

Article

Scouting for Food Heritage for Achieving Sustainable Development: The Methodological Approach of the Atlas of the Ark of Taste

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Abstract: Over the last two decades, scholars and organizations across the world have carried out research projects and promoted dissemination tools aimed at promoting food and food-related elements embedded in local and traditional foodways. In this regard, the documentation of food and biocultural heritage has been seen as the starting point of processes directed toward their safeguarding and promotion. Drawing from this premise, the paper presents an original methodological approach, designed within the framework of the Ark of Taste project, to map, inventory, and document food and food-related resources to produce a comprehensive dissemination tool for the promotion of local food and biocultural heritage. To this end, the paper discusses the case study of the Atlas of the Ark of Taste in Tanzania, looking at the approach used, and the challenges faced, in undertaking field and desk activities aimed at inventorying Tanzanian food products and in the creating of the gastronomic atlas of this country. Drawing from this experience, the paper highlights the potentially crucial role that food and gastronomic inventories may have in achieving UN Sustainable Development Goals from a grassroots perspective. Acknowledging the limitations and possible unintended effects of these initiatives on the protection of food and biocultural resources, the authors recognize the promising role that these tools could have in fostering the achievement of environmental (SDGs 13, 14, 15) and social sustainability (SDGs 1, 2, 3, 10) objectives.

Keywords: food inventory; methodology; slow food; Tanzania; food scouting; SDGs



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1. Introduction

1.1. Food, Heritage Studies and the Making of Gastronomic Inventories

Over the last two decades, growing attention has been paid to the recognition of food as an element of intangible heritage [1–4]. In this context, the safeguarding and promotion of food and biocultural resources have been highlighted as an important strategy to strengthen the identity of the local community, as well as to foster their economic, political, and social empowerment [5–7]. Several scholars and organizations across the world have carried out research projects and promoted dissemination tools aimed at promoting biocultural diversity linked to food and gastronomic systems. Among them, Koohafkan and Altieri [8] documented Globally Important Agricultural Heritage Systems (GIAHS), showing how these systems based on family farms and traditional indigenous knowledge can contribute to food and nutrition security and the maintenance of agrobiodiversity and environmental resilience, as well as sustain local cultures, economies, and societies. Maundu et al. [9] designed a participatory methodology aimed at the documentation of the traditional foodways and associated intangible heritage of the East Pokot community of Kenya, while Nabhan et al. [5] engaged several USA actors in identifying and valorising disappearing wild foods.

Initiatives of this kind have often led to the development of dissemination tools that come under different names, such as ‘dictionaries’, ‘encyclopaedias’, ‘catalogues’, and ‘atlases’; this paper will refer to them as ‘gastronomic inventories’. These tools often seek to improve the knowledge of resources linked to food and gastronomic milieus and to foster processes to safeguard and promote them. In so doing, they aim at providing tools (possibly) able to support communities in achieving specific objectives that can cluster around UN Sustainable Development Goals (SDGs).

Despite the heterogeneity of these publications, it is possible to identify two macro-categories, based on their object of interest and the initiatives from which they are developed, the actors involved in their design, the methods of dissemination, and the specific objectives pursued through these initiatives. This classification reflects two different understandings of the term ‘food heritage’, the first being closer to the concept of agri-food heritage and the second closer to the concept of culinary heritage [10].

The first category includes a line of initiatives whose primary focus is the documentation and safeguarding of food diversity shaped by animal and plant diversity (native or well-adapted to local ecological systems) that have been strongly linked to the cultural systems of specific rural and local/indigenous communities, sometimes progressively underutilized and neglected [11]. Initiatives of this kind involve public and, more rarely, private actors operating in the agri-food sector and often in rural development programmes [12,13]. Their results are usually disseminated through publications that focus primarily on the biological and organoleptic description of species and their edible parts, alimentary uses, and associated production practices. Their main goal is to support the conservation of agrobiodiversity resources, highlighting the potential of indigenous species and associated knowledge in improving the sustainability of the food systems and food sovereignty of local communities [14,15]. Although there are references to cooking techniques and sometimes to traditional dishes, the gastronomic element plays a marginal role here.

The second group of publications focuses on food products and culinary corpora and, more specifically, on traditional dishes and recipes. There is a great diversity of actors involved in projects of this kind, since traditional cuisine is the focus of initiatives carried out by both private subjects in the gastronomic publishing sector and public organizations and institutions; this is the result of a growing interest, among national and international agencies, in the promotion of intangible heritage as a source of local development [16,17]. Such projects have led to inventories consisting of collections of recipes and dishes linked to the culinary heritage of specific geographical regions, for instance in Europe [18,19] and Latin America [20,21], which describe the preparation of the dishes and, often, elements of the social and cultural context. However, little attention is paid by these projects to the analysis of the ingredients used in recipes and their production and processing methods.

