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No Poverty


Deepa Pullanikkatil
Charlie M. Shackleton *Editors*

# Poverty Reduction Through Non-Timber Forest Products

## Personal Stories

Springer

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# Foreword

It is a real pleasure to write a foreword for this wonderful volume, both because it is about non-timber forest products (NTFPs), which have fascinated me since my undergraduate days, and because of the unique approach the editors have chosen to take. Some of my favourite memories are of learning to make shea butter from women in western Benin during research for my Ph.D. Each woman collected the fallen fruits in a particular location and had her own way of oven- or sun-drying the nuts, of shelling them to obtain the oil-rich kernels and then grinding these to a chocolate-coloured paste which, on washing, miraculously gave rise to a creamy-white butter which was then stored in a variety of containers depending on whether it was intended for subsistence use, sale at the local market or destined for the urban market of Cotonou. It was a rare and immensely enjoyable privilege to spend time with some wonderful women who allowed me to participate in their collection and processing activities while telling me about when and why they had started making shea butter, the challenges the work entailed, and what it meant to them and their families.

Sadly, it isn't possible for us all to travel and learn about the many wonderful NTFPs in this world in such a personal way. But reading the stories in this book comes a very close second. Each story and its associated pictures transport you straight into a trader's life. Their voices speak directly to us, telling us about the journeys—sometimes meandering, often challenging, always exciting—they have travelled to become the NTFP traders they are today. Along the way, their stories offer insights into a way of life that is directly engaged with nature in a manner many of us have never experienced. Although each story is unique—and this is one of the biggest challenges for policy-makers trying to support NTFP activities—a strong set of positive messages comes through loud and clear.

First, NTFP traders can be found in every country of the world. NTFPs are as likely to be traded in Cameroon as in the United States or Brazil. From high value truffles in Italy to incense sticks in India and palm wine in Mozambique, these are both high and low value products which may be traded on local, national and global markets. Regardless of product and location, what these traders have in common is that they are entrepreneurs, with an incredible ability to innovate both in terms of their products and their marketing strategies.

Second, these stories speak of the importance of traditional knowledge, with many traders having learned their skills from parents or other mentors. At the same time, almost every story illustrates the vital role of external support at some stage in the journey. Whether it is to improve the quality of honey through better bee-keeping techniques or to expand markets for basket-makers by establishing a cooperative, there is a significant role for private, NGO and state agencies to provide support to these traders to enable them to develop their production and marketing skills. And many traders proudly pass on the favour, by sharing their knowledge with other people.

Third, the value of NTFPs to traders is so much more than the income it provides. For those of us interested in NTFPs, it has long been a huge frustration that their value is overlooked in national policies and by development agencies because, when converted into dollars, their contributions to a person's livelihood may seem small. The examples in this book are a great illustration of the need to think about people's well-being in a more holistic way. Certainly, NTFPs are an important source of cash which traders can use to cover their basic needs. But the money is also used to pay for education, for gifts, for luxury items and for social get-togethers—contributing to improved status in family and society. The self-confidence and societal respect gained from having a successful trade are immensely important, especially for women. They can even empower traders to engage in decision-making forums as described by Giraben, the bamboo furniture maker from Gujarat, who successfully stood for election to local government. In some cases, like that of the pine needle cooperative in Nicaragua, the activity can expand beyond a few people to create an attraction that brings benefits for a whole community.

Fourth, it is striking that many of the traders did not start out as specialists in their field but carried out their trade as part of a portfolio of activities, and only became more invested in the NTFP when it fitted into their changing life circumstances. The flexibility with which NTFP trade can be integrated into people's lives is one of their hallmark characteristics, making them equally attractive to people looking for small income supplements and to people with greater ambitions.

Lastly, and very importantly at a time when many environments in both the global North and South are being rapidly degraded, these traders are engaged in activities that rely on raw materials from nature. Most of the traders are very aware of their dependence on the natural environment, and speak of it with great appreciation. They are concerned not only with the impacts of degradation but also with changes in governance which can reduce their access to the resource and their ability to contribute to decisions about how it is managed.

Charlie Shackleton has been a consistent champion of improving our understanding of NTFPs. He and Deepa Pullanikkatil are to be congratulated not only for pulling together such a wonderfully diverse selection of cases but also for breaking new ground by allowing traders to speak for themselves. Their introductory and concluding chapters provide an excellent review of both the depth and breadth of research on NTFPs, and provide valuable lessons to policy-makers on how to promote the hidden and often

under-valued role of NTFPs in enabling people to lift themselves out of poverty.

Wherever you are reading this book, I hope it inspires you to find and learn from a local NTFP trader, whether they be a mushroom forager, a basket-maker, carver or bee-keeper. Your life will be richer for it.

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# Part I

# Introduction

# Poverty Reduction Strategies and Non-timber Forest Products

Deepa Pullanikkatil and Charlie M. Shackleton

## Rationale for This Book

The first of the 17 Global Goals that make up the 2030 Agenda for Sustainable Development is to end poverty in all its forms everywhere (UN 2016). Although the numbers of poor people in the world has declined over the last few decades, it is still alarmingly high, being approximately 770 million in 2013 (Fig. 1) (World Bank 2017).

Currently the majority of the world's poor live in rural areas, although there is an inexorable shift towards urban areas. Rural livelihoods are dominated by land-based activities and strategies such as arable farming, animal husbandry and gathering of wild, natural resources from surrounding habitats and landscapes (FAO 2003). Whilst many rural households engage in more than one livelihood activity, our interest in this book is the collection, use and trade in wild, natural resources, frequently termed Non-Timber Forest Products (NTFPs). These include wild plant, fungi and animal products collected or caught from a wide range of habitats and spaces for products such as firewood, wild fruits, nuts, edible roots, small mammals, insects, fish, honey, palms, and medicinal plants, which are used for household consumption or small-scale trade. Additionally, in some contexts NTFPs may play an important role in preventing households and communities falling into poverty, by providing safety nets in times of shocks and gap fillers during income slack periods (FAO 2003; Shackleton and Shackleton 2004, Paumgarten 2005). The global value of the most economically important NTFPs in world trade was conservatively assessed to be $11 billion annually (FAO 2002). Evidence from Vedeld et al. (2004) and the Poverty Environment Network (PEN) research project which covered 24 countries in Latin America, Asia and Sub-Saharan Africa shows that the environmental income contribution to rural households is substantial. Although there were variations across regions, on average, 22.2% of household income (cash and non-cash) was from NTFPs, while environmental income shares (including forest and non-forest income) was 27.5% (Angelsen et al. 2014). This is significant, considering that crop income was 28.7% (Angelsen et al. 2014). Yet, NTFPs remain a hidden economy and consequently they are rarely included in national poverty reduction strategies (Shackleton and Pandey 2014; Wunder et al. 2014).

In 2005 the journal *World Development* published a special issue on livelihoods, forests and

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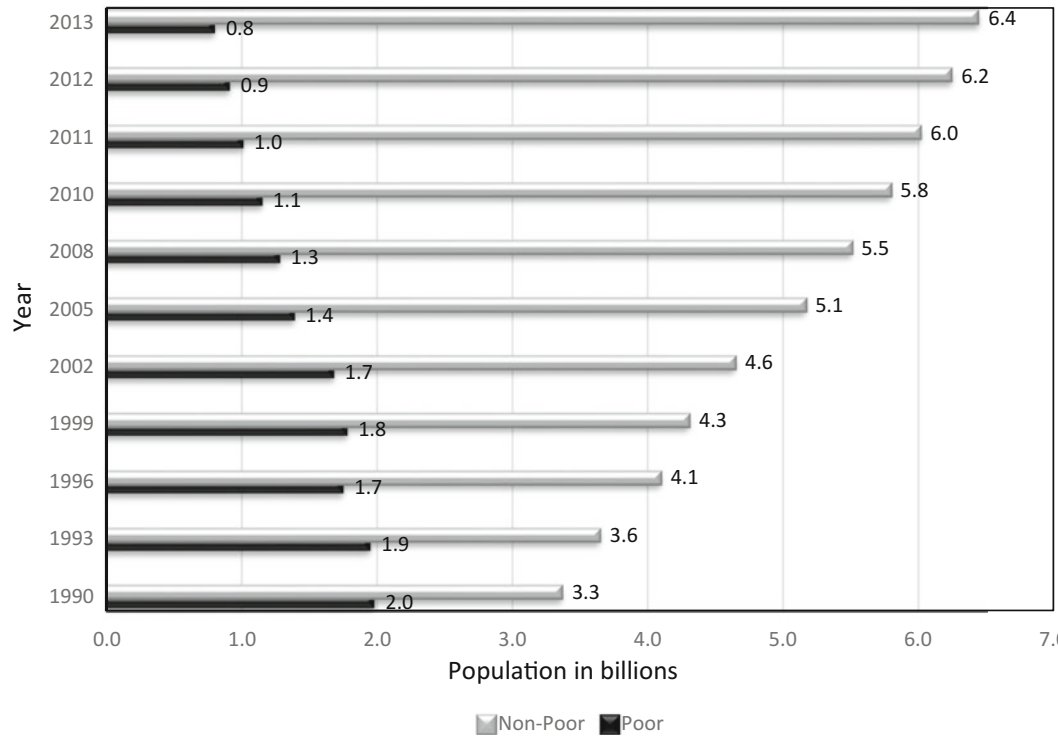


**Fig. 1** Numbers of poor and non-poor in the world from 1990 to 2013. *Source* World Bank, 2017

conservation and the editorial called for more research on NTFPs and socio-economic development including poverty alleviation (Sunderlin et al. 2005). A decade later, the same journal published another special issue, in which the editorial called for further research on the broad role that NTFPs and extractive incomes play for diversification, asset accumulation and poverty dynamics (Wunder et al. 2014). The need for more evidence on how NTFP incomes in rural households can aid in poverty alleviation was also voiced by Ros-Tonen and Wiersum (2005). This prompted a notable rise in the number of studies determining the income (consumptive and cash) share provided by NTFPs. In some instances, these were extended to consider poverty levels within and without the NTFP share (e.g. Davenport et al. 2012; Fonta and Ayuk 2013; Worku et al. 2014; Abdullah et al. 2016). In a parallel process, the seminal work of the Poverty and Environment Network (PEN) sought to use a common methodology across dozens of sites and countries. Common features across most of these studies were their quantitative nature and economic framing. There were relatively few studies offering more socially orientated perspectives and insights on the links between NTFP use, dependency and poverty. The ordinary people using NTFPs, their reasons for doing so and their experiences became veiled behind the numbers.

