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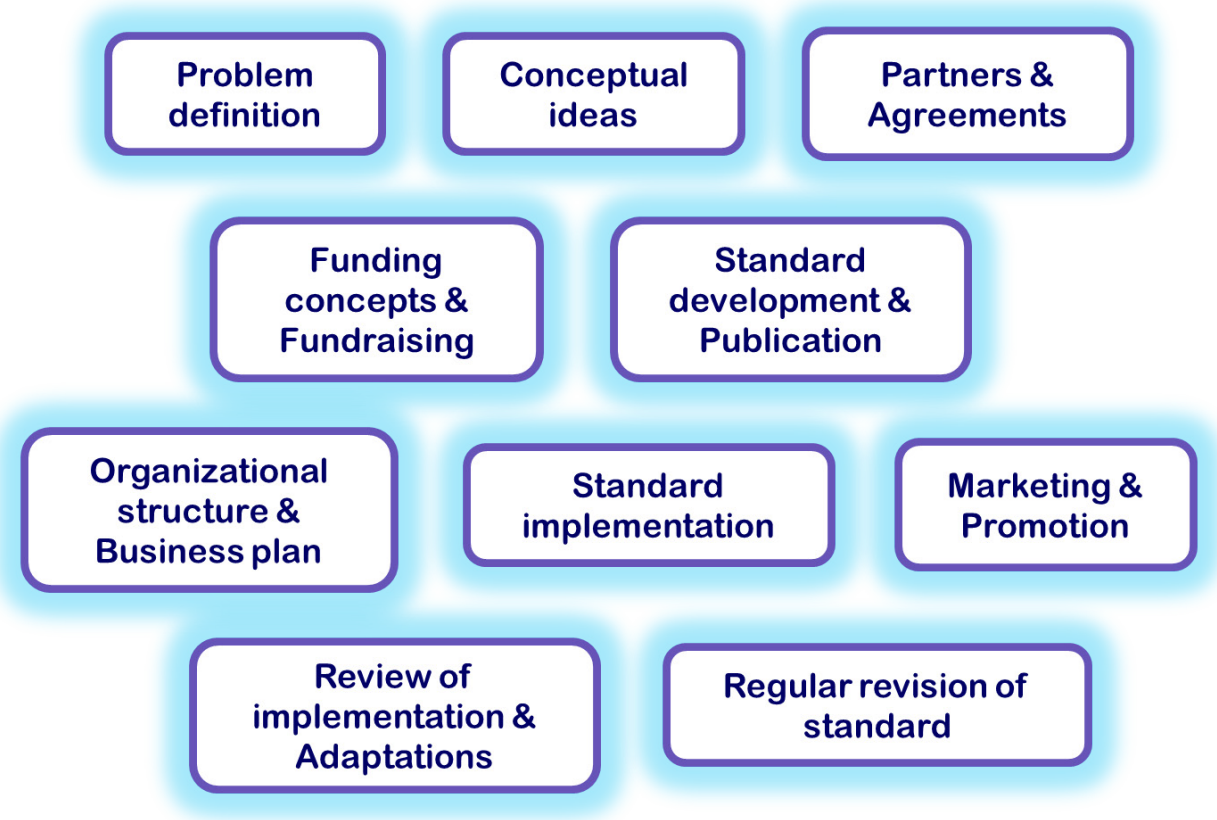
Sustainability in Practice:

Key Aspects, Opportunities and Challenges in Implementing a Standard for Sustainable Use of Natural Biological Resources



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Cover picture: The ten key steps identified in this BfN-Skript for the development and implementation of a standard for sustainable use of natural biological resources.

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Abstract

The formal concept of sustainable sourcing of natural resources dates back to the Brundtland Report 'Our Common Future' from 1987, which defines sustainable development as an ongoing process that 'meets the needs of the present without compromising the ability of future generations to meet their own needs'. Since then, numerous initiatives, standards and normative guidelines were developed and implemented with the aim to establish sustainable sourcing and trade in natural resources and work towards the United Nations' Sustainable Development Goals (SDGs; United Nations 2015).

This paper is based on an internal evaluation of the International Standard for Sustainable Wild Collection of Medicinal and Aromatic Plants (ISSC-MAP) and the related FairWild Standard (FW) that was carried out in 2017 on behalf of BfN. The study reviewed 10 years of implementing these standard initiatives and their impacts, successes, failures and challenges during implementation. This paper provides an insight into lessons learned from the evaluation of ISSC-MAP and FW implementation by illustrating their general relevance for sustainability standard implementation. As a result of this review, we propose the following ten key aspects of successful sustainability standard conceptualization, development and implementation and highlight their challenges and opportunities:

1. Definition of the sustainability problem
2. Development of conceptual ideas
3. Finding partners and making agreements
4. Development of funding concepts and fundraising
5. Standard development in consultation and standard publication
6. Developing an organizational structure and business planning
7. Standard implementation
8. Standard marketing and promotion
9. Review of standard implementation and adaptations if appropriate
10. Regular revision of the standard or guideline

Each of the proposed key aspects is described in detail; the considerations are showcased using the example of two specific standards for sustainable wild collection of plants, lichens and fungi: the ISSC-MAP and the FairWild Standard (FW).

Conclusions from this review may have general relevance for all initiatives aiming to implement sustainable sourcing systems for natural resources. Standards for the sustainable use of natural resources can be developed and implemented within or outside of the production process, using a bottom-up or a top-down approach. Bottom-up approaches are, often informal, local standards and guidelines for sustainable sourcing of natural biological resources, usually written in local languages. International traders and manufacturers may develop their own private sustainable sourcing standards, which tend to be more formal and require implementation by their suppliers (top-down approach). The most common top-down approach is the implementation of generic or product-group-specific government or private standards. Top-down approaches are often more successful on the market than bottom-up approaches, but the latter can play an important role to ensure supply continuity and ecosystem conservation beyond market demand.

Analysing the concept and implementation of the ISSC-MAP and FW, the review has shown that a small niche standard can succeed in several fields, namely: 1) Achieving a wide range and substantial level of influence on other sustainable wild collection systems (standards, guidelines, CITES NDFs) on a global scale; 2) Pioneering core principles of ecologically sustainable sourcing (in the case of ISSC-MAP / FW: providing innovative resource assessment and management planning tools for wild collection); 3) Developing into an important reference concept (in the case of FW: for sustainable wild collection of plants, due to its comprehensiveness in all three pillars of sustainable sourcing, i.e. ecological soundness, social responsibility, economic viability).

Suggestions to improve the impact of meaningful, specialized sustainability standards are based on set-backs and failures of standards such as the ISSC-MAP and FW, and include 1) Adaptation of the standard(s) during the regular revision process to make them more flexible in implementation and more attractive to new companies, especially brand holders; 2) Diversification of certification options and / or expanding the scope of standard applicability (in the case of FW this could mean opening up to cover also ecologically and socially sustainable farming of herbs to increase the number of interested brand holders and hence also producers); 3) Simplification of procedures within the standard(s) to increase accessibility, especially to small and medium sized producers; 4) Development and implementation of a comprehensive fundraising strategy. In general, ground-truthing standard requirements and implementation options through trial implementation projects has proved to be a valuable approach in ISSC-MAP, a process that makes the most sense at early stages in standard development but may be useful to consider for later stages or revision processes, too.

It may also be useful for standards on the sustainable sourcing of natural biological resources to observe the current development or regenerative agriculture standards in the USA and learn from this holistic approach that goes beyond sustainable sourcing.

1. The sustainability concept and its implementation

1.1 The sustainability concept

Humankind depends on the availability of natural resources; no human or other known life form would be possible without water; as humans we consume food, energy, and minerals in large amounts to maintain our lives and livelihoods. Wood and timber serves for construction and as a resource for fire; we use plants, fungi, lichens and animals for the medicinal, healing powers of their ingredients and substances, for colouring textiles, producing ornaments and decoration, or as a component of religious or other ceremonies. As a result of large-scale and continuous use by an ever growing global human population, many natural resources, whether renewable or not, have become depleted to various degrees. Habitats have been changed or made disappear, whole ecosystems (e.g. large parts of the tropical rainforest in countries like Indonesia) have been destroyed, and natural landscapes converted into settlement areas, industrial zones or farm land.

At least since the late 1980s, consciousness about the potentially negative consequences of human activities on the environment has gradually grown world-wide and initiatives were taken to develop concepts that fight destruction of ecosystems and habitats. This can be done by protection of valuable ecosystems or by using resources in a better, ideally less destructive way. One of the most important concepts is the idea of sustainable use. The term ‘sustainability’ may have lost a bit of its shining through overuse and misuse during the past three decades. However, the philosophy behind it and its conceptual idea are still more than valid due to its holistic approach and its inclusiveness in terms of time, resources and interest groups. The concept of sustainability dates back to the Brundtland Report ‘Our Common Future’ (United Nations 1987), named after the chair of the UN Commission, the former Norwegian prime minister Gro Harlem Brundtland, appointed in 1983 by the UN Secretary-General. In this report, sustainable development is defined as a development that ‘meets the needs of the present without compromising the ability of future generations to meet their own needs’.

