it. On the other hand, in a perfume, the value of one individual genetic resource related to the total value of the product might be comparably low, as a perfume often is a mixture of a series of differing ingredients and fragrances. But there can be also a high marketing value of the genetic resource, for example if the ingredient of the genetic makes the product special and marketing will thus highlight that specific ingredient (for example, when advertised as the energizing factor in an energy drink, etc.)

In the Tool / the PowerPoint matrix, the value of the genetic resource in comparison to the value of the whole final product is indicated by the use of pie charts. The dark green parts of the pie chart show the value of the genetic resources within the value of the final product.

In this example, the genetic resource within the final consumer product in the cosmetics sector makes 10% of the total product value.

At the international market, the value of Plant X in the cosmetic products and also in the flavor and fragrances-product is 10% (or less), too, while the value of Plant X has a share of 25% in relation to the value of the total consumer product (for example due to its exotic taste).

As demonstrated by this example and the above interpretations of results of an automatically visualized value chain, the Tool provides an overview by visualizing a value chain based on one product development and possible downstream products.

Governments can use the visualizations to create or adjust its administrative processes. The knowledge can also be used by governments to inform the local providers (communities, cooperatives, famers, etc.) which various and complex processes are happening within the value chain that includes a locally harvested genetic resource.