The accumulation of numerous quantitative case studies has facilitated a suite of broad conclusions about the income shares provided by NTFPs across a wide range of macro- and micro-contexts. A clear outcome is that the share of total household income obtained from NTFPs is highly variable in space and probably in time (Shackleton et al. 2007; Angelsen et al. 2014). Consequently, whilst broad patterns and conclusions may be distilled, application of mean or median values to as yet unsurveyed sites or

countries should be done with extreme caution. Nonetheless, there appears to be an emerging opinion that whilst NTFPs are important in rural livelihoods, that their use and trade are unlikely to lift large numbers of the rural poor out of poverty (Angelsen et al. 2014), although the same can probably also be said about any other single sector or intervention.

Such a conclusion may be important from a policy perspective seeking to inform decision-makers about policies and investments of government or donor funds. However, in suggesting that NTFPs may not be a vehicle out of poverty for the majority of the rural poor, commentators often neglect the obverse, namely, they are a pathway out of poverty for some. In looking for broad-scale solutions to address the poverty of millions, there is a risk of neglecting the solutions that have worked for some. And if they have worked for some, is it not worthwhile investigating the contexts and circumstances that allowed such to ascertain where and when they might be replicable, or what interventions might be needed to increase the possibility of them being replicable? Even if the broad potential is low, NTFPs certainly do provide an avenue out of poverty for some (Tewari 1993; Shackleton and Shackleton 2004; Shackleton et al. 2007). These are real people and many have made a success and have secured a livelihood out of using NTFPs in often difficult circumstances and without direct support from governments and development agencies. We suggest that there are valuable lessons to be learned from their experiences and perspectives that cannot be revealed from the dominant quantitative studies and analyses to date. In the quantitative analyses of the monetary values and percentages, the personal experiences and stories of those who have moved out of poverty have been overlooked. This book provides evidence, through a suite of stories and narratives, of people who have lifted themselves out of poverty through trade in NTFPs. Narrative stories provide a wealth of insight about people and their experiences rather than aggregated classifications, categories and characteristics of poverty.

## Why Tell Stories?

The age old tradition of stories and storytelling has been carried forth across communities and cultures. For some, stories are an important part of preserving cultural continuity and heritage (Barton and Barton 2017). Passing on information from one generation to another through stories made it possible for knowledge to be preserved and not lost. Storytelling also helps for intercultural understanding and sensitivity (Sell 2017). But conserving culture wasn't the only reason for storytelling. Stories can also be for entertainment, communication of a particular view or conveyance of some important information (Exley 2010). Sell (2017) says that stories are a "door opener, enabling access to new thinking patterns and value systems". Stories and narratives are also a powerful way of teaching (Rossiter 2002) and play an essential role in socialization of learners (Barton and Barton 2017). In our day to day life, we are continually exchanging our own stories through conversations, over the phone, using social media or through presentations, films and writing with people we know or don't know. A lot of this is storytelling. But why do we tell stories?

The centrality of stories in human experiences is depicted in these quotes:

> To be a person is to have a story. More than that, it is to be a story. (Kenyon and Randall 1997)

> There is no greater agony than bearing an untold story inside you. (Maya Angelou 2009)

From the first quote, we can understand that narratives help people make meaning of their own and others' lives and actions, so much so that they narrate themselves into the person they become. Humans have the creative ability to express themselves through stories. Storytelling helps to make sense and meaning of life and appeals to the human soul, "with an allure that transcends cultures, ideologies, creeds, and academic disciplines" (Mariri 2011). Stories told through myths and legends have helped us gain courage and develop empathy in a baffling world. Indeed, stories are what make us human.

The second quote alludes to the fact that storytelling liberates the teller, promotes psychological closure and can be therapeutic (Weaver 2016). Storytelling, when it is sharing part of one's life experiences, needs courage as it may show a vulnerable side of the teller. But it gives deeper insight to the listener about the lived experiences of the teller. A good story invokes both thoughts and feelings, thereby is intellectually and emotionally moving. Often we are able to identify a part of us in the stories and the storyteller. Stories have a way of touching the listener or reader and sticking in our memory, in a manner that data cannot. When we present stories, the readers may be able to relate to the characters in them in a very humane way and, be moved and inspired by them.

The pages of this book contain real stories of people from around the world, who have lifted themselves out of poverty using nature's bounty. The nature's bounty that we talk about here are Non-Timber Forest Products or NTFPs. These biological resources of wild plant and animal species provide livelihoods to many around the world (FAO 2003; Shackleton and Shackleton 2004). The individual case studies included here tell us about how individuals used different NTFPs, whether it is medicinal plants, fungi, fruits, honey, bark, bamboo or tree nuts and with the income, were able to educate their children, buy assets, build homes, afford small luxuries they couldn't previously and attain dignity and a sense of belonging in their communities. The stories depict journeys that the NTFP traders took, journeys of facing hardship, fear, risk, failure and overcoming them through sheer hard work, perseverance, courage, vision, adaptability and willingness to learn.

A lot of quantitative research has been published on NTFPs, but many lack the "human side" of the NTFP trader, because one cannot find this personal aspect in quantitative data. This book is not a traditional academic volume which often tends to be an impersonal discourse, but it is a collaborative effort of people from 20 countries who used storytelling as a method to give insights on the personal lives of the NTFP traders. In that regard, the book is unique and, as you read the case studies, you will find that they provide a "voice" to the NTFP traders, which is missing from the data rich studies. We believe it is important to tell these stories, because NTFPs need to be recognised and valued for how they can transform lives and reduce poverty at an individual level beyond just monetary aspects.

## Definitions

Natural products have been used for millennia by people all around the world. It is when their economic values and trading opportunities were realised that they began to be labelled in various ways. They have been called by many names including 'wild products', 'natural products', 'non-timber forest and grassland products', 'veld products' and 'sustainably produced wood products' (Belcher 2003). Many definitions of NTFPs exist (Table 1) and scholars have debated on what is and what is not an NTFP. The definitions of FAO on Non Wood Forest Products (NWFP) excludes all wood such as for fuel wood, use of wood and bark for carvings and tools, charcoal and wood chips from natural forests and plantation, but excludes services (FAO 1999). However, other than in FAO projects and circles, the term NWFP is rarely used (Belcher 2003). Other definitions exclude some forest products, such as fuelwood (Myers 1988) and carbon (Broekhoven 1996), while others take into account the scale of forest (Falconer 1990).

In this book we use the most recent and most comprehensive definition by Shackleton et al. (2011) as a guide. We believe this is a more all-inclusive definition and considers the aspect of benefits to "local" people, thereby addressing Belcher's (2003) concerns and agreeing with Falconer (1990) in terms of scale (local). As such, it explicitly includes fuelwood and wood products at the local scale and excludes ecosystems or environmental services. However, given the wide range of case studies and authors some may not interpret the concept in the same manner as we do in the opening two chapters.

Despite the multiplicity of definitions, scholars have evidenced that NTFPs play an important role in local livelihoods, including for household

**Table 1** Illustrative definitions of NTFPs

| Publication | Definition of NTFPs |
|---|---|
| Myers (1988) | "Non-Wood Products" were defined as "all harvestable items other than timber and fuel wood. These range from damar, sandalwood, resins, kopal and several essential oils and edible oils, to fruits and nuts, fibres and canes, natural silk, and exudates. Also, and at least as important, are genetic resources. All these non-wood products can be harvested with virtually no disturbance of forest ecosystems" |
| de Beer and McDermott (1989) | The term 'Non-Timber Forest Products' (NTFPs) encompasses all biological materials other than timber, which are extracted from forests for human use |
| Falconer (1990) | Forest products, including by-products that are not processed by large forest industries. Thus, Falconer (1990) took into consideration the scale of operations |
| Broekhoven (1996) | Non-Timber Forest Products are "…all biological materials other than timber, fuel wood and carbon which are extracted from natural forests for human use.<br>This includes parts of individual plants, such as leaves, bark and latexes; or parts of the population life cycle, such as seeds, flowers, eggs, or entire plants or animals" |
| FAO (1999) | Non-Wood Forest Products consist of "goods of biological origin other than wood, derived from forests, other wooded land and trees outside forests" |
| CIFOR (2008) | Non-Timber Forest Products (NTFPs) are any product or service other than timber that is produced in forests. The term includes fruits and nuts, vegetables, fish and game, medicinal plants, resins, essences and a range of barks and fibres such as bamboo, rattans, and a host of other palms and grasses. CIFOR'S definition includes Non-Timber wood products (e.g., for woodcarving or fuel) |
| Shackleton et al. (2011) | NTFPs are biological products from self-reproducing populations of mostly wild or self-reproducing species that are harvested or used by humans for consumptive or non-consumptive uses from natural and modified landscapes for the benefit of local landusers or owners |

provisioning, income generation, cash savings, as safety nets during times of stress and playing an important role in local culture and supporting and regulating ecosystem services (Shackleton et al. 2015). The 'NTFP' concept is to some also seen as the bond connecting conservation and development. Harvesting NTFPs and using them rarely requires specialised skills, large-scale investment or heavy machinery, unlike large timber industries, which need all this and is less environmentally friendly. Hence, for forest conservation, NTFPs are well-suited and so, it may be argued that promoting sustainable use of NTFPs may aid in forest conservation (Ortiz 2002) in conducive contexts with appropriate and viable governance regimes (McLain and Lawry 2015). Many of the world's poor rely on NTFPs for subsistence, cash and as a means of livelihood improvement. Belcher (2003), however, argues that not all such products are benefitting the poor and higher value products may be controlled by other stakeholders and may be lost to the poor. Furthermore, he contends, that the NTFP terminology is confusing due to it being used by many disciplines including ethnobotany, ecology, economics, conservation, each looking at a different angle. This may be taken advantage of by corporations, who can sell NTFP products with the labels "eco-friendly" and "people-friendly" connotations, even though that may not be true.

The second core concept of this book is poverty and poverty alleviation. Poverty has been defined in very precise terms and also in multi-dimensional measures as well as in absolute and relative measures. Methodological differences yield different poverty measures and there is no single universally accepted definition of poverty (Olowa 2012). Definitions of poverty vary according to discipline and means of measuring it. However, there is consensus that poverty is complex (Lade et al. 2017; Xun and Lubrano 2017; Correa 2017). In this book, we recognise that poverty is more than just a lack of

money. It is does not just have one facet but includes aspects of wealth, dignity, belonging, freedom to make decisions, choice, participation (in civil, social and cultural life) and most importantly, hope. Chapter 2 gives the various definitions and how we came about defining poverty in this book.