During the following years, the concept was refined to include e.g. cultural aspects, and finally adopted at the 1992 Rio Earth Summit through the Agenda 21 (United Nations 1992a) and the Convention on Biological Diversity (CBD; United Nations 1992b). The CBD was developed to link sustainable development with the use of natural resources. The convention defines ‘sustainable use’ as ‘the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations’ (United Nations 1992b). 20 years after the Earth Summit in Rio, the United Nations developed ‘Sustainable Development Goals (SDG)’, conceptually resembling the Millennium Development Goals (MDG; United Nations 2000), but focussing on sustainable development (United Nations 2015). In this document, 17 sustainable development goals were defined. While focusing on social development, the sustainable use of natural resources is covered in at least five goals: SDG 6 (water use); SDG 7 (energy use); SDG 12 (‘ensure sustainable consumption and production patterns’); SDG 14 (sustainable use of oceans, seas and marine resources); and especially SDG 15 (‘protect, restore and promote sustainable use of terrestrial ecosystems, sustainably

manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss').

While certain adaptations were made during the past 2 decades, the central idea of sustainable sourcing has remained unchanged: ensuring the livelihoods of present and future generations through using resources in an ecologically friendly, socially just and economically viable way, thereby respecting the cultural identity and practices of traditional resource users. One may argue that this approach is still very anthropocentric, as it neglects nature's and all life forms' own rights and looks at resource use from a purely human perspective, including the concept of 'human ownership' of nature. From a philosophical perspective, this may certainly be considered as a weakness of the 'sustainability' concept, while from a practical point of view it is a long-term experience that humans, despite their cognitive capacities, are focussed on themselves and on their own well-being and that, based on this observation, change is more likely to occur if the rationale behind it refers to a – direct or indirect – safeguarding or improvement of living conditions for humans. Hence, one may call the sustainability concept's positive effect on nature a 'collateral benefit', but this should not cast a shadow over the importance of such effect.

1.2 Bottom-up and top-down approaches to implementing sustainability standards

Standards for the sustainable use of natural resources can be developed and implemented at different levels within or outside of the production process (as illustrated in **Figure 1** for wild collection). A standard is, according to the Encyclopaedia Britannica (2006) a definite rule, principle, or measure established by authority. ISEAL (2014) defines a standard as a document that provides, for common or repeated use, rules, guidelines, or characteristics for products or related processes and production methods, with which compliance is not mandatory. These definitions show that standards can be both authoritative (compulsory) or voluntary, depending on the framework and the standard setter. Standards can, but do not need to be formal documents, on which certification systems are based that define procedures to verify standard implementation.

Local stakeholders such as collector organizations or other producer groups sometimes develop their own sustainability standards mainly to make sure that the resources are not depleted and still available for generations to come. Usually, such standards are no elaborate formal documents but 'good collection practices', 'good agricultural practices', 'good aquaculture practices', 'sustainable forest management practices' or similar, which are tailored to the natural (ecosystems, habitats, climate, etc.), social and cultural (traditional use, land ownership structures, religious concepts, etc.) or local financial conditions (type of local economic system, options for local value adding, etc.), and are often species-specific guidelines (e.g. Shanley & Medina 2005). In some cases, local trading companies develop such sourcing guidelines and plant monographs (e.g. Pašić & Delalić 2001). These 'bottom-up' approaches to sustainable sourcing are almost always in written in local language, as their main target audience are local collectors. Often, such guidelines are not available in writing, because collectors would be easier reached by pictorial displays and face-to-face trainings.

International traders and manufacturers may develop their own private sustainable sourcing standards, too, such as e.g. Unilever's Sustainable Agriculture Code (SAC) (Unilever 2015, 2017) or Martin Bauer's mabagrown® standard (not publicly available; Martin Bauer Group 2016). These standards are often more formal than local standards. As they cover a wide range of products, production forms and regions, their criteria tend to be less specific than those of local standards but may be tailored to the wishes and requests of clients.

Outside the chain-of-custody, generic government or private standards are available that cover aspects of sustainable sourcing of natural biological resources in various levels of comprehensiveness. Often, they are specific to a certain group of products or production forms. FSC (FSC 2015) e.g. focuses on wood and wood products, ASC (the current standard can be downloaded from www.asc-aqua.org/resources/document-resources) and FairWild (FairWild Foundation 2010a, 2010b) on plant products from wild collection. Some standard holders allow regional or national adaptation of their generic standards, e.g. the Forest Stewardship Council (FSC 2009).

Local stakeholder standard initiatives are usually bottom-up approaches, where ingredients or products with a defined quality and ecological, social, and / or cultural concept are produced and marketed. Standards developed by traders, manufacturers or third parties outside the trade chain are top-down approaches that originate from legal requirements and / or market demand and request that producers, processors and handlers (including traders, transport companies, re-packers etc.) within the trade chain adhere to external criteria in order to market their products.

Bottom-up approaches are often used in development support concepts and start with the question how a product can be created that has a uniqueness in quality or an attractive story to tell in order to create a market for the product. There are many bottom-up local standard and guideline approaches that mainly aim to guarantee long-term local resource availability, without having a specific market in mind when developing the guidelines (e.g. Shanley & Medina 2005). Such products may only be traded locally or at the national level. Bottom-up approach described for sustainable coffee production in Indonesia by Wijaja et al. (2017) usually rely on existing international demand, on successful partnership concepts (implementation of a mediated partnership model) and the willingness to relate the local initiative to an international standard.

Top-down approaches either rely on existing markets and their demand or follow predicted new market trends. Sustainability standard initiatives such as Fair Trade (various different international standards such as FLO / Fairtrade International, Fair Trade USA, Fair for Life, and others), ecological sustainability standards (e.g. Rainforest Alliance, ISSC-MAP) or company standards have shown that top-down approaches are often more successful on the market, at least in terms of economic importance, quantity and diversity of traded products and visibility for the consumer. Interviews made to evaluate the implementation success of FairWild revealed that producer companies that started implementing the standard before a market for the product was established were mostly not successful in subsequent marketing of their certified produce and gave up certification after a while. On the other hand, manufacturers or traders approaching producers and requesting them to implement the standard for a defined

range of products succeeded more often over the long term, because there was already an established or clear prospective market for the selected product(s).

While from a (national or international) market perspective top-down approaches may generally be more successful than bottom-up approaches, the latter have their own important values. At a mostly informal level, they play an important role to ensure supply continuity and contribute to sustainable sourcing and ecosystem and habitat conservation even beyond market demand (e.g. for local livelihoods and subsistence; Niemistö 2011).

It should be noted that top-down and bottom-up are not necessarily exclusive concepts and that integration of both may be useful and possible (Cairns 2003).

2. Sustainable medicinal and aromatic plant use

2.1 Historical review

MAP are – together with plants used for food, timber and fuel – among humankind's oldest and most commonly used natural resources. There is clear evidence that such plants were in use since *Homo sapiens* evolved as a species and it is not unlikely that human ancestors such as *Homo erectus* / *Homo heidelbergensis* and *Homo neanderthalensis* (Hardy et al. 2012, Shipley & Kindscher 2016) already had a good understanding of medicinal properties of plants and collected and used them on purpose to heal wounds and cure diseases. This is backed by gaining knowledge on self-medication in other animals, namely primates (Huffman 1997) such as gorillas (Cousins & Huffman 2002).

It is likely that medicinal plant use, initially developed by trial and error and later forming traditional medicinal pharmacopoeias orally transferred from one generation of shamans or healers to the next, has developed in parallel in many different human cultural contexts. The oldest confirmed written documents on medicinal plant use by humans are probably of Chinese origin. A text called 'The Great Native Herbal' (Shen Nong Ben ao Jing) is dated back to about 2.800 BC (van Wyk & Wink 2004). Sumerian clay boards indicating medicinal plant use date back to about the same time (Kelly 2009, Petrovska 2012). Also the first known Indian Veda texts (religious texts that include the principles of Ayurvedic Medicine, namely the Rig Veda) date back to about 2.000 BC (van Wyk & Wink 2004).

With the evolvement of written language and durable papyrus documentation, evidence of medicinal plant use becomes more tangible (e.g. the famous Egyptian Ebers Papyrus, which can today be found at the library of Leipzig University, Germany; it has been dated to about 1.550 BC; Ghalioungui 1987). While in the early days of *Homo* sp., medicinal plants were exclusively collected from the wild, the transformation of lifestyles from mainly nomadic to more settled forms of living allowed humans to experiment with cultivation.

With growing human population and accelerating social and economic development, demands for natural resources increased, particularly since the late 19th century. This led to habitat loss and / or overharvesting of many medicinal plant populations and threats to many MAP species (Roberson 2008). Sourcing of quite a number of plant species (mostly those that are in high demand) has been converted to cultivation, but there are still several thousand plant species collected from the wild for medicinal and aromatic purposes around the globe (Schippmann et al. 2006, Rajeswara Rao & Rajput 2010, Amujoyegbe et al. 2012).

2.2 Trade chains in wild collection

Sustainable sourcing of medicinal plants cannot be achieved without considering the role and potential influence of each party involved in MAP production and trade. Trade chains of starting material harvested from the wild vary to some degree but usually follow a comparable pattern. A general overview of such trade chains is provided in **Figure 1**.

Usually, collectors deliver their collected goods to a producer (this can e.g. be a company or a cooperative). In some cases, intermediate collectors or local traders purchase the collected goods from individual collectors and sell the goods to the producer. Processing steps may

occur both at collector and at producer levels. Some producers work with sub-contracted processors or sell their ingredients to such processors before export. In many cases, however, the ingredients are directly exported without further processing (other than drying). Some traders have their own processing units and produce finished products for their clients, while others may use the service of an external processor. Traders can be located in the country of export or – more commonly – in the country of import or any third country.