Recently, a Catalan group has attempted to untangle the conundrum of gastronomic inventories and has proposed a taxonomy for unelaborated culinary products [22], while the chef Ferran Adrià and his research team have attempted to do the same for the culinary techniques [23]. Despite these attempts, the current literature on gastronomic inventories appears to reproduce a dichotomized vision of food. To use a classic anthropological binomial [24]: on the one hand there is nature, which covers biodiversity; and on the other there is culture, which covers foodways. This representation risks being misleading because it fails to represent the complex nature of food, which holistically embraces nature, culture, and *techne* [25]. Food (and the consequential foodways) should, because of the interaction between human communities and their surroundings [26], be seen as a ‘complex whole’ that tells of the mutual influence between humans and nature that marks the deeply embedded history of any community together with its landscape [3]. In other words, food is a biocultural product and biocultural heritage [27]. In attempting to protect its diversity in a context of rapid erosion it is necessary to find models to identify, document, and communicate this complexity.

1.2. *Slow Food, the Ark of Taste Project, the Online Database, and the Atlases*

A lot of research work is still to be done, however, for concretely proposing methodologies and good practices aimed at recording the gastronomies as a whole (food ingredients, products, dishes, their instruments and techniques, ritualities of ingredient recruitment, food preparations, and consumption). The Slow Food Ark of Taste Atlases offer a model that seeks to build a bridge between the features of the two groups.

Slow Food is an international, non-governmental, non-profit organization. It was established in Italy in 1989 and, in its thirty years of activities, it has expanded to encompass over 1500 chapters worldwide and over 100,000 active members [28]. It represents one of the first examples of a food activist movement whose aim is to rediscover and promote local and traditional food against the spread of new forms of global gastronomy characterized by a deterritorialization of products and production [29]. The birth of Slow Food should be read in the context of the heated debate about post-modernity and globalization that was kindled in the 1980s [30–34]. In this cultural context, the inception of Slow Food was a reaction to the deep transformation of the foodscape, which was strongly affected, in terms of the loss of biocultural diversity, by the industrialization and commodification of food production that occurred after World War II [35]. Slow Food campaigned against these changes, and the Ark of Taste was one of the first initiatives launched by the movement on a global scale, in 1996. The project, which is still running, aims to recover and preserve ‘ecogastronomic units of concern’ [5] or, in more lay terms, ‘endangered foods’.

The Ark of Taste was created to ‘point out the existence of small-scale quality productions that belong to the cultures, traditions and history of the entire planet and draw attention to these products and the risk that they might disappear within a few generations’ [36] (p. 5). As Pietrykowski [37] stated, the Ark of Taste, through its promotion of endangered food cultures and food biodiversity, acts as a symbolic vehicle to protect products threatened with extinction. Slow Food activists use the project to raise awareness of the richness and diversity of the food cultures of the entire world, bringing global attention to the problems that are affecting their conservation.

The project consists of a digital catalogue that records different animal breeds, vegetable species, and artisanal food products such as cheeses, cured meats, traditional beverages, and so on. In 2021, the archive listed over 5,500 products from over 150 countries [38]. The products in the Ark are ‘food products, including domesticated plant varieties and animal breeds, ecotypes, populations, wild species, and processed products. [They] must be of distinctive organoleptic quality [. . . and] linked to a specific territory and the memory, identity, and traditional knowledge of a particular community [. . .]. Finally, Ark of Taste products must be produced in limited quantities and at risk or endangered due to various social, economic, and ecological factors, including habitat degradation and land use conversion, forced or voluntary migration, sedentarization of mobile populations, lack of intergenerational knowledge transfer, barriers to market entry, one-size-fits-all hygiene regulations, climate change, environmental and genetic pollution, incentives to adopt improved or foreign varieties and breeds, changing sentiments due to education and the media, and the general mechanization, industrialization, and standardization of the food system’ [39] (p. 217).

In 2017, the Ark of Taste project was enriched with a new initiative, the ‘Ark of Taste Atlases’, whose aim is to expand the body of knowledge in the database and offer useful tools for the promotion of the local food heritage of selected countries. The Atlases form a series of monographs edited and published in collaboration with researchers from the University of Gastronomic Sciences, the private university in Pollenzo (Italy) founded in 2004 by the Slow Food movement. These books organize and expand the materials available in the Ark of Taste database, providing a dedicated outlet that showcases traditional products and the underlying biocultural diversity to the general public, and specifically to local organizations, institutions, and professionals in the restaurant sectors, as well as to researchers interested in preserving and promoting local food heritage [40,41]. The making of each volume is linked to specific research funded by local Slow Food branches, by national

and international organizations, or by private investors and crowdfunding. The funds are used to finance the desk and field research, and to cover the costs of publication. At the end of 2021, the series encompassed eight volumes: Albania [42], Brazil [43], Estonia [44], Kenya [45], Mexico [46], the Netherlands [47], Peru [41], and Tanzania [48].

1.3. *The Aim of the Article*

In light of the current debates, this paper offers a methodological model for anthropologists and social scientists interested in preserving this important aspect of biocultural diversity, particularly in the context of development [49]. To this end, it presents an in-depth analysis of the structure and functioning of the research tools and methods involved by focusing on a case study [50], the making of the Ark of Taste Atlas in Tanzania [48]. In so doing, the paper reflects on the contribution that this and the other food inventory initiatives can have in the achievement of the UN Sustainable Development Agenda from a grassroots perspective.