## NTFPs and SDG Goal 1

The world achieved the Millennium Development Goal (MDG) of halving extreme poverty ahead of schedule, yet many challenges remain to the achievement of SDG Goal 1 (UN 2013). Too many are still struggling to meet their basic human needs. "The SDGs are a bold commitment to finish what we started, and end poverty in all forms and dimensions by 2030" (UN 2017). Many of the world's poor have natural resource dependent livelihoods in which NTFPs are a significant and often crucial part. Although NTFPs have been considered by some as a minor product, research shows that the role of NTFPs in poverty reduction is not to be ignored (IUCN 2008). As a source of food, medicine, energy, crafting material, construction material and a source of income for many, NTFPs do certainly have a role to play for many countries to achieve SDG Goal 1. Many different approaches to lift people out of poverty have been and continue to be tried; for example conditional cash transfers, social grants, agricultural support, manufacturing incentives, skills programmes and others. None have been found to be universally applicable, and hence the growing recognition for the need to provide a suite of options and opportunities from which the poor can select to meet their differentiated skills, needs and local contexts. NTFPs should be regarded simply as another options within a suite of options, and one which some households or communities may adopt whereas other households even within the same community may favour other strategies or a mix of NTFPs and complementary strategies. No single approach can guarantee to lift all people out of poverty.

A search in Scopus in August 2017 using search terms "Non-Timber Forest Products" or "NTFP" and "Poverty" revealed 116 documents published between 1995 and 2016. The majority were from the journals *International Forestry Review* (9), *Economic Botany* (6), *Forest Policy and Economics* (6), *Ecological Economics* (5) and *Agroforestry Systems* (4), *Environmental Conservation* (3) and *Environmental Management* (4).

There were 88 journal articles, 16 reviews, seven book chapters, two books, two conference papers and one short survey, making a total of 116 publications (Fig. 2). We acknowledge that there

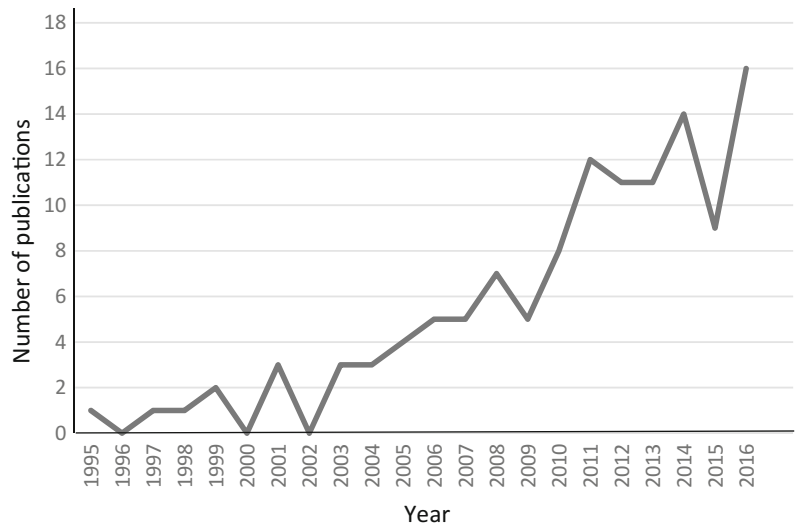


**Fig. 2** Search results in Scopus on "non-timber forest products and poverty" (1995–2016)

are a great deal more studies, but this search was sufficient to illustrate the increasing trend. Notwithstanding the research in this field for over three decades, most land management and development plans ignore NTFPs (Sills et al. 2011). Furthermore, some countries put restrictions on use of some NTFPs in some locations, which could be detrimental to local livelihoods, in particular, indigenous peoples (Conkleton et al. 2012). In spite of the importance of NTFPs to poverty alleviation in many contexts, they are rarely part of poverty alleviation strategies or land use policies (Shackleton and Pandey 2014). It is encouraging to note that a few countries like Finland, Namibia and Nepal have been providing enabling environments for NTFPs as well some national and international NGOs are supporting this (for example INBAR—International Network for Bamboo and Rattan) (Morris and Laird 1999; Shackleton and Pandey 2014). In some countries, associations help in promoting better prices for NTFP products and forest certification encouraged sustainable use of NTFPs (Duchelle et al. 2014). Thus, when included in policies and poverty reduction strategies NTFPs are likely to positively impact poverty and contribute towards achievement of SDG Goal 1 to end poverty in all its forms.

## NTFPs Missing in Poverty Reduction Strategies

In 1999, the World Bank and International Monetary Fund adopted a framework as a mechanism for linking poverty reduction with debt relief under the Enhanced Heavily Indebted Poor Countries Initiative (HIPC) (IMF 2016). This framework was to develop Poverty Reduction Strategy Papers (PRSPs) which are central to IMF-supported economic and financial programs in low-income countries. The papers are prepared by governments through a participatory process involving stakeholders and development partners and are updated every three years. The PRSPs address poverty challenges and describe policies and programs which can promote growth and reduce poverty, and put forth funds needed to achieve this.

In 2002, a status report on forests and the forest sector in PRSPs revealed that the assessment of forestry potential for poverty reduction was superficial and unsystematic (Oksanen and Mersmann 2003). NTFPs tended to be viewed as supporting activities to other sectors deemed more important for poverty reduction and were not considered as a productive sector on their own. "Linkages between PRSP processes and forest policy and planning are generally weak" the authors contended. More recently, Bird and Dickson (2005) and Shackleton and Pandey (2014) iterated that NTFPs and forestry in general are missing from poverty reduction strategy papers of many countries. These papers are important frameworks for national planning and international development assistance, however, very few papers consider the links between forest resources and poverty and hence NTFPs may not be given adequate attention. This will affect budgetary support and reduce opportunities for this sector to work with other sectors. Other missed opportunities include the inability to make long term plans for this sector and thereby affecting its sustainability and ability to provide long-lasting benefits to communities.

There are many reasons for PRSPs not including NTFPs. There is low visibility of NTFPs and the environment-poverty link has not yet been supported by the majority of consultation exercises associated with Poverty Reduction Strategy Papers (Bird and Dickson 2005). Wunder et al. (2014) state that development practitioners do not focus much on environmental incomes such as NTFPs for various reasons including the idea that environmental extraction is seen as a backward relic because food security improvements tend to focus on specialised cropping and animal husbandry. Furthermore, environmental extraction has less scope for technological progress, forest rich areas may be less densely populated and therefore not a priority for policymakers and the items harvested are regarded to have low economic value and business development potential (Wunder et al. 2014). Paumgarten (2009) noted lack of statistics on NTFPs and poor dissemination and advocacy by the forestry sector as hindrances for PRSPs to not adequately take account of

NTFPs. Although there was opportunity to have NTFPs included under poverty alleviation with the Millennium Development Goals, there was insufficient data on NTFPs to convince policy-makers (Sills et al. 2011).

Governments favour social sector poverty reduction strategies such as in health and education and less emphasis is given to forests or natural resource based strategies (Bird and Dickson 2005). Land tenure is another reason, as many countries have fortress conservation or have restrictions for local people to access NTFPs. In many countries in Africa, customary law and statute law creates confusion as to rural communities rights to NTFPs and in some instances, farmers do not have rights to the trees on their farms, creating conflicts and mistrust. Furthermore, NTFPs are often invisible as they are not in the mainstream economy and many are traded only within local markets in an informal manner (Bird and Dickson 2005; Shackleton et al. 2007). Consequently, there is need for further public consultation when developing PRSPs on the link of NTFPs to poverty reduction. Some measures such as inventory of NTFP stocks, research on NTFP ecology and sustainable harvesting levels, providing extension services, integration into policies and understanding local drivers of NTFP use could help in integrating NTFPs into development agendas (Shackleton and Pandey 2014).

## Selecting Stories

The book is based on life story methodology combined with narrative interviews and case study writing. Enquiries were made through the editor's contacts, non-governmental organizations (NGOs), development agencies and government officials on potential participants for narrative interviews. Purposive sampling was used to select NTFP traders (or households) in each of the selected countries. Informed consent was sought from the participants and their life stories were documented. This was done through narrative interviews which were completed through several visits at the convenience of the interviewee at their premises and for one case through two skype interviews.

Narrative interviews are in-depth, unstructured interviews and are categorised as a qualitative research method (Muylaert et al. 2014). Audio recorders were used after explaining to the interviewee the scope and rationale of the interview and his/her consent was sought in the use of the data. The study used Jovchelovitch and Bauer's (2000) narrative interviewing methodology. We used the life story methodology to structure the interview as it was helpful in providing insights and focuses on the experiences of the people. Bourdieu et al. (1999) used life story methods in understandings of poverty in the West. "Life story interviewing is a qualitative research method for gathering information on the subjective essence of one person's entire life that is transferable across disciplines" (Atkinson 2002). A life story includes an explanation of how and why a life course took the form it did. Life stories have a unique combination of emotional and rational knowledge which can give a broader perspective and insights on how people used NTFPs to overcome poverty, and how they *feel* about such.

Direct observations were also used to collect information regarding use of NTFPs for the study. Recordings were transcribed and trajectories of life stories were formed through analysis of text and ordering of events narrated by each interviewee. Case study writing followed the analytical approach to understand what has happened and why. Photographs were taken of the interviewees and their NTFP work after seeking permission from them. The NTFP user is the first author of the case studies and the interviewers are co-authors. This was intended to provide a voice for the people involved in NTFP work and to narrate their story from their perspective.

## Structure of the Book

The book is structured into three parts. Part 1 has two chapters, this introduction chapter, and a chapter titled, "Debates on NTFPs and Poverty",

in which a global perspective of how NTFPs contribute to livelihoods is presented. The myriad of problems affecting livelihoods from NTFPs including land tenure, governance, inadequate exploration of opportunities for improving NTFP employment, and the inefficient use of NTFPs are included. Opportunities for improving NTFP-based livelihoods as well as conflicts in NTFP use are covered. This chapter also covers the debates on trade in NTFPs including the nature, scale, gender aspects, monetary and non-monetary benefits using a global lens. Discussion on NTFP value chains and sale to tap into their full potential as a sustainable livelihood venture is included. The chapter also explores how NTFPs can play an important role in poverty alleviation instead of merely serving as a safety net. NTFP based poverty alleviation is explained which includes poverty mitigation and the potential for poverty reduction.