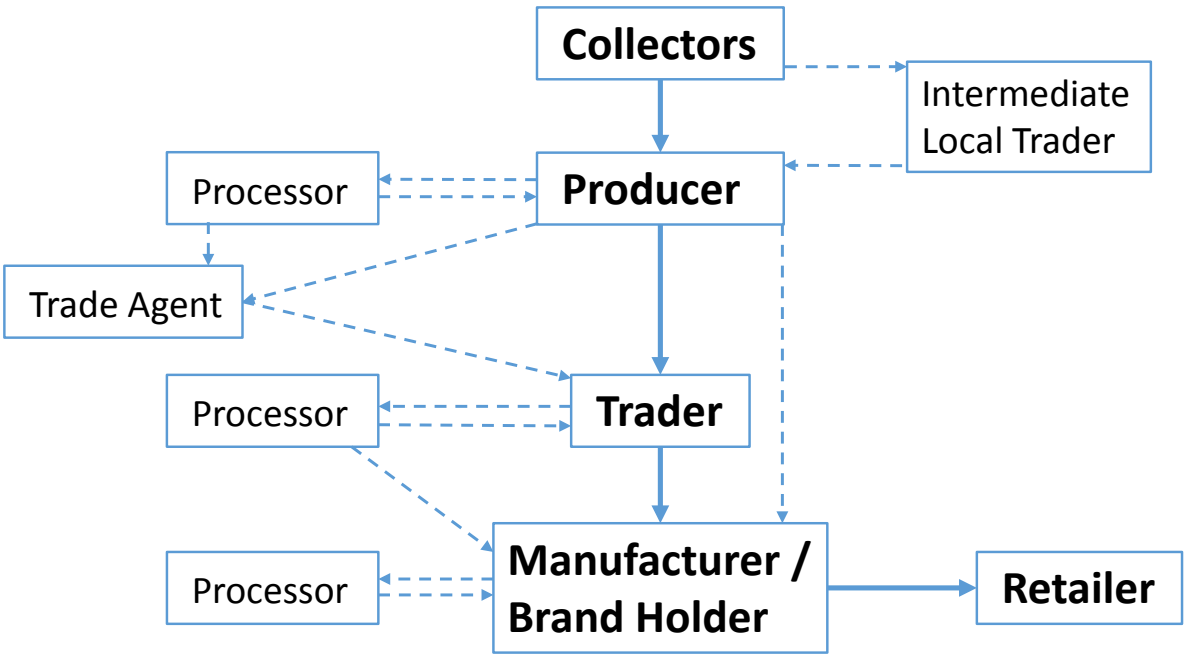

Figure 1: Schematic overview of typical wild collection trade chains. Bold straight lines indicate the main trade route within the chain of custody. Regular, dotted lines and arrows show alternative trade routes (W. Kathe).

Traders sell the ingredients or the processed goods to the manufacturer / brand holder company, which may in turn use sub-contracted processors to manufacture finished goods for the consumer market. These are usually marketed through retailers or, occasionally, through company-own retail shops or direct sale.

Implementing sustainability principles at each step along the trade chain is important to guarantee the sustainable production of the final products that are sold on consumer markets.

3. Showcases: ISSC-MAP and FairWild

In the late 20th century, awareness increased that medicinal plants were becoming threatened through over-collection and habitat loss. Schippmann et al. (2002, 2006) estimated that about 15,000 of the ca. 70,000 plant species used for medicinal and aromatic purposes, were threatened in at least parts of their natural habitats. The German Federal Agency for Nature Conservation (BfN) has been involved in implementing the concept of sustainability in various ways, through supporting the development of and implementing international conventions (e.g. CITES and the CBD), through supporting the establishment of protected areas and through standard developments. To address the problem of declining wild medicinal and aromatic plant resources, BfN has taken action since the 1990s. Among the most important initiatives were the WHO / IUCN / WWF Guidelines on the Conservation of Medicinal Plants (WHO et al. 1993), the Declaration of the International Conference on Medicinal Plants in Bangalore (1998; the text can be found at www.bgci.org/worldwide/article/132) and the Global Strategy for Plant Conservation (GSPC) of the CBD (CBD 2002, 2011). Based on these initiatives, WWF, IUCN, TRAFFIC and BfN decided to move forward and develop a standard for sustainable wild collection of medicinal and aromatic plants (Kathe 2011). BfN supported the development of the International Standard for Sustainable Wild Collection of Medicinal and Aromatic Plants (ISSC-MAP) between 2004 and 2010 and published it in 2007 (Medicinal Plant Specialist Group 2007). The ISSC-MAP defines principles and criteria for sustainable wild collection of medicinal and aromatic plants, including indicators on the development and implementation of resource management plans. While not explicitly designed as a certification tool, the ISSC-MAP, with its standard structure comprising principles, criteria and verifiable indicators, provided a good basis for the development of a certification system. In 2008, the FairWild Foundation was endorsed by the founding institutions of the ISSC-MAP as the official owner of this standard and became responsible for its global implementation. In 2010, the FairWild and the ISSC-MAP standards were combined into one new FairWild certification standard, including most elements of the ISSC-MAP (FairWild Foundation 2010a, 2010b).

ISSC-MAP and FW have been implemented in various ways. The most obvious and widely known implementation is through FairWild certification, as this is the only publicly visible tool (FairWild label displayed on consumer products). ISSC-MAP and FairWild, however, also influenced other private sector standards guidelines and policies. In addition, the ISSC-MAP and FW had a direct or indirect influence on the development or adaptation of other sustainability standards, including fair trade standards, ecological standards and management standards. ISSC-MAP and FW implementation outside the scope of certification has often been part of larger development or economic promotion projects funded by government agencies or NGOs. Some of these projects targeted on informing national or supranational legislative and regulatory processes in a number of countries.

The original concept and scope of ISSC-MAP implementation is illustrated in **Figure 2,** which was published in the original standard (Medicinal Plant Specialist Group 2007). It shows that the ISSC-MAP should link sustainable MAP use with products and people (producers, traders, manufacturers, consumers and political institutions and organizations) through four different key implementation options:

- As a certification standard
- As resource management guidelines
- As a reference document to influence voluntary codes of practice
- As a reference document to inform policies and legislative processes

The original ISSC-MAP standard focused on conservation aspects and ecological sustainability criteria, while social aspects were only covered in a general form, i.e. if directly relevant for wild collection (e.g. Principle 4 – Respecting Customary Rights; Criterion 6.5 – Worker safety and compensation).

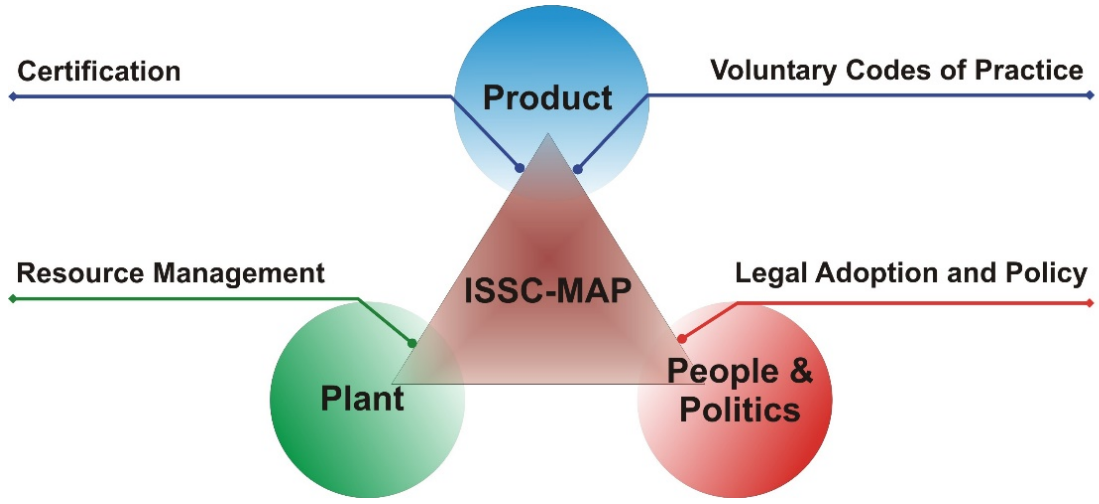

Figure 2: Priority implementation options for the ISSC-MAP. This figure was published in Medicinal Plant Specialist Group (2007).

With the publication of the new FairWild Standard in 2010 (FairWild Foundation 2010a, 2010b), the ISSC-MAP was fully integrated into and marketed as 'FairWild', although separate implementation of the ISSC-MAP in non-certification options was still possible.

In 2017, BfN conducted an internal review of successes, failures and challenges of ISSC-MAP and FairWild implementation. That review focussed on an analysis of the implementation of the FairWild standard with regard to the number of certified plant taxa, certified producers, manufacturers and products. In addition, all other (non-certification) implementation forms of the standards were reviewed. This paper does not focus on presenting the results of the research but on seeking answers to a number of questions:

- What key aspects of standard development and implementation can be identified and what opportunities and challenges arise?
- What lessons for the development and implementation of standards for sustainable use of natural biological resources can be learned from the successes and failures of ISSC-MAP and FW implementation?