The research that underpins this article was conducted within the framework of the international Sustainable Agri-Food System Strategies (SASS) project. The research was funded by the Italian Ministry of University and Research between 2017 and 2021 and involved European and African universities and NGOs in a project aimed at promoting the production, marketing, and consumption of neglected and underutilized species in Sub-Saharan Africa [51,52]. Interest in these products has arisen from the wide recognition of their role in ensuring food security and sovereignty in traditional agricultural systems, preserving biodiversity, and generating income and employment for local communities [13,53,54]. The project focused on Kenya and Tanzania, and specifically in three key locations: the Arusha Region in northern Tanzania, the areas around Iringa and Dodoma in southern and central Tanzania, and Nakuru County in Kenya. In these areas, since 2018, the authors have conducted research to document the food heritage of the region [45,48]. One of the results of this work was the Ark of Taste Atlas in Tanzania.

2. **Materials and Methods**

2.1. *The Tools and the Procedure of Data Collection*

The research is based on the use of tools and procedures developed by researchers of Slow Food and the University of Gastronomic Sciences since 1996. Specifically, it relies on the use of the classification and information systems of the Ark of Taste database and analyses and documents the local foodscape [55] according to the methodological model designed for the realization of the Atlases of the Ark of Taste.

The Ark of Taste database is a free and accessible platform that acts as an international showcase for the memory and heritage of endangered foods, as well as for the starting point for promoting the survival and expansion of their production and consumption. Each entry consists of a simple record that encompasses the following individual sections (Figure 1): the name of the product (1), a short, unstructured textual description of the product (100–200 words) (2), a geo-localization of the product based on the place from which it was initially nominated (3), and a textual localization of the product that encompasses geographical information as well as simple information concerning the typology of the product, the community which uses/used the product and the person who nominated the product (4).

Nduya Banana
Ark of taste

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Nduya

Nduya is an important banana variety in Machame village and in the Kilimanjaro region. It grows well in the Northern region, particularly in Kilimanjaro and Meru District in the Arusha Region. The ethnic groups which cook and brew this banana are mostly Waschagga, Wameru, and Waarusha. Nduya is very resistant to poor soil and to an arid climate. Nduya like other bananas in the Kilimanjaro region is cultivated by way of intercropping. It is normally intercropped with cassava, coffee, sunflower and even Amasoma vibere, a type of climbing yam. Normally, cow manure is used in its cultivation. Nduya is an indigenous banana variety. It resembles most banana species except that the banana shoots are shorter and wider than others. It is a small type of banana. Its banana fingers range in size from 2.4 cm (0.94 in) by 9 cm (3.5 in). The fingers are normally smaller, pointed and have straighter leaves unlike other banana varieties. Nduya banana tastes more like Ndizi Ng'ombe, with slightly bitter taste when peeled green. When ripe the Nduya banana turns yellow in colour. Nduya has been used to make Mbege, the traditional beer prepared by Chagga people to celebrate social moments of life. It used to be cultivated and sold much more in earlier days, however, it did not fare well in the markets due to the size of its fingers. However, it has always been used in ceremonies, such as in celebrating the birth of a child or in a christening. It is also presented during dowry ceremonies, and consumed in traditional Chagga weddings in the region. Nduya is important because it is the banana variety that has been traditionally used to make Mbege. Nduya is a very important banana variety because it is used to make great quantities of Mbege. Mbege is one of the main buttresses of Chagga culture, which continues the rich heritage of the Chagga people. Unfortunately due to its lack of popularity in the markets today, its use is diminishing greatly in the area and the continued cultivation of this variety is uncertain. Therefore, preserving the Nduya banana is essential in upholding the Chagga culture.

The traditional products, local breeds, and know-how collected by the Ark of Taste belong to the communities that have preserved them over time. They have been shared and described here thanks to the efforts of the network that that Slow Food has developed around the world, with the objective of preserving them and raising awareness. The text from these descriptions may be used, without modifications and citing the source, for

Territory

State	Tanzania
Region	Kilimanjaro

Other info

Categories	Fruit, nuts and fruit preserves
Indigenous community:	Waschagga, Wameru and Waarusha
Nominated by:	Aikande Charles Kileo

Figure 1. An example of an entry from the Ark of Taste database (retrieved and last accessed on 14 December 2021). The individual sections of the entry have been highlighted in different colours.

Each entry is the result of a bottom-up process of selection that has the local community and Slow Food members at its centre, as discussed in more detail later in this paper. Each nomination starts from a local community that indicates the product to be protected. The community completes the entry, following a pre-established template, by describing the product (its name, ingredients, and production area), the traditional production and/or processing techniques, and its culinary uses, indicating the motivation for its local importance, and pointing out its actual or potential risks of extinction. The data provided by the community are validated by Slow Food researchers and experts, on a national and international level, as well as through a continuous interaction with the nominator (follow-up can be made to gather more information on the product). After this second step, the product is officially entered into the database and published on the Ark of Taste website.

The materials in the Ark of Taste database are the starting point for the making of an Atlas. Each Atlas includes an average of 75 products described on a basis of an expanded record sheet specifically developed for this project. The aim of the record sheets is to systematize the information concerning the specificity of the product, its culinary uses, its social and cultural relevance, and its conservation status (Table 1).

All the information is organized in specific fields to bring together data concerning the biodiversity and data concerning cultural elements connected to the product. Together with the textual information, the record also includes a graphical representation of the product in order to improve the accessibility of the information. Thus, the records of an Atlas represent a more exhaustive, systematized, and accessible description of a product than what is provided by the database (see Figure 2 in comparison with Figure 1).