Part 2 is a collection of stories from around the world, covering six continents and 18 countries (Fig. 3). These are the personal stories authored by NTFP users and co-authored by the contributors from the respective countries. A total of 22 case studies, covering a wide range of products from pine needles in Nicaragua, to honey in Cameroon to açai berries from Brazil to truffles from Italy and bamboo in China are featured in this book. The case studies provide a rich diversity in terms of products, their uses and settings, and they include both developing country and developed country settings. The case studies are presented in alphabetical order of country names.

Part 3 is the closing chapter on insights gained from the stories and how the information could be used in poverty reduction strategies. Lessons learnt which could be valuable for policy makers are spelt out.

The book is meant for academics, development practitioners and the general public who may be interested in NTFPs and poverty alleviation. We hope the stories in this book will provide new insights and inspire the readers to look at NTFPs in the light of a poverty reduction mechanism.

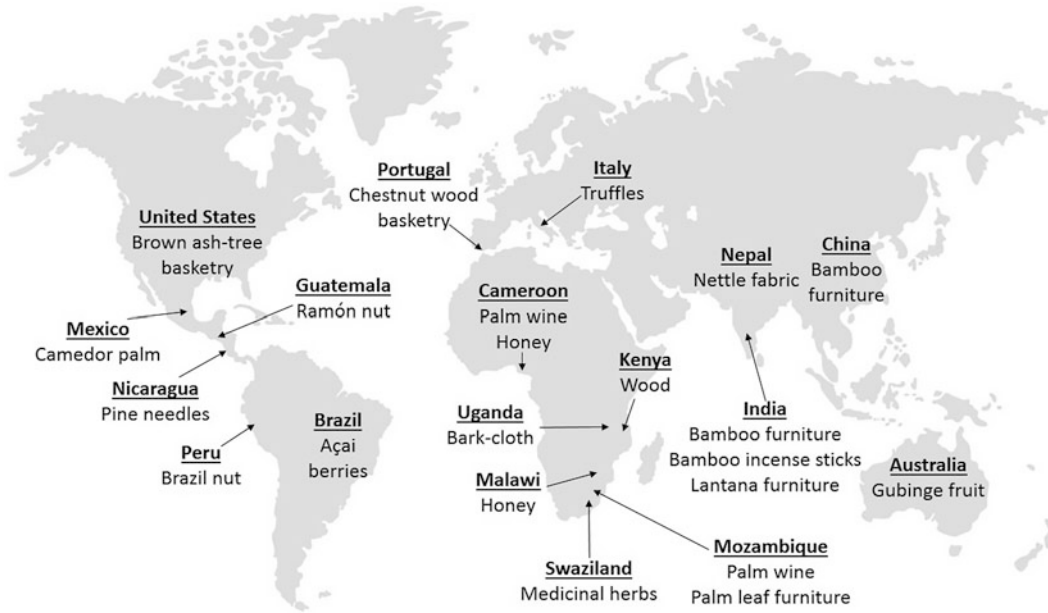


**Fig. 3** The distribution and subject of the case studies from six continents and 18 countries

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# Considering the Links Between Non-timber Forest Products and Poverty Alleviation

Charlie M. Shackleton and Deepa Pullanikkatil

## Introduction

The debates around the value and importance of non-timber forest products (NTFPs) are complex and ongoing. The complexity is a result of many factors, including the wide variety of species, products and uses, as well as the variety of constituencies and disciplines each seeing advantage from 'co-opting' the importance of the contribution of NTFPs to their own areas of interest and concern. Conservationists are interested in NTFPs because their combined high value in many settings offers a potential alternative to the destruction of forests by either commercial logging or their widespread conversion to other land uses (Peters et al. 1989; van Beukering et al. 2003; Dejene et al. 2013). Anthropologists and ethnobotanists are interested in NTFPs because of their contribution to cultural identity, traditions and daily consumptive needs of many rural (and some urban) communities (Cocks and Dold 2004; Kim et al. 2012; Fadiman 2013). Nutritionists are interested in NTFPs because of the many indigenous foods and their contribution to food security (Barany et al. 2004; Ahenkan and Boon 2011; Ncube et al. 2016). And economists and development planners became interested in NTFPs because of early suggestions that their value could be harnessed as a vehicle for poverty alleviation amongst some of the most marginalised communities around the world (Shackleton et al. 2007a, b; Angelsen et al. 2014; Rahut et al. 2016).

In many locations and instances these separate constituencies have converged (Arnold and Ruiz Pérez 2001; Kusters et al. 2006), thereby providing a compelling argument and advocacy for more research into NTFPs and their incorporation into forest conservation plans and local or even national economic and development policies (Oksanen et al. 2003; Shackleton and Pandey 2014). Thus, the agenda of conservation agencies is advanced by supporting those arguing for sustainable NTFP use for livelihoods, cultural or economic purposes, and vice versa (Neumann and Hirsch 2000; Angelsen and Wunder 2003). And yet the simultaneous achievement of conservation, development and cultural goals has been elusive (Arnold and Ruiz Pérez 2001; Kusters et al. 2006; Sunderland et al. 2011). Consequently, it is the debates around poverty alleviation potential that attract most attention and potentially have the power and stature to influence national policies around the use and conservation of natural landscapes (Wunder et al. 2014a). This is because poverty and its alleviation

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are typically high on the agenda of national governments throughout the developing world, as well as international efforts towards a global future that is more equitable and sustainable, as encapsulated by the Sustainable Development Goals and their precursor, the Millennium Development Goals.

The use of and trade in NTFPs obviously substantially predates academic research and internationally agreed development agendas and goals. People have collected, trapped and foraged for wild products since the dawn of humanity (Svizzero 2016). Similarly, useful species have been transported, bartered or sold between regions, countries and continents for millennia. Indeed, control of NTFP production areas and trade routes drove much exploration and conquest over several millennia, although much unrecorded until the 16th century onwards (Laws 2011). The Romans sought perfumes and resins from lands they conquered or further afield, such as frankincense (*Boswellia* resin) and myrrh (*Commiphora* resin) from the Arabian peninsula and northeast Africa. The spice trade from India and Southeast Asia to Europe was perhaps the first large-scale, long-distance international commercialisation of NTFPs. The bounty of the Americas transformed European cuisine with the introduction of already domesticated potatoes, tomatoes, maize, avocadoes and pineapples, not to mention chocolate. After colonial conquests, the colonial authorities encouraged the exploration of countries newly under their control for useful plants and products (the precursor of modern bioprospecting), with thousands of species shipped from the colonies to Europe for horticultural trials, and between colonies under the same coloniser (Schiebinger 2004; Schiebinger and Swan 2005; Kannan et al. 2013).

The suggestion or recognition that NTFPs may offer a means for development opportunities generally, and poverty alleviation specifically, arose in the early to mid-1990s. In 1988, Myers profiled "further products or outputs" from tropical forests based on several earlier inventories of NTFPs (or non-wood forests products) in Southeast Asia and India. This had been commissioned to identify species with commercial potential, and argued that their value was likely to rival that of high value timber, and consequently their development could save forests from the widespread ravages of commercial logging and provide income opportunities. The argument of potentially higher values from NTFPs than from commercial logging or land conversion was further advanced by Peters et al. (1989) and Balick and Mendelsohn (1992), who calculated values of NTFPs within tropical forests in Amazonia. Neumann and Hirsch (2000) added that this coincided with a number of substantive shifts in global geopolitics following the breakup of the former Soviet Union, which resulted in seismic shifts in development perspectives and policies of the Global North to the Global South countries. In the face of commentary that broad-scale development successes based on NTFPs were relatively rare or vulnerable to global pressures and elite capture (Dove 1993; Belcher 2001), for a variety of reasons, the narrative narrowed from one about higher values than competing land uses to a focus on poverty and poverty reduction strategies (paralleling shifts in international development discourses at the time).

Byron and Arnold (1999) opined that whilst many people "depend" on NTFPs, there was ambiguity in both what dependence meant and how it could be measured. They observed that some users of NTFPs have no alternatives and that without NTFPs their livelihoods, culture and wellbeing would be measurably worse off, whereas others have choices in whether they use or trade in NTFPs or alternative products and livelihood strategies. They went on to conclude that forest resources are undoubtedly important in allowing many poor people to "survive" but that they were "less important in helping people escape from poverty". They also cautioned against support to the NTFP sector in situations where more rewarding livelihood opportunities emerge; i.e. avoidance of promoting 'poverty traps'. Similar sentiments were expressed by Neumann and Hirsch (2000) who stated that "although NTFPs are extremely critical for the

rural poor as a livelihood strategy … they rarely provide the means of socioeconomic advancement", whilst Campbell et al. (2002) affirmed that "we found no evidence that they [woodland NTFPs] are able to lift people out of poverty". This was repeated by Angelsen and Wunder (2003: 34) when they argued that "although most NTFPs are poor instruments for poverty reduction some are important for poverty prevention", although they do acknowledge some exceptions a couple of pages later.

## What Are Poverty, Poverty Alleviation and Poverty Traps?

Given the substantive and continuing focus internationally on the need to reduce poverty, it is not surprising that there is much debate on how to define and to measure it (Misturelli 2010). Whilst many definitions acknowledge that it is more than just a limit to or lack of assets and cash, economic measures or indices (such as income, consumption or assets) remain the most widely used (Barrett 2005). This is because of their *relative* ease of definition, measurement and monitoring and universal understanding at a variety of scales and across 'wealth' groups (Angelsen and Wunder 2003). More social, qualitative, experiential or participatory indices are particularly powerful at local levels (Hargreaves et al. 2007; Misturelli 2010), but may suffer considerable heterogeneity from one place to another. Moreover, as a consequence of the gradual acknowledgement of the multidimensional nature of poverty, there is growing consideration of wellbeing as opposed to only income or asset poverty. For this text we consider poverty to be "a pronounced deprivation of wellbeing related to lack of material income or consumption, low levels of education and health, vulnerability and exposure to risk, no opportunity to be heard, and powerlessness" (World Bank 2001). Thus, in this book we recognise that poverty does not just have one facet but includes aspects of wealth, dignity, belonging, freedom to make decisions, choice, participation (in civil, social and cultural life) and most importantly, hope.