ISSC-MAP and FairWild are good examples for standards that follow the concept of sustainable sourcing in a thorough and comprehensive way; both provide well-suited showcases to illustrate challenges, opportunities, successes and potential pitfalls in sustainability standard development and implementation.

4. Key aspects of standard development and implementation: Opportunities and challenges

When reviewing the development and implementation of sustainability standards for natural resource uses, such as the ISSC-MAP and FairWild, different key aspects were identified in order to categorize and structure the process of development and continuous implementation of sustainable sourcing standards. Each of the key aspects comes with its own opportunities and challenges and may thus be important to consider during development and implementation of comparable standards or guidelines.

The following ten **key aspects** within the process of sustainability standard implementation are proposed:

1. **Definition of the sustainability problem**
2. **Development of conceptual ideas**
3. **Finding partners and making agreements**
4. **Development of funding concepts and fundraising**
5. **Standard development in consultation and standard publication**
6. **Developing an organizational structure and business planning**
7. **Standard implementation**
8. **Standard marketing and promotion**
9. **Review of standard implementation and adaptations if appropriate**
10. **Regular revision of the standard or guideline**

It should be noted that these key aspects do not reflect any obligatory sequence of actions. In most cases, different key aspects will be implemented in parallel and, depending on the standard that is being developed, the sequence of implementing the key aspects described may vary. The ten key aspects require a certain formality in standard development and implementation. For this reason, they refer in practice mostly to top-down approaches, although in principle they would also be applicable to bottom-up approaches.

In this chapter each of the key aspects will be explained and discussed. Experiences made with the ISSC-MAP and FairWild are provided to highlight possible challenges, pitfalls and opportunities, respectively. Recommendations are given on a generic level, where this is possible.

4.1 Definition of the sustainability problem

In order to be successful, standard developers need to define the rationale of standard development and the goals the standard should achieve. This is a key preparatory step for standard development in all relevant sectors, be it forestry, fisheries, wild collection, garment production or others. In case of the ISSC-MAP and FairWild, this background has been described in chapter 3. The developers were aware about the challenges due to their previous work on sustainable wild collection of MAP and related analyses (e.g. Lange 1998; Schippmann et al. 2006).

Like in plant wild collection, there was serious concern about the observed dramatic and continuous decline in the world's marine fish populations due to overfishing and threats to habitats. Government initiatives often fail to effectively regulate and control resource use and to convince actors in the trade chains to apply sustainable sourcing and trade practices. This gives ample room to private initiatives to develop and implement sustainable sourcing standards. For example, the UN Convention on the Law of the Seas (UNCLOS 1982) and the Code of Conduct for Responsible Fisheries (FAO 1995) were not very successful, probably due to poor implementation (Agnew et al. 2014). As a result, the Marine Stewardship Council (MSC) was founded by WWF and Unilever in 1997 as a private initiative to combat overfishing through a certification standard (MSC 2010).

In the sectors of sustainable wild collection and fair trading, the failure of government approaches becomes even more evident. Fair Trade or Social Responsibility along international supply chains are not regulated at all by laws in Europe, China or North America, which are the largest markets for wild collected products. Ecological sustainability of wild collection is poorly regulated; even government organic standards such as the USDA-NOP Final Rule (www.ams.usda.gov/about-ams/programs-offices/national-organic-program) and the EU organic regulation (Council Regulation (EC) No. 834/2007, Commission Regulation (EC) No 889/2008 and following) include very few requirements to make organic wild collection sustainable.

4.2 Development of conceptual ideas

Sustainable sourcing standard or guideline concepts ideally aim to achieve their initial goals as identified and defined in key aspect 1. To work towards this aim, the scope of the future sustainability standard must be specified and targets defined. Standard developers should be aware of the opportunities of a new standard, but also take possible limitations and business risks into consideration.

Conceptual ideas and related outlines of standard structure and development processes should illustrate in how far the new standard covers a gap that has not yet been properly addressed by existing standards or in how far the new standard specifies sustainability aspects in a way that is innovative and has not yet been sufficiently covered by others. Both aims and target audiences / implementers of the new standard should be identified at this conceptual stage, as well as implementation pathways. Experience with existing standards has shown that the concept and aims to be achieved should not only be innovative but also

realistic; otherwise, the risk is high that a new standard may remain more or less valuable theory but may not or only rarely get implemented in practice.

An interesting current example of an innovative conceptual approach are regenerative agriculture initiatives. Presently, at least two standards on regenerative agriculture are being developed in the USA; they are still at a draft level, but it is interesting to observe that one of them (AGW standard) includes sustainable wild collection in the (pre-consultation) draft. Regenerative agriculture is a system that goes far beyond organic farming and certification and aims to implement a holistic system of production, by taking aspects such as sustainable housing, biological monitoring and holistic financial planning into consideration. It will be exciting to observe how this movement develops and whether it succeeds to challenge the (limited) sustainability concepts of organic farming and fair trade, and whether it will be able to excert pressure on law makers in the USA (and in other coutries) to adapt regulations on farming and wild collection. In any case, regenerative agriculture standards are an interesting approach towards a more holistic view of sustainable sourcing, an approach from which standard holders like the FairWild Foundation, UEBT and others could learn from in order to widen their perspective and transfer sustainable sourcing to holistic farming and wild collection practices.

Another positive conceptual example is the mechanism of consistent resource management, developed by the ISSC-MAP and taken over by FairWild and other standards. Resource management is based on the idea that sustainable harvesting of resources that grow in natural or semi-natural habitats requires a management plan that takes all influences on the resource into consideration and describes management action to be taken. The ISSC-MAP has probably been the first initiative that did not only point it out but developed a management framework, which is implemented through FairWild certification. Many other standards that also certify wild collection, including most organic standards and regulations, do not require risk analysis, resource assessments or clear management systems at landscape and ecosystem level. The indirect impact and success of the ISSC-MAP and FairWild is very likely based on the fact that they introduced a novel conceptual approach to ensure the ecological sustainability of wild collection. No other standard was (and probably still is) that detailed and meaningful when it comes to criteria and indicators that can define sustainable sourcing of herbs.

Contrary to regulatory approaches, the success of private initiatives largely depends on market take-up and related demand. In some cases, industry stakeholders may try to prevent large-scale implementation of sustainability standards through developing and lobbying for their own guidelines, which are often weaker and more superficial (e.g. the development of industry-driven forestry standards such as PEFC). Additionally, increasing consumer interest can encourage retailers to develop their own standards on food safety, quality and environmental sustainability to back up their brands and products. However, according to Banterle & Stranieri (2013), retailer-developed standard and transparency systems often go beyond mandatory requirements for a sustainable use of natural resources.

This shows that economic considerations should already be taken into account while developing a standard concept. Key questions are: Will implementation of the planned standard create an economic incentive for businesses? And: Will the standard allow each

business along the trade chain to benefit from standard implementation? It is important to note that economic benefits are not always monetary at first glance; if a standard contributes significantly to resource stability or to guaranteeing resource quality, businesses may have an economic benefit either through long-term resource availability or through improved product quality, which may give them an edge over competitors.

In the case of the ISSC-MAP, the standard concept was linked from the very beginning to considerations about potential pathways of standard implementation (see **Figure 2**). There was a certain demand by the herbal industry realizing that collection operations were not always sustainable, but at the same time, private sector companies feared that converting wild collection operations to follow sustainable sourcing practices could result in uncertainty over raw material supply, quality assurance, and food safety requirements (Kathe et al. 2010). Further guidance was requested by the private sector and hence the ISSC-MAP was developed. The original concept and the resulting Version 1.0 of the standard (Medicinal Plant Specialist Group 2007) strongly focused on ecological sustainability, with its 6 original principles, and as described in the standard's objectives (criteria to be applied to MAP species and ecosystems; management planning; resource monitoring and reporting; recommendation of requirements for certification). Except for the 'Respecting Customary Rights' principle (Principle 4) and Criterion 6.5 ('Worker Safety and Compensation'), no social aspects were considered in the standard, which probably could have been considered as a deficit in the sustainability concept of the ISSC-MAP.

Nevertheless, this concept offered the opportunity to design a document that focused on the ecological sustainability of wild collection and to introduce novel formal mechanisms such as the resource assessment and monitoring concept. However, given the obvious absence of detailed criteria and indicators on social sustainability and the lack of an open public consultation during standard development it was not always acknowledged as a 'sustainability standard'. Merging the ISSC-MAP with FairWild and the publication of Version 2.0 of FairWild in 2010 (FairWild Foundation 2010a, 2010b) made the standard more comprehensive because FairWild contributed its strong focus on social sustainability to the combined standard.

The lack of a public consultation process in standard development or revision processes has two main disadvantages: 1) The credibility of the standard and of the standard holder may be questioned by competitors, by target groups and by the media. As clear and internationally acknowledged sustainability standard development procedures, including consultations, were defined by ISEAL (2013, 2014; see also key aspect 5) any sustainability standard developer or holder that does not adhere to these may have a credibility problem and may face a hard time in explaining, why the standard has not been developed in compliance with ISEAL principles and has not been approved by ISEAL. 2) A public consultation process offers the opportunity to get many stakeholders, among them future standard implementers, on board at an early stage, hence allowing them an influence on standard development. This can be a huge advantage with regard to future acceptance and take-up of the standard.