Table 1. Fields and information in each Ark of Taste Atlas entry record.

Field	Information
Product name	This indicates the name of the product as used in its area of origin, and its names in the local dialect (if applicable).
Category	This indicates the macro-category for the classification of the product in the Ark database (e.g., fruits and vegetables, honey, meat, or fish).
Scientific name	This is used for animal and plant species only and indicates the binomial nomenclature of the species.
Production area	This offers geographical information concerning the place where the product is traditionally produced, traded, and consumed (e.g., city, region, country).
Culinary uses	This describes the ways of cooking (e.g., boiling, baking, roasting, etc.), and using the product (e.g., cooking techniques and traditional recipes), and points out possible cultural uses (e.g., use in ceremonies, rituals, and festivals).
Product history	This offers a brief history of the product and its social, religious, cultural, and economic importance, evaluated on the basis of historical sources, if available, and oral testimonies. The field aims to provide information concerning the significance of the food to the community and its cultural and historical value, as well as its current socioeconomic role.
Current status	This explains why the product is produced only in limited quantities and/or the main factors that threaten its conservation. In this section, the role of the product in the market and the ultimate initiatives aimed at its protection and valorisation are presented.
Nominator information	This provides information about the person (or organization) who initially nominated the product for the Ark of Taste.

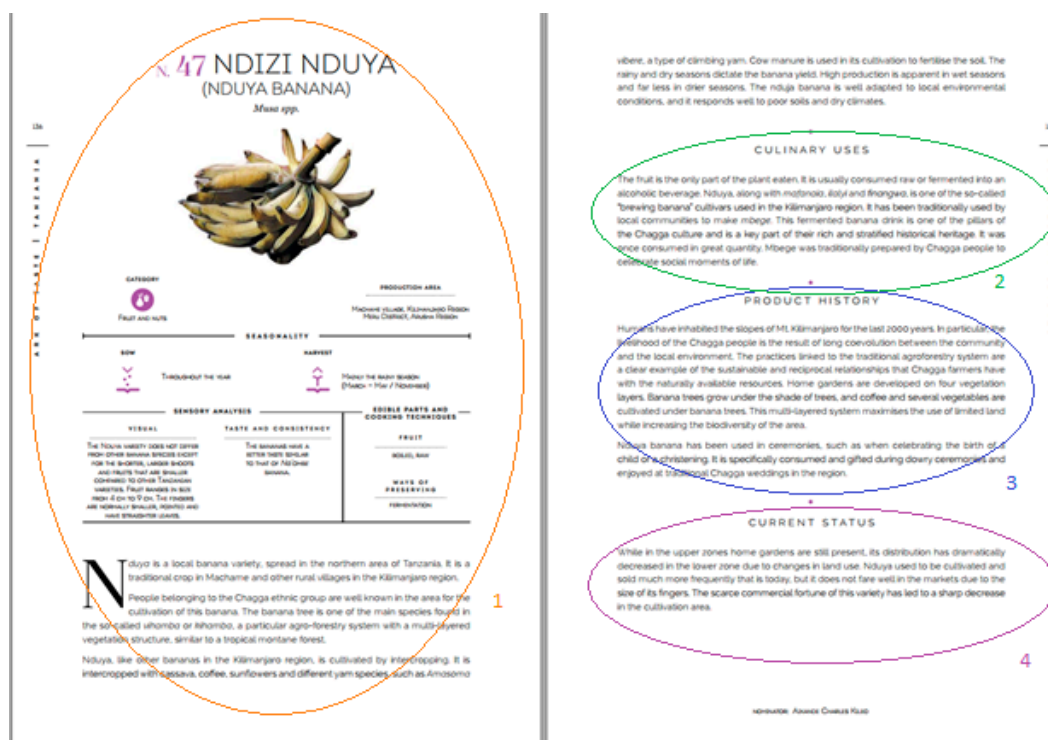


Figure 2. The same product as in Figure 1, as it is presented in the Atlas of the Ark of Taste of Tanzania. The individual sections of the entry have been highlighted in different colours.

The production of each Atlas follows a common operational flow aimed at drawing on the knowledge base already available in the Ark of Taste database and expanding this with further details and new products. In this respect, the process involves three distinct phases (Table 2) identification, during which the product is selected, and a first description

is produced; (1) data processing, in which the description is completed and finalized; and (2) indexing, in which the information for the product is validated and the product is included in the Atlas.

Table 2. Description of the operations performed for each product that is inserted into an Atlas.

Cases	Identification	Data Processing	Indexing
Product in the Ark of Taste database New product direct research (Atlas of the Ark of Taste funded projects)	Food scouting by the local research group Nomination by research group through the Ark of Taste form Validation by Slow Food Ark of Taste research team Publication in the Ark of Taste database (DB)	Completion of the information (by desk and/or field research) by the University of Gastronomic Sciences (UNISG) research team	
Product in the Ark of Taste database New product direct research (Atlas of the Ark of Taste funded projects)	Preliminary literature review by the UNISG research team Food scouting by the UNISG research group	Nomination by the UNISG research group through the Atlas of the Ark of Taste form — [Optional: Nomination by research group through the Ark of Taste form Validation by Slow Food Ark of Taste research team Publication in the Ark of Taste DB]	Validation of the information by the Atlas of the Ark of Taste research team Publication in the Atlas of the Ark of Taste
New product indirect research (Atlas of the Ark of Taste funded projects)	Training of local research team by the UNISG research team Nomination by research group through the Ark of Taste form Validation by Slow Food Ark of Taste research team Publication in the Ark of Taste DB	Completion of the information (by desk and/or field research) by the UNISG research team => — [Optional: Nomination by research group through the Ark of Taste form Validation by Slow Food Ark of Taste research team Publication in the Ark of Taste DB]	