Following FAO (2003) and Angelsen and Wunder (2003), the concept of poverty alleviation has two dimensions. The first, poverty mitigation, covers strategies and activities that prevent a household's circumstances deteriorating into deeper poverty. The second, poverty reduction (or elimination), describes a movement in the opposite direction, namely a lasting improvement in household circumstances, asset base and wellbeing. However, Dokken and Angelsen (2015) point out that most studies on the contribution of NTFPs to livelihoods, poverty alleviation and wellbeing are actually once-off household surveys and consequently represent static views of both poverty and use. They caution that households' incomes, and consequently poverty, at any specific time can be variable through time as a consequence of multiple household and broader factors such as high or low agricultural yields, the gain or loss of a job in the household, price shocks and the like. Consequently, a meaningful proportion of households may be classified into different income quartiles at different times. No NTFP studies have as yet differentiated between such structural or more persistent/permanent and stochastic (fluctuating) poverty (Dokken and Angelsen 2015), although the many analyses of coping strategies in the face of household shocks does offer some insight in this regard (e.g. Völker and Waibel 2010; Paumgarten and Shackleton 2011; Debela et al. 2012; Wunder et al. 2014b; Mugido and Shackleton 2017a; Weyer et al. 2018).

Part of the debate around NTFPs and their potential for poverty alleviation has also touched on the notion of them being poverty traps (Neumann and Hirsch 2000; Campbell et al. 2002; Angelsen and Wunder 2003; Ainembabazi et al. 2013), i.e. the very antithesis of offering opportunities for poverty alleviation. Poverty traps have been variously defined within different fields (Haider et al. 2018), ranging from "any self-reinforcing mechanism that causes poverty, however measured, to persist" (Barret et al. 2007), to a minimum asset base below which households are unable to accumulate and insure against shocks (Carter and Bennett 2006), or "strategies to cope with poverty that further

entrenched them in poverty" (Whitehead 2006). For example, Whitehead (2006) described how small households in northeast Ghana lack sufficient labour to work their own fields and so become daily paid labourers in the fields of others, the returns from which are insufficient for them to be able to hire labour to assist them in their own fields, and so the cycle continues. Coomes et al. (2011) revealed how in a village in northeastern Peru, insufficient land limits the productivity of some households because they are restricted to planting subsistence and short fallow crops because they lack sufficient land to practice fallowing or plant larger perennial cash crops.

Despite the conceptual intuition behind the notion of poverty traps, there is some opinion that the empirical evidence is quite limited (Kraay and McKenzie 2014), especially in households with multiple livelihood strategies based on a diverse asset base (McKay and Perge 2013). For example, Belcher and Schreckenberg (2007) concluded that only in "rare cases" are NTFP activities "classified" as poverty traps. Kraay and McKenzie (2014) argued for differentiation between different types of poverty traps which is likely to improve understanding of the conditions required for their emergence and strategies for their solution. With specific application to the role of NTFPs in livelihoods and poverty, FAO (2003) noted that in some instances households or communities can be locked into poverty through use of NTFPs because NTFPs offer low returns as a consequence of (i) many having low value, (ii) high transport costs between harvesting sites and markets, (iii) limited markets and (iv) being substitutable if prices rise too high. These attributes discourage investment in NTFP activities and enterprises, meaning that they continue to offer mostly low returns which serve to reinforce household poverty. For example, Cinner (2010) described how poorer fisher households in coastal Tanzania adopt more destructive seine-net approaches which degrade the coral and fish resource, limiting their future returns and prospects of moving out of poverty. However, such analysis often fail to consider (i) the extent of reliance on the NTFP under examination, (ii) whether the actors have the skills, assets or desire to move into other sectors, and (iii) whether other sectors or opportunities are readily available in their local setting. Thus, the poverty of the poor is not just about limited cash incomes, and often NTFPs are a sector of convenience, rather than a trap, which fits well with other constraints or needs for that household in that setting at that time. The additional problem is that many observers of NTFPs and their use or commercialisation fail to account for the full range of other household strategies. For example Belcher et al. (2005) demonstrated significant differences in returns depending on whether households sought to specialise in specific NTFPs, or they were simply supplemental to other livelihood activities. Additionally, most studies do not account for returns per unit effort. Shackleton et al. (2007a, b) argued that often the returns from NTFPs compare very favourably to those from other land-based activities if the hours worked are taken into account.

## NTFPs and Poverty Mitigation and Cash Saving

The observations and reports that NTFPs are used by hundreds of millions, if not over a billion, people globally, indicates their importance in poverty mitigation. Household consumption of NTFPs provides a double benefit through (i) the consumption of goods required by the household as well as (ii) a cash saving benefit because many NTFPs for household consumption are obtained for free from local environments.

Multiple works have determined the monetary value of direct consumption of NTFPs. The most comprehensive of these is the seminal work of Angelsen et al. (2014) reporting on almost 8000 households from 24 developing countries. This revealed a mean contribution of 21.1% (±13.1%) or US$433 per household per year. This was second only to crop income at 28.7 ± 13.3%. This figure is remarkably similar to the 22% proportional contribution of NTFPs to total household income concluded by Vedeld et al. (2004)

from a meta-analysis of 54 empirical studies. Thus, just over one-fifth of the income of rural households is provided by NTFPs, primarily in the form of wild foods, firewood and timber/fibres for construction. This is a noteworthy contribution by any interpretation and yet there is wide variation around this figure; with some studies revealing markedly higher contributions than this and others lower. Some illustrative examples from a range of different biomes are provided in Table 1. These results are not directly comparable because the different studies apply different definitions of NTFPs and therefore what types of biological products are included or excluded, as well as the methods employed. All should be viewed as underestimates because very few include and report on a full inventory of every NTFP used by the households involved.

Three common patterns repeat themselves when examining such studies within the context of poverty alleviation debates and strategies. The first is that the income share provided by NTFPs is usually meaningful and typically within the top three strategies employed by households. This is quite remarkable given that in most countries the NTFP sector is overlooked and does not enjoy the same level of support to boost production that the crop, livestock and small-business sectors might (Shackleton and Pandey 2014). What might it achieve were it given the same sort of support?

The second is that the share of household income represented by direct use of NTFPs is typically higher amongst poor households than more well-off households. For example Dash et al. (2016) reported a proportional contribution of NTFPs to the poorest quartile of 13.8% in Similipal Reserve in northeast India, compared to only 2.8% for the wealthiest quartile, whereas in Iran, Khosravi et al. (2017) found the poorest households to received 21.3% of their income from NTFPs in comparison to 10.2% for the group with the highest total income. The differential was even higher in the dry regions of southeastern Ethiopia where the poorest households obtained 57% of their income from forest products compared to only 12% for the richest households (Worku et al. 2014). The limited work in urban settings suggests the same, where for example, Kaoma and Shackleton (2015) found a significant negative relationship between total household income and the proportion of income from urban collected NTFPs. There are some exceptions to this generalisation (e.g. Ambrose-Oji 2003; Leßmeister et al. 2018), but relatively few.

The third common finding is that the proportion of households living below some poverty line defined in each study, declines, often appreciably, when use of NTFPs are included in household income (Table 2). Across the five studies in Table 2, the mean proportional change is 31%.

**Table 1** Examples of the proportional contribution of NTFP income to total household income across different biomes

| Biome | Country | Relative contribution to household income (%) | Reference |
|---|---|---|---|
| Wetland | Uganda | 53 | Gosling et al. (2017) |
| Savanna | Burkina Faso | 45 | Leßmeister et al (2018) |
| Tropical forest | Cameroon | 38 | Makoudjou et al. (2017) |
| Broadleaf forest and scrub | China | 32 | Hogarth et al. (2013) |
| Various (mostly forest) | Malaysia | 24 | Saifullah et al. (2018) |
| Urban | South Africa | 20 | Kaoma and Shackleton (2015) |
| Dry oak savanna | Iran | 15 | Khosravi et al. (2017) |
| Evergreen and semi-evergreen tropical forest | Bangladesh | 14 | Kar and Jacobson (2012) |

**Table 2** The proportion of households with incomes below the poverty line within or without NTFPs

| Country | % of households below the poverty line when forest income is: | | % change | | Reference |
|---|---|---|---|---|---|
| | Excluded | Included | Absolute | Proportional | |
| Bangladesh | 65.0 | 43.0 | 23 | 35 | Abdullah et al. (2016) |
| Ethiopia | 65.1 | 41.1 | 24 | 38 | Worku et al. (2014) |
| Nepal | 11.1 | 5.9 | 5 | 47 | Oli et al. (2016) |
| Nigeria | 76.5 | 66.1 | 10 | 14 | Fonta and Ayuk (2013) |
| South Africa | 58.7 | 46.7 | 12 | 20 | Davenport et al. (2012) |

A constituency little explored is the collection and consumptive use of NTFPs in urban areas. Whilst it is undoubtedly a ubiquitous practice (Schlesinger et al. 2015; Shackleton et al. 2017), it has hardly been examined within a poverty alleviation framing other than analysis of market chains of NTFPs imported from surrounding rural areas. The exception is that of Kaoma and Shackleton (2015) who determined that urban sourced NTFPs contributed approximately 20% of household income to the urban poor in three towns in South Africa, and it reduced the number of households living below the poverty line by 7.7%. Saifullah et al. (2018) included urban households in their sample, but did not disaggregate them in the analysis.

Across these multiple examples and settings, it seems reasonable to conclude that NTFPs do play a noteworthy role in poverty mitigation in myriad settings and contexts. Indeed, the available evidence and increasing number of case studies suggests that it is closer to being the norm rather than the exception voiced by Angelsen and Wunder (2003).

## NTFPs as Safety Nets in Mitigating Poverty

The role of NTFPs in mitigating poverty is starkly demonstrated when vulnerable households use them during times of heightened need as they either have no other options, or the other options alone are insufficient to meet a household's heightened need. These situations are typified by unanticipated external or internal shocks to a household (or entire community) which undermine, diminish or eliminate a particular livelihood activity, either temporally or permanently. External shocks include droughts, floods, crop pests or diseases, death or theft of livestock, war, forced relocation, currency devaluations or extreme increases in the prices of foodstuffs or agricultural inputs. Typically these sorts of shocks affect multiple or all households in a community simultaneously, and consequently are often termed 'covariate' shocks. Internal shocks are those that affect one or more household members, such as illness, trauma or death, loss of employment or a major cash income stream, extreme price changes for inputs into primary livelihood activities. These generally befall an individual household at a time, and are termed idiosyncratic shocks. Temporary or longer-term use or sale of NTFPs in response to such shocks has been dubbed the "safety-net" function of NTFPs (Angelsen and Wunder 2003). It may be manifest on one or a combination of three ways (Shackleton and Shackleton 2004), including (i) increased use of NTFPs already used by the household, (ii) substitution of purchased or grown goods by NTFPs and (iii) temporary trade in NTFPs.