It is probably the lack of public consultation and neglecting the importance of economic factors that have contributed to the fact that today, after ten years of implementing ISSC-MAP and FairWild as certification standard, only about ten producer companies are currently

certified and six brand holders registered as licensees. These small numbers illustrate a key problem when it comes to sustainable sourcing of natural resources: it is largely market driven. Companies would only go for adopting the principles and criteria of a rigid sustainable sourcing standard if they 1) benefit from it economically (directly or indirectly) or 2) if they can use the standard and / or certification to underpin their own branding concept or reputation. The fact that FairWild certification is mostly used for common species / ingredients can also be explained by an economic mechanism: these are often ingredients that are traded in high volumes. The costs of certification and standard implementation (compliance costs and direct certification costs) are lower if the target species is common and traded in large quantities as compared to low volume or rarer species. In the latter, higher costs for resource assessment / monitoring and management planning would incur that can likely not be compensated by trade revenues. In addition, it is of relevance that a certain minimum percentage of certified ingredients must be observed for most standards in order to label the final product as 'certified' and using the certification label (e.g. in FairWild: a minimum of 20 % in dry weight, excluding water and salt, must be observed in order to use the trademark on the front label; FairWild Foundation 2016). Consequently, companies tend to get high volume ingredients into certification, because this will allow them to use the respective trademark and reduce the per kg certification and standard compliance costs. This mechanism is not only relevant to small-scale niche standards but also to private and company standards such as mabagrown® / UTZ Certified, Fairtrade International, Fair for Life, and others. It is an interesting lesson learnt that these mechanisms may not have been sufficiently considered when developing the concepts for the ISSC-MAP and FairWild.

Another aspect that could be important at the conceptual level for a niche standard such as FairWild is the question of scope. International standards covering sustainable agriculture have a considerable gap with regard to 'the wild', i.e. ecosystem and habitat protection and fostering natural populations. Most standards have criteria that do not allow large scale land conversion (e.g. clear-cutting of rainforest, primary or old growth forests) for a defined period before cultivation, but other than that, the relevance of cultivation practices for natural ecosystems is mostly not well dealt with. Aspects like establishing and taking care of compensation areas for land conversion to cultivate the target species, natural population monitoring and others are missing in most sustainable agriculture standards. A sustainability standard such as FairWild could make the difference and demonstrate that it is possible to develop a meaningful and yet inclusive standard that includes sustainable herb farming to increase its scope and impact. While not taken into account in the original concept, these aspects may well be analysed and considered for the conceptualization of the next standard revision.

4.3 Finding partners and making agreements

No private standard developer or related organization can succeed without partnerships and agreements with other stakeholders. Standard holders may cooperate with each other (e.g. to develop common guidance documents or strive for mutual equivalency recognitions of standards), they may opt for industry partnerships (e.g. UEBT has an industry membership and partnership system), or develop agreements or accreditation systems with certifiers.

The most radical form of cooperation and agreement is merging different initiatives into one, such as the merger of the ISSC-MAP and FairWild in 2008. Another, more recent, example is the merger of UTZ Certified and Rainforest Alliance (www.rainforest-alliance.org) under the Rainforest Alliance umbrella, with a new combined certification programme planned to be published in 2019. Also the merger of Fair for Life and Ecocert Fairtrade (ESR), resulting in a new, combined Fair for Life standard (Fair for Life 2017), is an example of collapsing different standards into one. Such mergers allow a market increase and / or the combination of standards with different scopes and expertise. However, there is a risk that standards either become too complex or, to avoid such complexity, that criteria are levelled out and become less rigid or meaningful.

Less radical and generally more common is the cooperation with other standard holders with the aim to acknowledge each other (mutually or one-way) as equivalent. Fair for Life e.g. accepts FLO Fairtrade International, Fair Trade USA, FairWild, Naturland Fair and the Small Producer's Symbol standard as equivalent (www.fairforlife.org), while FairWild does not offer equivalency recognition of other standards on a general level and restricts equivalency acceptance to the level of labelling products with ingredients certified according to different standards (FairWild Foundation 2016).

Instead, the FairWild Foundation has a number of operational and strategic partnerships to implement its strategy and achieve its targets. The most important partnership is the agreement with TRAFFIC (until 2020), which secures the foundation's operation, hosts the FW Secretariat, provides infrastructure and personnel as well as technical support. The FW Foundation has a Memorandum of Agreement with the IUCN-MPSG, which provides support in developing methodologies, agrees to prioritise the IUCN Red List Assessments for status of species to be certified according to FW and specifically carries out initial FW risk analyses for wild collection of certain plant species in a given country or region (e.g. *Arnica montana* flowers in Hungary). A new accreditation system was developed in 2017, which allows any interested certifier to apply for accreditation by the FW Foundation. With each certifier, separate and non-exclusive agreements will be made (see also www.fairwild.org/news/2017/6/23/new-accreditation-system-and-auditor-training-programme-for.html).

Other comparable standard holders such as UEBT rely on member partnerships. Differentiation is made between provisional members, trading members, and affiliate members (www.ethicalbiotrade.org/membership/), a mixture of NGOs, foundations and industry partnerships. The FSC is an international membership organization, too; its governance is based on participation, democracy, equity and transparency (https://ic.fsc.org/en/what-is-fsc/governance).

Partnerships and related agreements allow inter-institutional support and cooperation, can improve market access and reduce costs, e.g. for the development of implementation tools. However, cooperation can also involve risks, particularly for small sustainable sourcing initiatives and standard holders, as potential cooperation partners may be competitors and may plan takeover rather than eye-level cooperation (e.g. the current merger of Rainforest Alliance with UTZ Certified and the takeover of Fair for Life by Ecocert). Industry partnerships or memberships can also influence the independence of an organization and its decision making processes (which is e.g. currently discussed in MSC implementation practices; see e.g. www.greenpeace.de/themen/meere/greenpeace-position-zum-marine-stewardship-council-msc).

4.4 Development of funding concepts and fundraising

One of the biggest challenges for standard developers and holders, during the start-up and implementation phases alike, is funding. Considerable personnel capacities are required to develop a standard, carry out public consultations, regularly review and revise the standard, develop a quality management system and implementation guidelines and ensure continuous support and administration.

To develop a financially sustainable structure, a funding and fundraising concept is crucial. Often, this is done together with business planning. The ISSC-MAP tackled this issue by developing a 'Corporate Plan for ISSC-MAP' (Philipps 2008; confidential document), which was then replaced by a business plan of the FairWild Foundation after the merger of FairWild and ISSC-MAP.

Licence or membership fees are important regular sources of income for private standard holders. License fees usually only apply if a standard is implemented through a certification system; such fees are charged to brand companies that market a product using the respective label on their products. License fees have two main components: 1) a fixed annual service fee (often depending on the operational size of the licensee) and 2) a sales-specific fee (a defined percentage calculated on sales prices per kg of sold and labelled products is charged as license fee; usually, the percentage decreases with increasing annual sales figures).

Not all organizations call those fees 'license fees'. Initiatives such as FSC, FLO / Fairtrade International, UTZ Certified, and FairWild have implemented a license or similar fee system. UTZ Certified, e.g., uses the terms 'membership fee' (which more or less equals the 'annual service fee') and 'program fees' (sales-specific licence fee, which is charged to 'first buyers' along the supply chain, depending on the quantities of certified produce they purchase; see UTZ Certified 2014 as an example; full fee overview at https://utz.org/wp-content/uploads/2017/06/Membership-Program-Fee-Overview.pdf). The FSC also has a 'membership fee', depending on the size of a company, and an annual administration fee for trademark licenses. FairWild does not charge a membership fee but a license fee (depending on quantity of sales) to all brand holders ('licensees') that wish to use the FairWild trademark on products (FairWild Foundation 2014). Fair for Life does not charge any license or membership fees; as the standard is de-facto owned by a certifier (Ecocert), costs are recovered through the certification fees.

Many holders of private sustainability standards cannot rely on income from license fees exclusively and depend on additional funds from various sources, be it government funds (part of the funds for the ISSC-MAP development were granted by BfN, a German government agency), private foundations or private sector contributions. Standard holders are usually not very transparent in sharing where there funds come from. Some details are provided by MSC, showing that in the financial year 2015 / 2016, about 73 % of its income was through logo licensing, while about 24 % came from donations and legacies (www.msc.org/about-the-msc/our-funding-and-finances). In its funders' portfolio, government agencies appear (e.g. DEFRA, BfN, The Scottish Government), as well as the private sector (e.g. Unilever, Tesco) and private foundations (e.g. AK Foundation, The Rufford Foundation). FairWild reported that about one third of its annual income in 2016 was obtained from donations and grants, while about two thirds came from license and trader fees (FairWild Foundation, personal information).

For the FairWild Foundation, as for many other standard holders, the main challenge is securing core funding for its organization, mainly for the Secretariat, as medium- or long-term grant funding is hard to come by. Organizations may be tempted to accept grants or financial support from governments or the private sector, but this may involve risking the organization's independence, because especially private sector companies may be trying to influence the standard holder to consider company interests and may link financial support with positive responses on considering commercial company interests. For small organizations such as the FairWild Foundation or UEBT it is a challenge to secure personnel capacity for fundraising, as such activity requires specific knowledge and skills.