The making of an Atlas involves the collaboration of different subjects/actors. It is always led by a primary research unit, based at the University of Gastronomic Sciences, which oversees the entire publishing process and also carries out the research (which includes remote desk research and fieldwork activities in the targeted country), coordinates the secondary research teams, processes all the gathered data, validates and finalizes the entries, and edits the Atlas. The production of the Atlas can involve one or more secondary research units made up of local researchers trained and coordinated by the primary research unit. These secondary units are tasked with collecting information in the country and extending the reach of the primary research unit. Moreover, the making of the Atlas always requires collaboration between the primary research unit and the Slow Food Foundation for Biodiversity executive team, which runs the Ark of Taste project, for the use of the data present in the Ark of Taste platform and the implementation of its knowledge base.

The actual operation that leads to a product being included in an Atlas depends on the original source of information concerning the product. The product may already be included in the Ark of Taste database, or it may be a new product identified while the Atlas is being compiled.

In the first case, the primary research unit uses the information present in the database by conducting desk and, to a lesser extent, field research and completing and finalizing the entry. Specifically, desk research activities include the search and analysis of bibliographical sources (academic and grey literature), phone calls and online interviews with nominators of the products and/or producers, as well as consultations with experts in the food and gastronomic fields (both scholars and practitioners).

In the second case, the product is identified through specific research. The research may be conducted by the primary research unit directly or by the secondary units. While research entails desk analysis (using academic sources and grey literature concerning the history and characteristics of the gastronomy of the selected country), ethnographically based fieldwork activities (e.g., open and semi-structured interviews, life-history recollections, and direct observations) represent the main method to gather information on the product. The information gathered is systematized by using the Atlas form and finalized into an Atlas entry.

Finally, all the entries are validated by the primary research team, in collaboration with Slow Food and other scientific and professional experts, and indexed in the Atlas.

2.2. Organization of Work and Fieldwork

The Atlas of the Ark of Taste in Tanzania was based on the collaboration between the primary research unit and various secondary research units. Specifically, one secondary unit worked under the supervision of John Msuya of Sokoine University, and a second unit was composed of volunteers from Slow Food Tanzania (Neema Komba, Lyne Ukyo, Reguli Damas Marandu, Vienigani Stephen Kuoko, and Helen Nguya) and worked under the direct supervision of the primary research unit. The units collected data from across the nation between 2018 and 2020, conducting fieldwork across the country, while the primary unit focused its fieldwork on Arusha County in summer 2018.

The selection of the area was based on the geographic and socioeconomic specificities of the city of Arusha. Arusha, the third-largest city in the country, is an important international centre because of the presence of international institutions such as the UN international criminal tribunal and its proximity to key touristic attractions such as Serengeti National Park and the Kilimanjaro National Park. In this respect, the area presented a combination of market dynamics, in terms of the modernization and preservation of food and agricultural practices that have emerged in the food markets and the restaurant sector [56].

Research was aimed at expanding the existing base of knowledge of the Ark of Taste and identifying potential new products through desk and field activities. The research involved scouting for food in 13 marketplaces and 42 restaurants that had been selected to provide a comprehensive sample that included all the typologies of venues present in the area. The research required the visual analysis of all the outlets and the completion of interviews with consumers, producers, and traders. Fieldwork allowed the previously existing knowledge base to be expanded in terms of both quality and quantity (at the beginning of the research, the knowledge base included only around 30 products).

2.3. Food Scouting

In the making of any Atlas, food scouting is the key methodology used for fieldwork. This is conceived as ‘the ethnography-based documentation of folk/traditional perceptions, uses, and management of the threatened or neglected plant, animal, and microbial food ingredients used within a given cultural setting/community as well as the folk customs attached to them that developed within a certain area as the result of a long socio-ecological coevolution’ [26] (p. 55).

Food scouting focuses on the search for and characterization of three main kinds of commodities: local food ingredients (e.g., wild and domesticated species), recipes, and artisanal foods. The Ark of Taste focuses on the former and the latter.

Overall, food scouting is used to analyse the food diversity within a geographical area [57,58], tracing, for each product, its sociocultural, economic, and culinary aspects [59–61]. The analysis is conducted in both public (e.g., restaurants, street food stalls, and markets) and private spaces (e.g., houses and private gardens), moving the research from small localities [62–64] to more extended areas such as countries or even transnational regions [65,66].

The analysis is conducted using a mixture of etic and emic perspectives. The former approach answers the need to define the main features of a selected region in terms of the

taxonomy of food commodities and places of production, trade, and consumption, and also to understand the general practices linked with the selected food. The latter focuses on local perceptions of food-related resources and their uses and management, in order to explore their embeddedness, relevance, and development within a given food and cultural milieu [67]. In doing this, the research considers local systems of beliefs and the linguistic and economic practices associated with the food practices. All this information feeds the completion of the Atlas entries.