It is generally impossible to place a quantitative monetary value on the use of NTFPs in such a situation. It is clearly more than just the value of the NTFPs consumed or sold. Without access to and use of NTFPs in such situations, the coping options may be constrained and if insufficient, could result in further loss of household

assets (e.g. selling of livestock or land) or engagement in maladaptive or illegal practices (such as prostitution, crime) or dissolution or relocation of the household.

One pointer regarding the importance of NTFPs in contributing to household coping strategies and thereby preventing or limiting increased vulnerability and poverty is the proportion of households that experience a shock that make some use of NTFPs in response. Some illustrative figures are summarised in Table 3.

It is clear from these few examples from different continents and countries that rural livelihoods are precarious because of frequent shocks and stresses. Although the reference period for enumerating the number of shocks differs between studies, the results show that most rural households experience at least one shock per year, with some receiving multiple shocks a year. Secondly, when faced with a shock, a number of coping responses are used, the nature of which is dictated by the household's assets and capabilities, the nature of the shock, its timing in the year and relative to previous shocks and the broader context. Amongst the array of coping strategies reported, the use of NTFPs is relatively common, albeit not typically the first response in most instances.

Whilst these illustrative figures allow some insights into the importance of NTFPs at these times, they are likely to be underestimates. For example, more qualitative case studies of NTFP traders show that many started trading because of some shock to their household that either

**Table 3** Examples within the last ten years of studies documenting the proportion of rural households turning to NTFPs as a coping strategy in response to unanticipated shocks

| Case example | Reference |
|---|---|
| 898 households in 45 villages in Vietnam. 84% experienced shocks that resulted in income losses in the six year reference period. The most commonly invoked coping mechanism was use of NTFPs, and the likelihood increased as the number of shocks experienced increased | Völker and Waibel (2010) |
| 234 households in western Uganda. Every household experienced at least one shock during the previous three years, with an average of 3.4 shocks per household. Larger shocks were more strongly associated with use of NTFPs as a coping strategy | Debela et al. (2012) |
| 100 households (50 in each of two villages, one in southeastern and one in northern South Africa). Every household experienced at least one shock in the preceding two years; many had experienced more than one shock. The most common coping strategy (85% of households) was to invoke kinship bonds. Yet, 70% of households had also used NTFPs as a coping response. For wealthy households it was the fifth most common strategy, whereas for poor households it was the second most common strategy | Paumgarten and Shackleton (2011) |
| 7978 households in 333 villages across 58 sites in 24 countries. 64% experienced at least one shock in the preceding 12 months, with a mean of 1.6 per household. Of these, 44% used forest or environmental resources as a coping response (18% ranked it as their first response strategy, 14% as the second and 12% as the third). Use as a primary response was positively related to existing use of forest resources and remoteness of the site and negatively related to education of the household head, size of cropland and assets value of the household | Wunder et al. (2014b) |
| 1200 households in 12 sites across South Africa. 79% had experienced at least one shock in the preceding 12 months, with an average of 4 shocks per household. 36% used NTFPs as a coping response, which was the third most common response after kinship and cash savings. Use of NTFPs as a coping response was positively related to household size, number of shocks experienced, age of household head, and negatively related to education level of household head, and agro-ecological productivity | Mugido and Shackleton (2017b) |
| 60 NTFP traders (30 in each of Malawi and South Africa). 95% had experienced at least on shock in the preceding two years; with a mean of 2.9 per respondent. 37% turned to NTFPs as a coping mechanism | Weyer et al. (2018) |

diminished or eradicated one or more primary income sources or other coping strategies failed. Weyer et al. (2018) interviewed 420 NTFP traders in rural and urban locations across five southern African countries and found that the three most common reasons respondents had become traders were (i) family death/illness usually of a breadwinner, (ii) the need to foster children orphaned by the death of close kin and (iii) general income deprivation (but with further exploration, many added that such income poverty was result of death of a breadwinner). Having found that NTFP trade allowed them to survive and cope after the shock, it then became a more permanent livelihood option for many. These findings echo those of Shackleton et al. (2008) who reported that between 34 and 93% of traders in four different NTFPs had entered the trade because of personal retrenchment of loss of husband's income (due to death, illness or retrenchment).

In summary, there appears to be ample evidence that NTFP use is a common strategy in the face of shocks. As such they represent an important asset or insurance which helps to mitigate poverty. The extent to which they do so is a function of the scale of analysis, the household assets and capabilities, the type and severity of the shock, the local diversity and proximity of NTFPs and the broader context.

## NTFP Trade for Poverty Alleviation

The trade in NTFPs is characterised by extreme multiplicity in almost every aspect one might wish to examine (Belcher and Kusters 2004; Ruiz Pérez et al. 2004; Sunderland et al. 2004; te velde et al. 2004) (Table 4). The scale ranges from extremely local to international. It includes raw products through to products with extensive processing or value addition. Raw materials may be harvested from local or individual agroforests, wild or planted species, communal rangelands and wetlands, through to areas distant from harvesters' homes requiring trips of several days or weeks. NTFP products can be sold in large volumes to many consumers in widespread markets down to small, niche or specialised markets. The degree of engagement in NTFP trade may be ad hoc when a specific need arises, through to people who are full-time in the trade and view it as their primary and perhaps only means of cash income. It draws in people with different skills levels, genders, ages, education and backgrounds. Some learnt or inherited the trade and attendant skills from their parents or grandparents, others came into it by chance or by desperation.

Not only is the trade characterised by such diversity, it is also dynamic in space and time. Some NTFP products are peculiar to a particular geographic region, village or even a certain group

**Table 4** The range in attributes that underlie the high diversity in the nature of NTFP trade

| Attribute | Dimensions and range |
|---|---|
| Raw material | • **Management system**: wild harvested, wild managed, encouraged/tolerated, cultivated<br>• **Sites**: forests, rangelands, wetlands, fields, disturbed lands, homegardens, homesteads, institutional grounds<br>• **Tenure system**: communal, private, usufruct, state, open access tenure systems |
| Product | • **Processing**: raw material, basic sorting and grading, extensive transformation<br>• **Value**: bulk low value, intermediate, low volume high value |
| Physical markets | • **Location**: roadside, home, local, regional, national, international<br>• **Nature**: general, specialised<br>• **Size**: large, small<br>• **Permanence**: permanent, itinerant, seasonal, ad hoc, on demand/order<br>• **Predictability**: constant, variable, highly erratic |
| Market chain | • **Length**: short, intermediate, long<br>• **Actors**: single, few, many<br>• **Differentiation**: single actor, a few stages, multiple stages and roles<br>• **Actor involvement**: intermittent, ad hoc part-time, permanent part-time, full-time<br>• **Outcome of involvement**: coping strategy, livelihood diversification, income |

of households within a village, catering for specific requirements of customers, whilst others are common across regions, countries and continents (such as firewood). Temporal dynamism, a topic with little systematic exploration in most NTFP literature (Dokken and Angelsen 2015; Rasmussen et al. 2017), is a consequence of changing market demands (locations, products, volumes, prices) in response to local and external drivers, changing actors and changing resource supplies. Some actors view the trade as simply a temporary occupation until 'better' opportunities arise, others are engaged simply to raise sufficient cash for a specific end need (e.g. school fees, fix the roof on the house, pay some medical bills, repay a loan), some are long-term NTFP traders, but only on a supplementary or casual basis as part of a diverse livelihood portfolio, and hence they come and go, whilst others specialise in producing and trading NTFP products as their primary and maybe only income source. On the resource side, harvesters and other actors in a given market chain must be responsive to changes in resource availability as a consequence of seasonal changes, unpredictable climatic events, land transformation, formal and informal governance regulations and perhaps unsustainable harvesting practices and interactions between such.

The consequence of such diversity and dynamism is that it becomes challenging to make prescriptions or generalisations on the role of NTFP trade in poverty alleviation. There will be examples that clearly demonstrate NTFP trade as a pathway out of poverty (such as the case studies in this book) whereas others will show marginal returns (Ruiz Pérez et al. 2004; Shackleton et al. 2007a, b, 2008) and perhaps evidence of a poverty trap. This points to the need for more meta-analysis and appreciation of context and market chain characteristics, such as the cross-case analyses of Belcher and Kusters (2004), Ruiz Pérez et al. (2004), Sunderland et al. (2004), and te Velde et al. (2004). However, many of these have been based on more established and longer value chains, with less attention to local markets and short chains, although the latter are likely to involve orders of magnitude more people. Indeed, local market chains and marketing of NTFPs have been overlooked in many regions (Shackleton et al. 2007b).

Perhaps the most widespread role of NTFP trade is in poverty mitigation, but that is not to belittle its not insubstantial role in poverty reduction as the cases in this book attest. Remarkably, there are very few studies that have estimated the proportion of households in a specific region or country that engage in trade in one or more NTFPs. Thus, much of the literature on trade and the incomes it provides is based on analysis of a specific market or market chain. But this does not provide insight in how many households engage in trade across the full gamut of NTFPs in a specific region. The large-scale study of 1200 randomly sampled households in South Africa reported that 6.4% of households traded one or more NTFPs on a casual or fulltime basis (Mugido and Shackleton 2017b), which is a lot lower than small studies in one or a few villages (e.g. Shackleton and Shackleton 2006; Kalaba et al. 2013), with Kalaba et al. (2013) reporting that 69% of households in their village survey sold one or more NTFPs. Nonetheless, if approximately 6.4% of rural households in South Africa trade in one or more NTFPs, then there are more than 300,000 households in the country doing so, suggesting that tens of millions of households throughout sub-Saharan Africa are likely to be engaged in trading NTFPs.

The poverty mitigation role is typified by those vendors who trade NTFPs as a casual activity for supplementary or top-up income. They might do so to cover a particular income shortfall, or to diversify their livelihood portfolio. The cash earned may represent only a few percent of total cash income or perhaps much more. They may drift in and out of trading NTFPs depending on what other opportunities are available or other incomes the household has. The cash earned may be limited but it is highly appreciated and helps ease livelihood burdens, though purchases of food, medicines, seeds, education costs, transport and the like (Mjoli and Shackleton 2015).