4.5 Standard development in consultation and standard publication

Developing a guideline or normative standard document is the first practical step to bring to life the idea of transferring the sustainable sourcing concept into an applicable and verifyable tool. As for the ISSC-MAP, a first draft standard was formulated and subjected to subsequent worldwide consultation and comments within the IUCN-SSC MPSG expert network. Input was also sought from selected industry and certification experts as well as from selected NGOs and IGOs, leading to a first full ISSC-MAP standard document. This procedure allowed informed input into the standard development process from various different stakeholder groups, but it was no public consultation. Most developers and holders of sustainable sourcing standards try to carry out the development and revision processes in accordance with the ISEAL Code of Good Practice in setting social and environmental standards (ISEAL 2014). This includes a public consultation process (clause 5.4; ISEAL 2014) and following ISEAL's Credibility Principles (Principles for Credible and Effective Sustainability Standards Systems; ISEAL 2013). FSC, MSC, FLO / Fairtrade International, Rainforest Alliance, UEBT, and UTZ Certified, among others, are full ISEAL members, while the FairWild Foundation, Fair Trade USA, and Global G.A.P, among others, are only community members (www.isealalliance.org/community-members).

While the ISSC-MAP and FairWild have not yet gone through a fully public consultation process, the ISSC-MAP developers used a different approach during the standard's development phase: several field consultations were carried out in parallel to the standard

drafting and stakeholder review process. Sites for field consultations were selected to offer a variety of different collection set-ups, regions and management situations (Kathe 2008). Field consultations were carried out in Bosnia-Herzegovina, Brazil, China, Ecuador, and Namibia (Medicinal Plant Specialist Group 2007). Experiences from some of these early trial projects did not only influence the standard development directly, but were also followed up on through a subsequent project called 'Saving Plants that Save Lives and Livelihoods', implemented between November 2007 and March 2010 (Kathe et al. 2010). The main objective of this project was the trial implementation of the ISSC-MAP illustrating different implementation options and in various wild collection settings around the world. Implementation was carried out in field projects in South America (Brazil), Europe (Bosnia and Herzegovina), Asia (Cambodia, India, Nepal), and Africa (South Africa, Lesotho).

The main field implementation steps were: 1) Situation analysis (including e.g. the conservation status of the species, scope and quality of available knowledge, importance for local livelihoods, market links and business concepts); 2) Development of adapted training material and local ISSC-MAP training sessions; 3) Resource Assessment using a system developed by Danna Leaman (Leaman 2008); and 4) Management planning based on the results of the resource assessment.

Among the most important lessons learnt were: 1) Importance of participatory approaches to resource assessment, monitoring, and management planning are the main key to success and required to obtain support from all stakeholders; 2) Reliable business links are often crucial for project success; 3) Strong and well-developed local partner organizations and a network of experts are prerequisites for long-term success; and 4) Translation of the ISSC-MAP and easy-to-read guidance documents into local languages is important to facilitate adoption of the standard in the target areas (Kathe et al. 2010).

Experiences in ISSC-MAP and FairWild standard development processes have shown that the parallel trial implementation in cooperation with selected local operations in different regional, cultural and structural contexts were highly beneficial for ground-truthing the requirements of a sustainability standard at an early development stage. Targeted stakeholder consultation was considered a necessity given the limitations of available funds and personnel capacities, but the lack of a fully public consultation according to ISEAL principles has been a notable deficit in standard development. It did prevent additional potential stakeholders from contributing to standard development, which is not only important for international recognition and credibility but also may have an effect on the potential adoption of a published standard by potentially interested parties.

Today, the publication of standards does not pose any particular challenges. Standards are usually published by the standard holder on its website. The standard holder is normally also the author of the standard and an official reference for citation is provided in the standard document. Hard copy publication is not common any more.

4.6 Developing an organizational structure and business planning

Development, implementation and maintaining a standard requires a certain organizational structure to ensure continuity and provide services such as marketing and promotion, developing implementation guidelines, standard and trademark administration, control of standard implementation and regular standard implementation review and revision. Such an organizational structure usually requires an administrative set-up and business planning. Most standard holders are charitable organizations and develop their own administrative unit and defined governance structure.

The ASC e.g. has a fairly complex structure (www.asc-aqua.org/about-us/governance) with 8 departments (Commercial; Communication; Development; Finance; Governance; Logo Licensing; Programme Assurance; Standards & Science) and a management and administration section; it is supervised by the ASC Supervisory Board and supported by a number of technical groups (Technical Advisory Group; Technical Working Group on Group Certification Requirements; Steering Committee – Feed Standard Development). Fairtrade International (formerly FLO) on the other hand is an international not-for-profit multi-stakeholder association of currently (as of May 2018) 20 national Fairtrade organizations, three producer networks and a central office in Bonn, Germany; besides, there are nine different Fairtrade Marketing organizations and the certification body FLOCERT (www.fairtrade.net/about-fairtrade/fairtrade-system.html).

The FairWild Foundation (www.fairwild.org/structure) is governed by a Board of Trustees and an Executive Board; its technical work is implemented by the Secretariat and its Technical and Advisory Committees. The Secretariat is hosted by TRAFFIC in the UK. The Board of Trustees has presently seven members (an updated list and current positions can be found at www.fairwild.org/whoswho) from NGOs, the herbal industry and internationally experienced MAP experts. The work of the foundation is supported by three committees (Communications and Marketing Committee; License Committee; Technical Committee) and an advisory panel.

There are no clear advantages or disadvantages to any particular form of governance. The most important aspects are that the governance and administration structure fits the aims and processes of the respective organization or standard holder and that it is efficient. Efficiency means that sufficient personnel is available to take care of all tasks a standard holder has to perform (administration, stakeholder communication, PR work and media communication, fundraising, standard and related guideline development and revision, accreditation systems, etc.) but that at the same time the administrative overhead is kept as small as possible, because fund availability is often a restricting factor for standard holders. In any case, business plans should be developed and regularly updated, not only to secure bank loans if needed, but also to provide guidance and a practical tool against which workplans can be developed and implemented and periodic financial reviews can be carried out.

4.7 Standard implementation

Sustainability standards can be implemented in various ways. They can form good practice guidelines for local sourcing (most locally developed standards and many company standards), serve as baseline to ensure comparable quality and sourcing practices across a company's assortment (e.g. mabagrown®; www.martin-bauer-group.com), may be used as standard reference for certification (e.g. FairWild Foundation 2010b; Union for Ethical Biotrade 2012) or be implemented through regulatory processes (e.g. USDA-NOP; www.ams.usda.gov/rules-regulations/organic). The ISSC-MAP and FairWild are interesting examples of standard implementation and related concepts, because the standards were designed for a variety of quite different implementation options (see **Figure 2**), even though the scope has been restricted to wild collection. Individual local implementation through resource assessment and monitoring as well providing guidance for landscape and habitat level resource management planning was an important goal. Offering guidance for regulatory processes and influencing voluntary codes of practice were also aims of ISSC-MAP and later FairWild implementation. From the very beginning, efforts were made to follow these different implementation options in parallel.

With this approach, the ISSC-MAP and FairWild were fairly unique, because most other sustainability standards had and still have a clear focus on one implementation pathway. MSC, ASC and FLO / Fairtrade International e.g. are focusing on the implementation of an international certification system. They certainly influenced other standards and regulatory processes as well, but this was never a defined aim of the standards. The focus on one implementation pathway has its advantages, because it allows streamlining efforts and using available funds to achieve one clear goal: increase the number of certified operators, hence achieving a wider impact and leadership on the market in the specific sector. FairWild did not focus on such a clear target and has remained a 'small' certification system. Even considering that the certification of wild collection operations represents a small niche market, other certification systems are more successful in terms of outreach and certified operators (e.g. organic certification; mabagrown® / UTZ Certified) than FairWild with a constantly low number of certified operators (for more details see key aspect 9).

However, the indirect impact of a standard can be a distinct advantage of a concept that is based on multiple implementation options. It can contribute to making sourcing of biological resources more sustainable and improve livelihoods even if certification is no option, because there is no market for the target product(s), or because demanded and harvested volumes are too small to make a certification process and system financially viable. The implementation review carried out in 2017 has shown that at least 40 different ISSC-MAP and FairWild implementation projects were implemented across the world, in which certification was no or not the prime target of standard implementation (FairWild Foundation, confidential information).

4.8 Standard marketing and promotion

Sustainability standards can be promoted directly through the standard holders or partners, or indirectly through actors on the market (producers; traders; brand companies; consumer organizations) or governments. Especially small sustainability standard initiatives often struggle when it comes to marketing, because they have insufficient financial and personnel capacities to promote their standard(s).

Larger not-for-profit initiatives such as FLO / Fairtrade International reach a substantial impact by marketing and promoting their certification system through a wide network, such as the national Fairtrade organizations, producer associations and member organizations. They gain considerable publicity through initiatives such as the Fairtrade Award and the Fair Trade Fortnight (www.fairtrade.org.uk/Get-Involved/Current-campaigns/Fairtrade-Fortnight).