3. Results

Overall, 50 products were selected to include in the Atlas (Table 3). Information concerning 30 products was available in the database. The other 20 products were identified during fieldwork by the primary and secondary units.

Table 3. List of products already present in the database before the research, and the newly identified products.

Products Already Present in The Ark of Taste Database	New Products Documented in The Field
Amasoma	Delega
Arusha Stingless Bee Honey	Denge
Bilimbi	Fiwi
Bungo	Gogo Sheep
Fiiye	Kishonanguo
Fulu	Kizulu
Furu	Komoni
Inumbu	Matango Pori
Kanswelele	Mchungu
Kimanshigha	Mdamudamu
Kuku Chikwale	Mgagani
Kweme	Mlenda Mbata
Matoborwa	Mlenda Mwituu
Mbege	Msasati
Mbula	Ngararimo
Mchicha Maua	Ngogwe Mshumaa
Michembe	Njugu Mawe
Ndizi Ifanaiya	Senene
Ndizi Kisukari	Tanganyika Sheep
Ndizi Kitarasa	Ubuyu
Ndizi Mbire	
Ndizi Nduya	
Ndizi Ng'ombe	
Ndizi Nkonjwa	
Nswalu	
Ntonga	
Ntwili	
Pepeta	

Table 3. Cont.

Products Already Present in The Ark of Taste Database	New Products Documented in The Field
Sakulwihe	
Togwa	

3.1. Products in the Ark of Taste Database and Expansion of the Base of Knowledge

In the case of products already in the database, the research was aimed at verifying the existing information and enriching the base of knowledge. The process undertaken can be exemplified through the case of the *nduya* plantain (*Musa* spp.).

At the start of the research, only a few pieces of information concerning the visual characteristics of the product and its link with the Chagga people were available in the Ark of Taste database. The desk research allowed the link between the cultivation of this crop and the traditional agroforestry system (linked to the traditional livelihoods of the Chagga) to be traced, and better detail to be found about the characteristics of the ecological environment in which the plant grows, and its traditional role in local food culture [68–71].

Based on this preliminary research, fieldwork activities allowed both an appreciation of the agricultural techniques used for the production and culinary uses of *nduya* and the assessment of the status of its production and commercialization. Specifically, the interviews with local farmers demonstrated that the cultivation of this plantain had dramatically decreased in the lower zone of Mount Meru because of the intensification of farming as well as the progressive urbanization of this area. Moreover, while in the higher areas Chagga farmers continue with *nduya* production (Figure 3), this is limited to private consumption to produce *mbege*, a beverage made from fermented plantain. It is seldom that *nduya* fruits and *mbege* reach the markets, and they remain products distinctively linked with the Chagga home economy.



Figure 3. A Chagga garden (© Fontefrancesco, 2018).

All the information collected was used to complete the *nduya* entry (Figure 2).

3.2. New Products

Fieldwork also produced surprises, in terms of the new products discovered. These fell under the category of underutilized species that were present in the market generally on a local basis and only in minimal quantities. This was the case for *kishonanguo* (*Bidens pilosa*). This is a weedy herb that grows less than 1 metre tall and has a green stem and sticky heart-shaped seeds. It is a semi-wild ruderal species, found in highlands and tropical areas with high rainfall, usually below 2100 m above sea level. Despite many organizations, among them the Food and Agriculture Organization (FAO), having promoted the cultivation of this plant across the country and the whole of Africa since the 1970s, its production and use are limited to specific groups, such as the Arusha and Meru people. While the literature offered the first pieces of information for classifying this product [72,73], the available information about its commercial and culinary uses was scarce. The interviews carried out in the markets with the sellers helped in this regard.

Field research identified the presence of *kishonanguo* in markets (Figure 4), specifically those attended by Arusha and Meru people. The interviews shed light on the role of this plant in traditional medicine and culinary use, as well as in the household economy (e.g., the stems and other parts of the plant serve as animal fodder, and the pollen from the flowers is a source of forage for bees). Specifically, the research highlighted how leaves and young shoots serve as a relish, as an ingredient of herbal teas, or as a spice, while the plant is cooked alone or along with other leafy vegetables such as fameflower (*Talinum portulacifolium*) and legumes (e.g., peas and beans), and seasoned with simsim or groundnut paste. Moreover, the interviews showed that the plant is still used in a variety of preparations, including as a dry powder, a decoction, a maceration, and a tincture, which are used to treat high blood pressure and anaemia as well as to prevent malaria, alleviate toothache, improve eye health, and treat wounds. This information completed the *kishonanguo* entry in the Atlas (Figure 5).



Figure 4. A *kishonanguo* seller in Tengeru market (© Fontefrancesco, 2018).



Figure 5. The entry for kishonanguo in the Ark of Taste Atlas of Tanzania.

4. Discussion

4.1. Lessons Learned

The experience concerning the making of the Atlas of the Ark of Taste in Tanzania offers, first of all, some methodological and epistemological lessons for practitioners interested in studying, analysing, and safeguarding food heritage.