Any poverty reduction realised through NTFP trade is most likely a result from sustained engagement by knowledgeable and experienced

**Table 5** Examples across a variety of NTFPs where NTFP traders' mean incomes are above comparative local, national or international poverty lines

| Product | Country | Net income (US$) | References |
|---|---|---|---|
| Bamboo products | Bangladesh | 70–145 per month | Mukul and Rana (2013) |
| Edible plant products | DR Congo | 1393 p.a. | Termote et al. (2012) |
| Flower stalks | Brazil | 65–350 per month | Schmidt et al. (2007) |
| Gaharu wood resin | Indonesia | 8 per day | Paoli et al. (2001) |
| *Gnetum* leaves | Cameroon | 2928 p.a. | Ingram et al. (2012) |
| Lianas | Brazil | 161 per month | Guadagnin and Gravato (2013) |
| Medicinal plants | Nigeria | 113 per month | Osemeobo (2009) |
| Mushrooms | Spain | 7000–10,500 per season | De Román and Boa (2006) |
| Orchids | Mexico | 20–259 per day | Cruz-Garcia et al. (2015) |
| Palm wine | Mozambique | 1850 p.a. | Martins and Shackleton (2018) |

*Note* reported incomes are from the original study and have not been adjusted to 2017 equivalent values

traders, the more specialist strategy classified by Ruiz Pérez et al. (2004) and Belcher et al. (2005). Here the sectoral studies of specific market chains are insightful (Table 5). However, one must acknowledge that whilst *mean* income from NTFP trade across a sample might be above a specific poverty line, that some actors may still fall below the same poverty line. Nonetheless, many NTFP traders and product types enjoy income returns well above the local wage rates (Shackleton et al. 2007a, b), or even local and national average incomes. For example, Belcher et al. (2005) examined 61 trade chains across multiple countries and reported that for just under half (44%) of them the average income to the traders exceeded the local average income and in some instances was close to or above national average incomes.

These examples seem to contradict Angelsen and Wunder (2003: 41) who concluded that "in most cases NTFPs provide an employment of last resort with marginal economic returns". Nonetheless, national and local contexts will be all important in whether people choose NTFP trade over other options or because there are no other options. If it was so successful in poverty reduction, one might ask why are not more people engaged in full-time NTFP trade? Perhaps there are more barriers to entry than external observers appreciate. It is assumed that because many NTFPs can be obtained from open-access or common property areas and that many do not undergo any value addition that anyone could therefore begin to trade in NTFPs. But there may be substantial barriers for some, such as the need to be near the homestead, limited knowledge of the species or harvest locations, fear of collecting in the wild, resource access control, concerns regarding stigmatisation of ones "poverty" and so on. However, numerous anecdotal reports indicate that the number of people participating in trading NTFPs is increasing in many regions (Shackleton 2015; Weyer et al. 2018).

## Conclusions

The purpose of this book is to put a face to some of the numbers. This chapter has collated multiple studies based on numbers which show a range of outcomes regarding the relationship between NTFPs, livelihoods, wellbeing and poverty alleviation. As such, there will always be a need for context specific studies to guide local and regional policies, projects and management options. Whilst seeking and attempting to explain commonalities and differences is the basis of research and science, one should guard against uncritically transferring findings or generalisations from one region, or even multiple regions, to specific localities and contexts. After all, there are real people behind the numbers.

It might well be valid that NTFPs will not provide a pathway out of poverty for most of the current poor in the world. But nor is any other single sector likely to and hence NTFPs provide an additional option, which for some might be complimentary to other options whilst for others it might substitute for other options (te velde et al. 2004). But even the numbers show that NTFPs are definitely a pathway out of poverty for some, however small the number may be. This book provides glimpses of how "some" changed their lives and poverty, and those of their families and children, through trade in NTFPs. Many of these stories are particularly noteworthy because NTFPs have provided a pathway out of poverty without any recognition or support from government agencies and institutions (Wunder et al. 2014a, b), although there are examples of where some support was provided. Consequently, the NTFP sector deserves recognition and support in development policies and PRSPs towards policy or financial investments to create enabling environments for this to happen (Shackleton and Pandey 2014). Coming back to the numbers, the even small percentages of people and households lifted out of poverty in villages, towns and countries around the world translates to millions of households globally. NTFPs clearly have a role to play. Indeed, as Byron and Arnold (1999) cautioned "In short, if we are to arrive at meaningful estimates of the importance of forests and forest products to people in their vicinity, we need to focus on measures that reflect the diversity of situations that exist, and the fact that for most this importance is best expressed in qualitative rather than quantitative terms. To do otherwise could prove to be very misleading."

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# Part II
# Personal Stories

# The Gubinge of the Twin Lakes

Bruno Dann

Bruno could say that this story begins with a prophesy, told to him when he was seven years old, by his Grandfather Gulloord Irimi.

> You see this fruit here, one day it will help people from all over the world. A lot of people will recognise and want this fruit.

Not much was known in Australia about the traditional fruit Gubinge when Gulloord Irmi spoke these words to him, let alone known to the rest of world. Back then people weren't commonly interested in traditional knowledge and Bruno recollects these times as being very difficult for his people.

> Children were being taken from their Mothers and Men were working very hard, they didn't get paid money like today, their wages were bags of tea, sugar and flour.

A year after Bruno's birth, Australia held the 1967 referendum for Aboriginal people of Australia to become citizens. Regardless of the majority yes vote, Bruno says that unfortunately the lives of Aboriginal people remained very much the same. The referendum did amend discriminatory words and limitations in the constitution but the running of aboriginal affairs was left broadly up to each State and disappointingly in Western Australia a lot of the 'White Australia' attitude had not evolved to match the new script.

Gulloord Irmi's words have always stayed with Bruno and every year Bruno and his partner Marion—founders of Twin Lakes Culture and Conservation Park 'Gunmimirrd and Goolyarook' organises and coordinates one of Australia's largest wild harvests of the native Australian bushfood Gubinge. The harvest which encompasses several communities and covers a massive land area, usually runs from late December through to early April and depending on weather conditions, the peak of the harvest being in mid-January.

Gubinge or the Kakadu plum (*Terminalia ferdinarndiana*) has today gained credit in most Super Food circles; as it is packed with anti-oxidants and contains the highest level of natural of vitamin C found in any plant on the planet, hence there is much interest in this fruit, overseas (Fig. 1).

Bruno explains that he was one of the last babies to be born in 'their' traditional way in his area. On the 24th of September 1951 Bruno's mother defied the laws imposed on them by Government and gave birth to him under a big old 'Morrel' tree that still stands strong today. He looks at this tree and smiles about how big it has grown since he remembers it as boy. Bruno was just five years old when he became the property of the state and went to the Beagle Bay Mission, like many other Aboriginal children who was sent to live under the 'care' of the Catholic

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**Fig. 1** Gubinge fruit, raw and ripened

Church. Bruno is part of what's known today as the 'Stolen Generation'.

> We were staying at place called Kennedy Hill right in the middle of Broome when the police came and took me from my mother, I was so young I didn't know what was happening, I missed her and I wanted to go home to her.

On the 11th of September in 1963 Bruno's mother passed away, he remembers when the church told him that he didn't know what 'passed away' meant, that no one explained to him that he would never see his mother again, he was just 7 years old. Bruno says she died of a broken heart from having her children taken away from her.

Looking back at this time now Bruno reflects how difficult it was for him living at the Beagle Bay Mission, without his mother or family and feeling that he didn't really have anyone to love or care for him. Yet, he also considers himself as being fortunate, as many other children were sent away, sometimes thousands of kilometres from their homeland. He feels grateful he got to remain in his birth place, as this meant he was able to grow up in his country and was taught a lot from his elders about his culture. During the holidays Bruno and some of the boys would leave the Mission to camp out with their elders. They would sometimes run off for weeks at a time, their elders waiting for them at the Mission fence line to take them out on country to learn about the land, their language and their traditional customs. Bruno believes that this has largely contributed to what he has achieved today, saying that this is how he knows what he does about the land.

> We all need to stay connected to our country and it is our responsibility to pass it on to our children the way it was handed on to us. This is in our culture how we think of it……This is for everyone to share, we can't be here forever on this earth…Pass on what you have, what you know.. like that and everyone will have their time. We are put here to look after this place, we have to take care of it for the next ones coming through, give it to them how we found it.

Bruno reflects on how he got into the business of harvesting bushfoods and says it all started with the decision to care for country as his elders had taught him.

> My old people would always tell us "Look after country and country will look after you" and this has always been the most important job I could do.

On August 1997 Bruno took his partner Marion to his country for the first time. Bruno remembers that they felt such a sadness for the land and it was in that moment that they came up with the concept to create a conservation park dedicated to the preservation of Bruno's country and culture inspired by 'Gunmamirrd and Goolyaroodk' the Twin Lakes.

> It had changed so much since I was a boy - the land was crying and dying. No one was living on it and taking care of it, a lot of the old people had passed away and everyone was so confused about what was going to happen (Native Title).

**Fig. 2** Bruno Dann with Gubinge fruit

Bruno and Marion made the decision to live out on Bruno's land to restore it to what it once was and he fondly he looks back on these early days as being very happy, mostly living off the land, fishing and crabbing like his old people did.

> It was paradise but a lot of hard work living with just the bush, we had no power, not even a generator, we cooked on the fire and had torches or candles to see at night and every couple of days we would drive 10kms to an out station to collect drinking water in big plastic bottles for the camp.

Bruno feels they have come such a long way since, now having solar/generator powered shipping container homes, water and a workable business.

Over the years what limited government funding received dwindled and in 2003 the government pulled out of supporting outstations like Bruno's. Bruno and Marion knew that for the Cultural Park to continue they would need to become sustainable. Interest in Aboriginal culture and bush food knowledge was growing and in December 2004 they began the first Gubinge harvest (Fig. 2). However, reliable markets were scarce and the demand for the Gubinge was limited. They knew that leaving the land now would be devastating for its restoration, particularly since they had accomplished so much. Biodiversity had improved and wildlife was becoming abundant. They didn't want to give up, but at this stage Bruno explains they didn't see how it could be financially viable to remain. In late 2007 they received a phone call that would significantly change this prospect.

Scott Fry, chocolate maker and founder of Melbourne based company Loving Earth, had heard about and wanted to buy Gubinge/Kakadu plums. That year Scott placed a 2 tonne order and for Bruno, a dependable market was secured. Bruno says 'they are our family from the sunrise country' and that it is this partnership with Loving Earth which has enabled the work at Twin Lakes to continue, he is very grateful for this relationship. Gubinge is now used in a quite few of the Loving Earths products, markedly their Gubinge Powder (with all profits returning back to the community) and a delicious Gubinge/Mandarin chocolate. Bruno says it makes sense to him to mill the Gubinge into a powder for people to use all year round.

> We (traditionally) didn't ever get all the Gubinge ripe off the tree. Many fall over the ground each year and these are the ones the sun gets into. My old people would use grinding stones and make the whole dried fruit, the seed and flesh into a powder and mix it with other foods from the bush.