Communications, advocacy and outreach for FairWild are undertaken by the FairWild Secretariat, with the support of its Communication and Marketing Committee. To expand the market share, a time-limited "Market Share Task Team" was established by the FW Foundation with the aim "to formulate a targeted engagement plan to enlist involvement of a critical mass of influential companies in use of FairWild ingredients and a strategy for achieving equivalency recognition with relevant standard / certification bodies" (FairWild Foundation; internal document). Since 2014 the FW Foundation has organized regular industry meetings and retreats in the UK and the USA and participated in industry meetings held. The problems companies faced in establishing FairWild trade chains, as well as opportunities to overcome these obstacles, were analysed with the assistance of an embedded student placement from Van Hal Larenstein University (B.Sc. International Development Management – Sustainable Value Chains), and a summary was published by Antosch & Morgan (2017).

While undoubtedly advocacy and policy work play an important role in the promotion of an initiative, the question may be asked why it seems to be a challenge for FairWild (and the ISSC-MAP as part of it) to place itself on the market in a similarly exposed position as FSC and MSC successfully did in the sectors of sustainable forestry and fisheries. There are some significant obstacles for FairWild, which were no serious problems for FSC or MSC. Both FSC and MSC (the latter in combination with ASC) cover a whole market segment and can set rules that effect a large amount of products directly (wood and wood products; fish and fish products from both fisheries and aquaculture), while there are virtually no products on the market that are made from wild collected herbs exclusively; most are mixed products, in which wild collected resources only constitute a minor percentage; therefore, it is hard to label a product FairWild, if the standard only covers wild collected starting material and derived ingredients. In their sectors, FSC and MSC have less competition than FairWild; PEFC and other largely industry driven forest and wood certification systems are competitors to FSC, but it is difficult to call these sustainable sourcing standards (Ford & Jenkins 2011). While the ISSC-MAP part of FairWild is fairly unique, the fair trade section is not, and there are numerous fair trade standards with comparable criteria available, which are already covering a good portion of the market, and which certify wild collected raw materials, ingredients and consumer products, too (for an overview see www.fairtradewinds.net/guide-fair-trade-labels).

Marketing and promotion of the ISSC-MAP and FairWild is an interesting example because the standard is not only implemented through the certification system but also through other pathways, often with the help of multipliers. Industry partnerships with large traders and brand companies in the herbal products sector resulted in adoption of uptake of the standard or of selected elements, such as formal resource assessment and management planning, by private companies and by other standards. Examples are the Soil Association Wild Harvesting Standard (not yet published), AHPA's Good Agricultural and Collection Practices for Herbal Raw Materials (American Herbal Products Association 2006), the Agricultural Production Standard of Fairtrade USA (Fair Trade USA 2017), and the mabagrown® standard of Martin Bauer GmbH & Co. KG (not publicly available), among others. Some reference the ISSC-MAP or FairWild, others don't, but there is a considerable marketing and multiplication effect in such adoption, because trade chains can be reached and indirectly influenced that would otherwise never have been accessed, because product certification according to FairWild would not have been economically feasible. Beyond certification, the ISSC-MAP and FairWild have become key reference standards and concepts in industry circles. The incorporation of formalized resource assessments and management planning into a sustainable sourcing standard for medicinal and aromatic plants has been a success story; companies interviewed indicated that this is one of the best and most meaningful elements of the FairWild standard. Some medium and large sized companies use the system for supply chains beyond certification, too, in order to make sure that sourcing is sustainable and a long-term supply can be guaranteed.

A considerable marketing success of the ISSC-MAP was its influence on the making of CITES Non-detriment Findings (NDFs). A prominent example within the scope of CITES NDFs is *Pelargonium sidoides* (a non CITES-listed species). The ISSC-MAP was implemented within a project on Sustainable Management of *P. sidoides* in South Africa and Lesotho (TRAFFIC 2015). An NDF for *P. sidoides* in Lesotho was prepared by Newton et al. (2008). Subsequently, a very detailed study on the sustainability of harvesting *P. sidoides* in Lesotho and South Africa was performed as a PhD thesis by Motjotji (2011). Based on this preparatory work a 'Biodiversity Management Plan for *P. sidoides* in South Africa 2011-2020' was developed and published in the Government Gazette as Notice 433 of 2013 (Government of the Republic of South Africa 2013). On a more general level, the ISSC-MAP was introduced to CITES and the NDF process in an official CITES NDF workshop hosted by the Government of Mexico in November 2008 by Danna Leaman (Leaman 2008), with a focus on the relevance of principles 1 and 2 and the resource assessment guidance of the ISSC-MAP for the making of NDFs. A more comprehensive report on the same topic was published by Leaman in 2009 within the scope of a WWF Germany project (Leaman 2009). A brief reference of the ISSC-MAP and FairWild in the context of CITES NDFs is also included in the CITES NDF Guidance for Perennial Plants, published by BfN (Leaman & Oldfield 2014).

Another marketing success of FairWild was its influence on the Global Strategy for Plant Conservation (GSPC). In the GSPC implementation process, there are numerous cross-references to the FairWild standard and FairWild certification. In the 2014 plant conservation report (Sharrock et al. 2014), the FairWild standard and its importance to meet Target 12 of

the GSPC are described in detail. FairWild has also become part of the GSPC 2021 Toolkit (www.plants2020.net) developed by BGCI.

4.9 Review of standard implementation and adaptations if appropriate

Each standard holder should carry out regular implementation reviews in order to verify the level of implementation, identify gaps and challenges and allow subsequent adaptation of concepts and implementation practice to improve its impact.

The review of ISSC-MAP and FairWild standard implementation between 2007 and 2017 carried out by BfN analysed the successes, failures and challenges of implementation of the FairWild certification system and of the other three defined standard implementation pathways as shown in **Figure 2**.

The review showed that the most obvious challenge is the scope of impact of the certification system. As confirmed by most interview partners, FairWild and the ISSC-MAP succeeded to introduce a certification system and had a positive impact on target plant populations and their habitats, but: 1) the number of certified producers (around 10) and brand companies (around 6) has remained at a constantly low level for the past 10 years; 2) the number of certified plant taxa is small (around 20) and most of them are very common species with often large populations. As indicated by several interview partners, there is concern that this small number of devoted brand holders (and hence low market presence of FW to the consumer and the general public) is a big risk for the future of the certification system. In an interview, UEBT pointed to this problem as well, not only for FW but also for UEBT and other smaller initiatives that are not fully mainstream.

Among the reasons indicated by interview partners were difficulties in achieving compliance with FairWild and a lack of economic incentive. The following challenges to achieve a more positive economic impact through FairWild certification were identified, among others: 1) high compliance and certification costs; 2) insufficient level of FW volumes demanded by the market; 3) trade volume forecast higher than actual purchase volumes; 4) competitiveness of the herbal tea market; complexity of FairWild may be a disadvantage as compared to standards that are easier to comply with; 5) lack of increase in product prices; no or little price differential between organic and FW certified produce.

As already indicated above, ISSC-MAP and FairWild was very successful in influencing other standards, the private sector and processes such as CITES NDFs. However, there is no indication, that the ISSC-MAP or FW had any influence on organic regulations, neither in the USA nor in Europe. Still, influencing regulatory processes is an important task for any standard holder that does not only want its own standard(s) to succeed on the market but aims to make the use of natural resources sustainable on a larger scale. The relative lack of success in this field after 10 years of implementing the ISSC-MAP and FairWild as sustainable sourcing standards and the patience and stamina that is needed to successfully influence political processes should not deter standard holders from further efforts, being aware that success may also depend on the availability of financial and personnel capacities.

4.10 Regular revision of the standard or guideline

Standards that represent a normative framework for the sustainable use of natural resources need to be kept up-to-date. Therefore, regular standard revisions are necessary. Sustainability concepts and their international reception adapt over time, new tools for resource management are developed and implemented and new reference frameworks become available (e.g. the UN's MDGs in 2000; United Nations 2000) or important international resolutions (e.g. the United Nations '2030 Agenda for Sustainable Development'; United Nations 2015, including the resulting Sustainable Development Goals) are adopted. Experiences made during standard implementation can also lead to targeted suggestions for adapting and improving the document within the regular revision process. Organizational changes or new strategies or policies of standard holders may trigger standard revisions, too.

The Fair for Life Programme e.g. was revised in 2011 (e.g. Bio-Foundation 2011, wild collection module) and again in 2017 (Fair for Life 2017), following the merger of Fair for Life and the Ecocert ESR Standard (Ecocert Environnement 2013). UEBT's Ethical BioTrade Standard from 2007 (Union for Ethical Biotrade 2007) was revised in 2012 (Union for Ethical Biotrade 2012); in 2016 / 2017 a certification standard for different product groups was developed (see Union for Ethical Biotrade 2017 for herbal teas), following a strategic change from a B-to-B service provider to a certification standard holder and a partnership with UTZ Certified. The FairWild standard was last revised when the ISSC-MAP and FairWild merged (FairWild Foundation 2010a, 2010b).

Ideally, each formal standard revision is carried out in accordance with ISEAL principles (ISEAL 2013, 2014), including a public consultation process. Such a process is time consuming and costly, but it is important for any holder of a sustainable sourcing standard to make standard development and revision processes transparent and to increase the standard's international reputation. Besides the time and money it takes to carry out a full revision process including public consultation, there are further challenges to standard revisions. Stakeholder groups may have different views about the nature of intended standard adaptation and it is not always easy to find a compromise. There may also be the risk that standard revisions add additional layers of complexity to the document (e.g. if as many comments as possible are integrated into the new standard), which makes implementation of the standard more challenging, or that revisions result in washing down the level of detail of compliance requirements and hence make the standard less meaningful. The latest revision of the Fair for Life standard is a good example for both developments. The standard has generally become more complex (e.g. different criteria for each operator, depending on the size and nature of the operator; requirement to work towards organic production) but has given up its modular approach; therefore, compliance criteria especially for wild collection have become more superficial and less meaningful (see Fair for Life 2017). For FairWild, the main current challenge is the lack of revision: the standard has not been revised since 2010. Initiating a revision process in the very near future will be crucial, especially given the fact that all comparable, competitive standards were revised during the last few years.