The first lesson is about places and objects. If one considers the field or the kitchen as the ideal main food places from which to start research, respectively, with a more biodiversity-oriented or a more culinary-oriented approach, the Atlas suggests a different perspective. For the Atlases, the research starts in the marketplace [74,75]. This decision does not originate from any neo-liberal drift [76], but is a simple ethnographic conclusion. If a product is exchangeable in a market, this does not, per se, mean that it is commodified [77]; it just means that the materials, knowledge, and practices underpinning the product have already undergone a process of translation that is able to make something attaining to the *évènement* [78] of the individual experience or family history, understandable and appreciated by a broader public. In this respect, translation, as framed by Bruno Latour [79] (pp. 106–109), is a combinatory strategy that transforms two or more objects that pertain to different domains (networks) so that they are comparable and interconnected. Market food products represent the epiphenomenon of a shared gastronomic culture and indicate an epistemological level of analysis that guards the researcher against getting lost in the maze of individual experience that lies in each farm or kitchen. If the marketplace is a positive starting point, the researcher needs to scout for different forms of marketplaces, as well as other public places for food exchange and consumption (e.g., restaurants, bars, hotels), always being ready to ask simple questions to move the research forward: ‘Who can access the market (either as a seller or as a customer)?’ and ‘Who is excluded?’; ‘Where and how do the excluded exchange their food products?’ and ‘What do they exchange?’.

The second lesson is about knowledge and translation. Each Atlas is the result of the translation of different pieces of information and forms of knowledge pertaining to different domains, such as the individual and collective domains, and the domains of literacy and oral communication, formal education and direct experience, and cogency and myth. This plurality, which permeates each page of an Atlas, stems from the rejection of the primacy of institutionalized knowledge and from the methodological attempt to recover traditional knowledge that, as Jack Goody [80] points out, is oral and in modern states is generally marginalized and silenced. In this respect, following the teaching of cultural anthropology

as well as that of ethnobiology, the lesson that the Atlases tell is the importance of looking at the margins, on the peripheries and in the interstices of modernity, and of keeping our ears open to the stories, practices, and affections that lie there. Rather than fostering an antinomic understanding (academic/institutional vs. traditional/community knowledge), the project proposes that there is a need to bridge all the different types of knowledge to provide a holistic description of food culture and diversity.

The third lesson is about participation. Despite the pyramidal structure of the work organization, the making of an Atlas relies on a combination of emic and etic perspectives, as well on heterogeneity of expertise and source of knowledge. It is neither just a matter of Linnean identification nor just a collection of food stories. It requires both of these two, and in doing so it requires researchers to play a dual role. Outside the field, the researchers play a crucial role in ensuring the trustworthiness of the information in the Atlas, bridging the gap between field data and the academic and professional literature. In this respect, the researchers have a more traditional scholarly role. However, in the field, they should assume another posture [81]. The project shares the ethical concerns expressed by the ethical guidelines of both ethnobiologists (e.g., the ISE guidelines) and anthropologists (e.g., the AAA and ASA guidelines) in terms of the subjectification of the research participants. In this respect, the researchers should not stop at documenting products, but should rather involve the participants in the process, eliciting their direct participation in the identification and the nomination of new products. Thus, the researchers should play the role of facilitators of grassroots processes aimed at preserving the local food heritage and raising the awareness of its importance to trigger food-centred sustainable development projects. All this duality tells of an applied and committed approach [82] that should lead all the work.

The fourth is about accessibility of the outputs. The making of an Atlas is above all the creation of a new, written memory that aims to support all the local communities and territories investigated in the research. In this respect, it is crucial for this base of knowledge to be accessible to the very people that are involved in its making. While in the case of Nombo and Leach [83] the contribution is made in the form of a clear co-authorship between the indigenous expert and the foreign scholar, in our case the contribution takes the form of a distributed authorship in which a plurality of subjects offer their knowledge orally or in written form. Despite this difference, the issue at hand with any form of traditional knowledge inventory is to reduce the exploitative aspect of the creation of a base of knowledge external from the community. In this respect, the decision to publish all the materials in open access providing access to printed copies of the work to local informants was aimed at limiting this risk. Due to the nature of the text and the sources used, the intellectual property of each record belongs to its compiler. However, the editorial choice of publishing in free open access prevents this property from translating into an economic benefit, also avoiding an indirect form of exploitation of traditional knowledge by non-members of the community. This can be considered a viable solution that abides by the current ethical principle of publicly funded research. However, it is not the only one. A possible alternative is, for example, to link property rights to local organizations or institutions. The best decision, as Nombo, Leach, and Anip [84] showed, is to make the decision in the field, negotiating with communities to find consensus and an alignment between the goals of the communities and those of the researchers.

4.2. Limitations

While the method offers a positive example for practitioners interested in documenting food heritage, they should also consider its limitations.

First, the making of an Atlas follows a qualitative approach based predominantly on ethnography. In this respect, researchers should be aware of the power and cultural relations between them and their informants, so that they can address excesses of compliance or reticence. In this respect, the participatory approach in the data gathering allows some barriers to be overcome and a clearer relationship between the partners to be negotiated,

so that the research can be transformed from mere knowledge extraction to knowledge co-creation [83].

Moving to the dimension of the quality of the collectible data, the evidence on a particular food product may rely on a limited number of informants because of the erosion of the food practice or the dispersal of the community, and therefore the description may be defective in some of its elements. Moreover, in the case of Tanzania and other developing countries, the lack of historical resources does not allow a deep historical analysis to be carried out. While the dimension of individual and collective memory is crucial in collecting details concerning the development of practices and their associated meanings, the limits of oral history in the absence of other historical or archaeological evidence have been widely discussed [85]. A comparative approach may help in this perspective, but the historical reconstruction inevitably remains circumstantial and deductive.

As in any case of the documentation of traditional knowledge, there is always the risk of misuse of the data by third parties. While scholars are paying more attention to the theme of indigenous intellectual property, it is crucial to building awareness concerning the cultural, gastronomic, and potential economic value of the food heritage in local communities in order to promote grassroots initiatives for protection and promotion and to raise awareness concerning the risk factors underpinning the increase in visibility and promotion of these resources on a more-than-local scale. In this respect, the nomination of a product should only be made on the basis of an ethical reflection concerning the actual consequential risks in terms of biodiversity depletion, unsustainable uses of food and biocultural resources, and cultural and social exploitation.

Directly connected to this point, any process of the identification and dissemination of food heritage necessarily involves a degree of commodification of the knowledge and the product [10]. In a context of local development, and particularly in the case of marginalized communities, researchers should be aware of this process in order to avoid the worst risks of marketization, which involve the intensification of local resources, a change in the balance of the ecological relationship [86], and the commodification of local knowledge [87]. After considering the material needs of the communities and the actual risk of extinction for the catalogued food resources, the way forward may lie not in avoiding market integration but rather in identifying modalities of integration that are capable of fostering more sustainable and context-based forms of development initiatives [88].

Finally, each Atlas is, per se, an open-ended project. Since the actual publication of a volume is always linked to financial and temporal restrictions, the product selection will always be limited and incomplete. Since the publication of further volumes dedicated to single countries is always possible, the process of local data collection and nomination is always possible because of the implementation of the Ark of Taste database. In this way, the door is always open for new collaborations and the continuity of the process of the retrieval and promotion of local food heritage. It should provide a concise and precise description of the experimental results, their interpretation, as well as the experimental conclusions that can be drawn.

Using the tools described here, practitioners can conduct their research in a way that bridges the gap between the tangible and the intangible elements of gastronomy, gives a voice to the local traditions of communities and ethnic groups, and thus contributes to a better understanding of the world's food and foodways and instigates processes of grassroots protection and promotion.

5. Conclusions

This paper starts by acknowledging a trend in the literature concerning food documentation. Food inventories commonly tend to focus either on aspects of agrobiodiversity or on the culinary corpora of food heritage (i.e., dishes and recipes). The paper presents an alternative method that is based on a holistic approach to food: the approach of the Ark of Taste Atlases. The paper describes the history of this method and its features by delving

into the details concerning the creation of one of the various atlases published in recent years: the Atlas of Ark of Taste Atlas in Tanzania.

Overall, with its pros and cons, the making of this Atlas reveals the positive impact that the creation of a food heritage inventory can have locally in achieving UN Sustainable Development Goals, particularly in a context of development.

As the case of our research points out, in these contexts, a large part of the food and biocultural heritage of local communities is largely unexplored. Thus, while inventories are commonly compiled to preserve the existing food and biocultural diversity threatened by global standardization, in this case, an inventory can have an important effect. It can expand the base of knowledge concerning local biodiversity, making clearer what the risk of loss is and the actual elements that are jeopardized. In this respect, it supports the achievement of the preservation of SDGs 14. Life below Water and 15. Life on Land, clarifying what the elements of biodiversity to be preserved are. Moreover, providing a novel description of the element of food heritage, often already compromised, of which products do not reach the market because they are relegated to informal barter and gift economies, helps design better preservation policies able to consider, recognize, and protect the traditional food practice associated with these assets.

Such a contribution moves in the direction of recognizing the value of the cultural specificities of local communities and cultural groups, thus defending cultural diversity. Accordingly, this action could contribute to empowering local communities and, overall, to achieving SDG 10. Reduce Inequality.

Moreover, the documentation of food heritage plays a crucial role in contemporary markets and, in particular, with final consumers. The inventories can be used, as it occurred in the case of the Atlas, by local NGOs or local economic actors to present and promote local products in the market, building awareness concerning these products, their history, meanings, and methods of production. In so doing, inventories turn into tools able to guide consumers toward more conscientious choices, thus achieving SDG 13. Responsible Consumption and Production.

Finally, as in the case of the Atlas, the making of an inventory can be linked to the attempt to identify indigenous food resources, for which production is better integrated within the specific context of action and supports local communities in their production. In this case, the inventory is a tool for the attainment of SDGs 1. No poverty, 2. Zero Hunger, and 3. Good Health.

In conclusion, it appears that the construction of a gastronomic inventory represents an important opportunity not only to better detail the biocultural heritage of a given community or a given region, but also to kindle and strengthen sustainable development. The experience of the Atlases of the Ark of Taste represents a methodological model based on the synergy between the world of research and local communities, easily scalable and transferable to other contexts, making it a valuable tool in the toolkits of any scholar interested in exploring, preserving, and communicating food and cultural diversity.

Supplementary Materials: The complete Atlas of the Ark of Taste Tanzania can be download freely from: https://www.unisg.it/assets/zocchifontefrancesco_2021_ark-of-tanzania.pdf.

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