5. Conclusions

The review of successes, failures and challenges of implementing the ISSC-MAP and FairWild as exemplary, comprehensive standards for sustainable sourcing of natural resources from wild collection over a period of about 10 years has identified a number of lessons learnt. These are not only relevant to the two standards but more generally to all initiatives that aim to standardize sustainable sourcing concepts. It was therefore a reasonable approach to generalize the findings of the review to provide guidance for sustainability standard conceptualization, development, implementation, management and promotion, as illustrated by the proposed ten key aspects of sustainability standard development.

ISSC-MAP and FairWild were used as showcases, because they illustrate challenges, opportunities, successes and potential pitfalls in sustainability standard development and implementation. On a technical level, they are good examples for standards that follow the concept of sustainable sourcing, as outlined in the introduction, in a thorough and comprehensive way. They represent a meaningful contribution to both resource security and to achieving the aims of the SDGs, namely SDG 15. ISSC-MAP and FairWild have paved the way to establish credible systems of resource assessment and continuous resource monitoring as well as management planning based on monitoring results. Numerous other standards and guidelines profited from this concept and adapted it for their own purpose, e.g. private sector standards and company guidelines, private organic or regenerative agricultural standards. The ISSC-MAP and FairWild had a significant influence on the CITES NDF process and the development of respective international guidelines on how to make an NDF. These are huge achievements and successes and show that it is possible to develop and implement a comprehensive sustainability standard for a specific commodity group and sourcing type.

However, this study has also shown that there are considerable challenges for niche standards such as ISSC-MAP and FairWild, which are only applicable to a limited range of products and require compliance with very comprehensive and rigid sustainable sourcing criteria. The FairWild Foundation decided to remain in its niche, in order to maintain its stronghold, credibility and unique selling point. Other standard holders made a different decision. UEBT's Ethical Biotrade Programme, for instance, has widened its scope from a purely BtoB guarantee provider to a certification system and is, together with UTZ Certified, a party ensuring the verification of quality and implementation of the mabagrown® standard, which is considered as equivalent to UTZ Certified (in the process of merging with Rainforest Alliance). mabagrown® has adopted the ISSC-MAP / FW mechanisms of resource assessment, monitoring and management planning for its wild collection supply, but it is also applicable to ingredients sourced from cultivation and it contains detailed criteria on product quality and safety. Both Fair for Life and the AGW Certified Regenerative standard (currently in development in the USA) decided on a wide scope and are applicable to both agriculture and wild collection.

These examples illustrate the importance of conceptual approaches to standard development, implementation and revision. The ten key aspects, as described above, are

different steps that should be thoroughly taken into account by any future, new and experienced standard holder alike. However, these steps may not be pictured as a sequential series of stairs, with one succeeding the next. They should rather be perceived as a level structure of ten spheres or themes which adjoin or even overlap.

Coherent conceptual approaches to standard development and implementation are a key to their success. As an example, the regenerative agriculture standards currently being developed are certainly innovative approaches with a great potential. Making the concept work in practice, however, would mean to run it through a reality check. As the approach is holistic (i.e. very comprehensive), there is a certain risk that it may become an elite system that has little large scale impact. For the development of any new or the revision of an existing sustainability standard, reality verification and subsequent conceptual adaptation may help to avoid this potential pitfall.

Another example is the showcase standard FairWild. The example of ISSC-MAP's and FairWild's indirect implementation through influencing other standards such as the private mabagrown® standard to adopt the mechanisms of resource assessment and resource management planning shows that innovative concepts in a sustainability standard can have an important indirect impact. Generally, such concepts can contribute to make sourcing and trade in natural resources more sustainable in mainstream trade chains, which would otherwise not have been reached by the standard itself. Influencing other standards, however, has a downside. In an economic world that is largely driven by market demand and competition, some other standards that have taken on board FairWild principles, sometimes at lower levels of rigour, are now competitors to FairWild. The standard has served as a 'quarry of ideas' for others but did not yet succeed to create significant market impact through its own system and branding. It may be understandable that the FairWild Foundation wants to retain its strong position and unrivalled expertise in sustainable wild collection, but the risk is obvious: the approach may confine the standard to a small niche and limit its impact. In a world that grows in complexity and in options to choose from, many companies strive for reducing the number of certifications and guarantee systems they use, both for economic and consumer transparency reasons. Inclusive certification systems (i.e. systems that cover multiple aspects under one certification mark) tend to be more attractive than specialized systems, because they avoid the necessity of multiple certifications. Fair for Life e.g., a standard that was developed almost at the same time as FairWild, now has about 3,000 certified products originating from several hundred certified producers and manufacturers (www.fairforlife.org/). Its impact has become fairly substantial. However, this comes at a price: while the old Fair for Life programme had a separate, detailed module on wild collection (Bio-Foundation 2011), the new standard has reduced the requirements for wild collection considerably. There is no formal risk assessment and no requirement of management planning any more (Fair for Life 2017).

One question in particular may need to be asked: is it worth to maintain a model certification standard for a small niche market – a standard that is so comprehensive, rigid and specific that only very few companies can or are willing to use it for certification? The FairWild Foundation has not considered ideas to widen the scope and include farming into its portfolio, but it may be useful to ponder on this subject again, because the small number of certified companies and licensed brand holders is a serious problem for the future of the

standard. In practice, the majority of certified ingredients (both in number and volume) are used in herbal tea mixtures; these mixtures usually contain several ingredients that are from cultivation and others from wild harvesting. A standard that allows only the certification of part of the ingredients of a consumer product (such as FairWild) has a considerable disadvantage over a standard that can cover both farming and wild collection (such as e.g. Fair for Life).

Another aspect to consider may be the future of wild collection. Today, it is still an important source of plants and ingredients, especially for MAP and ingredients for herbal teas and supplements. However, during the past decades there has been a tendency to convert sourcing from wild collection to cultivation whenever possible and the scope of herb farming has increased worldwide. If good cultivars are available or can be produced, farming offers advantages to trading companies and manufacturers, because harvest volumes and the concentration of active ingredients are more predictable and stable. Especially sourcing of products with high demand and hence high volumes in trade were converted from wild collection to farming, such as e.g. chamomile. But cultivation is not always a feasible option: it can take a long time and costly research to bring a species successfully into cultivation; some species have so specific soil or habitat requirements that it is very difficult to provide these on a farm; wild collection is often cheaper than farming if it relies on traditional collection structures in low-income countries. Therefore we can expect that also in the future wild collection and cultivation will coexist as two alternatives, often competing sourcing options.

For FairWild this means that for its urgently needed revision process, a conceptual re-thinking may be useful, that includes all ten key aspects indicated above. For any other sustainability standard in development or revision, similar considerations may be useful, adapted to the specific sector, competition, resource availability, and market demand.

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Abbreviations

AGW	A Greener World (NGO; USA)
AHPA	American Herbal Products Association
ASC	Aquaculture Stewardship Council
BC	Before Christ
BfN	German Federal Agency for Nature Conservation (Bundesamt für Naturschutz)
BGCI	Botanic Gardens Conservation International
B-to-B	Business-to-Business
CBD	Convention on Biological Diversity
CITES	Convention of International Trade in Endangered Species
DEFRA	Department for Environment, Food and Rural Affairs (UK)
EC	European Community (used mainly in legal references)
ESR	Ecocert Fair Trade
EU	European Union
FAO	UN Food and Agriculture Organization
FLO	Fairtrade Labelling Organization (now: Fairtrade International)
FSC	Forest Stewardship Council
FW	FairWild
GACP	Guidelines on Good Agricultural and Collection Practices
GSPC	Global Strategy for Plant Conservation
IGO	Inter-Governmental Organization
ISEAL	International Social and Environmental Accreditation and Labelling Alliance
ISSC-MAP	International Standard for Sustainable Wild Collection of Medicinal and Aromatic Plants
IUCN	International Union for Conservation of Nature (Inter-Governmental Organization)
MAP	Medicinal and Aromatic Plant(s)
MDG	Millennium Development Goals (UN)
MPSG	Medicinal Plant Specialist Group of the IUCN-SSC
MSC	Marine Stewardship Council
NDF	Non-Detriment Finding (CITES process)
NGO	Non-Governmental Organization
NOP	National Organic Program, Final Rule (USDA, USA)
PEFC	Programme for the Endorsement of Forest Certification Schemes
SAC	Sustainable Agriculture Code (Unilever)
SDG	Sustainable Development Goal(s) (UN)
TRAFFIC	Wildlife Trade Monitoring Programme of WWF and IUCN
UEBT	Union for Ethical BioTrade (Amsterdam; The Netherlands)
UK	United Kingdom of Great Britain and Northern Ireland
UN	United Nations
USA	United States of America
USDA	United States Department of Agriculture (USA)
WHO	World Health Organization
WWF	World Wide Fund for Nature

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