Every year Bruno Dann and Twin Lakes Cultural and Conservation Park supply an

average of 4 tonnes of wild harvested Gubinge fruit to Loving Earth, generating $120,000.00 (Australian dollars) for the local communities. Bruno says he feels happy to be able to facilitate this opportunity for people to benefit, particularly at such a financially difficult time of the year.

> It makes me proud to see all the families returning to what has done for thousands of years. 120 people harvesting is the most we have recorded in one season and it's a good thing that people today have this and that the industry is growing.

The Cultural and Conservation Park is located 127 km north of Broome on the Dampier Peninsular of Western Australia and much of the Gubinge harvest takes place here. Bruno reflects that it can be quite difficult for people to get the fruit and that is why he pays $20.00 a kilo, he says,

> We harvest and we know what challenges people have. The fruit is picked in what we call the 'Wet Season', it is very hot and people have to go walking through the bush foraging to find ripe fruit. Since all of the pickers live in rural areas, road access is affected by the rain, when unpaved roads turn to muddy rivers which become difficult to navigate. Many elements determine what the season will be like, if it is too hot or if the rain doesn't arrive at the right time. We also have the threat of cyclones this time of year; even exposure to the tail end of cyclonic winds can strip the trees.

It is challenging and he wants people to get paid what they deserve for their work. Bruno explains that the Gubinge harvesting is a very busy period for him and Twin Lakes with essential preparation being done well before the harvesting starts, this is to ensure that everything runs as smoothly as possible.

> I talk to many different families from the communities and we organise how much fruit they think they can get for me. I also drive around to different areas to see what the early fruit looks like so I can estimate what sort of year we will have. We don't water the trees, there are too many, they are everywhere, so everyone is watching the weather and rejoicing when we get the rain that is needed for a good season. We also have to get the harvest vehicles checked over and organise the camps at Twin Lakes to make sure we have enough stores, fuel and harvesting equipment.

One of the biggest threats to the Gubinge harvest is bushfires. Traditional fire customs once regularly practiced by Bruno's people have died out in the area or are being practiced at the wrong time of year. Bruno recalls how the bush was healthy when his people were living on the land and how much it has changed since he was a boy, reflecting that a lot of the mature trees have been lost from the fires.

> When you lose something you lose it, it's gone, it's gone forever, in the olden days the old people use to love trees, they use to come to trees, rub the trees down and talk to them and make them feel very special, that's how we do it in our culture, we have natural orchards we don't need to plant trees; we need to save the trees that are already here from fire and other threats. I remember when people wanted to put Indian sandalwood here in my country, it doesn't belong here, we don't belong to it and it doesn't belong to us and it should stay with the people it does belong to. We have things in this country people haven't even recognised yet and this fruit has being going to waste for years, rotting on the ground, it is happy to be picked again.

Bruno feels that the words that his Grandfather pronounced to him all those years ago have manifested and not only with 'Gubinge' but other bushfoods too. This year Twin Lakes harvested one tonne of Bruno's traditional tea 'Jilungin' for the Australian native tea company Roogenic.

Professor Yasmina Sultanbawa from the University of Queensland has been researching 'Jilungin' and says she is very excited about its potential and how well it is performing as a herbal tea. Bruno explains that the 'Jilungin' tea is harvested at a different time of year to the 'Gubinge' this means people have the opportunity to harvest both and he is excited to see this market grow, potentially for 6 months of the year it can create a lot of work for people on country.

> The world is starting to notice us now and want what we have. 'Jilungin' is going real good, it is being recognised. People want to live on their country but before now there just haven't been the right opportunities for them. Our government needs to recognise that we don't want our land destroyed by mining and we don't want to be a part of it.

On the 27th of November this year 2017 'Nyul Nyul' Native Title under the 2015 proposed 'Bindunbur Claim' was accepted by the Federal Courts, a determination that Bruno and his family have been fighting for almost 30 years. Native Title is the recognition by Australian law of traditional rights and interests to land and waters of Aboriginal and Torres Strait Islander people and the acknowledgement of their unique ties to that land.

> I hope that Indigenous people realise from my story that they too have things that the world would be interested in, I want to be a good example and show them that they can do what I've done. To share with world what they have and benefit from their knowledge.

Bruno says that he wants to keep going with the work he is doing for as long as he can and then one day he can pass the country on to his children and their children just as his old people did for him. He hopes it can keep creating opportunity and jobs so people don't have to struggle and worry so much.

> My elders were the land carers, the professors of the land and would remind us that one day it would be our responsibility. We all have a purpose and when that purpose is finished we move on…..and that's how we see it in our culture. It doesn't matter what sort of man you are - big and strong…. nothing like that. It is, what sort of heart you've got and what sort of feeling you have for what you've got.

# Açai Berry: Brazil's Super Fruit

Geová Alves and Roberta Peixoto Ramos

At the mouth of the Amazon River is the Bailique archipelago, consisting of eight islands, seven of which are inhabited by approximately 51 communities, whose population rely on the activities of fishing and extraction of forest products for their livelihood. Historically, the açai berry has been the main trade of the Bailique communities (Fig.1). This case study is about how they successfully received Forest Stewardship Certification (FSC), making it the first in the world to receive this certification, guaranteeing not only the quality of their product but also its social and environmental sustainability.

Known as the super-food of Brazil, the açai is packed with powerful antioxidants that may protect cells from damage and may possibly help against diseases such as heart disease and cancer. The inch-long, reddish-purple fruit is also popularly known as an anti-aging agent and helping with weight loss.

The Bailique communities wanted to be the protagonist of their own development, and they designed a strategy for improving their wellbeing and quality of life. They were supported by Oficina Escola de Lutheria da Amazônia (OELA) and the Grupo de Trabalho de Amazônico (OELA), which are two NGOs that work in the Brazilian Amazon region. Thus, along with the traditional people, in 2013, the Bailique Community Protocol was put in place. This Community Protocol is an instrument for sustainable management of the territory and its natural resources, and a tool for local empowerment. The protocol contains the local norms and guidelines on decision making, thereby being a working document that can facilitate the dialogue between the community and any external actor, diminishing the power difference between these two actors. The Bailique Community Protocol was the first of its kind in Brazil.

After 14 months of workshops, meetings and social mobilization, the Bailique communities concluded their Community Protocol and, it was in place by December 2014. Since then, the Bailique communities have been working to put into practice the collective decisions taken during the discussions of the protocol. It also helped in identification of land conflicts and partnering with government organizations to resolve issues. The community identified four products that they wanted to develop further and they are: the açai berry, essential oils, fish and medicinal plants. Furthermore, they all agreed to focus on the quality of local education for the sake of future generations. The Bailique Community Protocol helped in strengthening social cohesion and empowering the communities, resulting in the creation of the Association of the Bailique

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**Fig. 1** The Amazon River bank with açai berry trees growing at the residence of a Bailique community member (photo by Laura Santos, Paulo Santos, Wenndel Paixão, Geova Alves, Luis Fernando Iozzi)

Traditional Communities (ACTB) and the more recent Cooperative of Bailique Extractive Producers (AmazonBai).

Geová Alves is the president of the ACTB and he is part of the young generation of leaders who wants to bring change to their community (Fig. 2). He spearheaded the certification of the açai berry, the fruit that provided livelihoods to many in this community. The açai berry has historically been the main trade of the Bailique communities, however, producers are subjected to exploitation making it a barely viable activity. In December 2016, the AmazonBai was awarded Forest Stewardship Certification (FSC) for their açai berries.

> The açai trade has historically been very important in the Bailique territory, but the producers have always depended on the 'middle men' to reach the markets, who usually put a very low price on their açai. The middle men collect the açai berries from the communities and take them to the city to be sold to local buyers, while dictating a very low price for the producers who collect the berry in the forest, says Geová.

The unfair prices fetched for the berries prompted Geová to act and after discussion with his community members, they decided that the açai would be the focus of their activities. Hence, the producers who were part of the Protocol started to participate in workshops and meetings about good practice in the extraction of açai berries according to the norms of the FSC certification. It is important to note that the FSC norms are related to the quality and hygiene of the product but are also connected with social and environmental sustainability. As Geová explained:

> The whole process of certification was a linking of the traditional knowledge of the producers on how to extract the berries according to their culture and the more technical knowledge brought by the FSC consultants on how to get the best berry possible.

It was indeed a very interesting process of negotiation between these two different worlds, where there was a conscious attempt to respect both modern and traditional knowledge. So, for instance, the producers learned about the need to wear boots for their protection when walking in the forest and also the need to avoid fruit contamination from the soil by using a plastic canvas to put the berries that were picked from the trees (Fig. 4). At the same time, the producers explained to the technicians that using a 'safety

**Fig. 2** President of the ACTB Geova Alves (photo by Laura Santos, Paulo Santos, Wenndel Paixão, Geova Alves, Luis Fernando Iozzi)

belt' to climb the açai trees would not be possible as good climbers usually jump from the top of a tree to another in order to maximize climbing time and facilitate the extraction of berries, and the belt would be a hazard in this case (Fig. 3). In order to guarantee safety when climbing, they agreed to select the tall and weak trees that should be cut down, allowing for more light into the forest, producing nutrients in the soil and removing a potential hazard for the climbers. For Geová, this was a special occasion that showed that local knowledge and scientific knowledge could work together for the common good.

The AmazonBai has 120 members from 30 different communities and now are organized and able to reach markets that will pay a better price for their açai. However, Geova highlights that the certification is not just an instrument to reach better markets and improve the income of producers, but it is part of a community strategy to implement an education system in their territory that will allow the younger generation to get good quality education in their communities, without the need to migrate to urban areas.

> The Bailique archipelago is very far from the city of Macapa and we do not have a good school system in our territory that gives a good education to young people. The students usually have to travel 12 hours on a boat to the city and then a couple of hours more on a bus to reach a good school. This is very expensive for us and is very difficult for the students who need to stay far away from their communities. Here we value the time we spend with the elderly because this is when we learn how to manage our land, and we learn about our culture and traditions. If a student stays far away from the forest for too long, he/she loses the link with their territory. So, the idea that we had during the discussion of the Community Protocol was to have a 'Family School' here in Bailique. In this way the kids would be able to stay much closer to their homes, learning from the national curriculum but at the same time learning skills which are important for life in the forest. And even better, they would have the chance to share that with their communities and learn from them, notes Geová Alves.

Family Schools are an education system that works with Alternation Pedagogy, where the student stays in the school for a set amount of time and then goes to the community to put in practice what was taught at school and at the same time learns the local traditions from the community. It is a school managed by the community and hence all decisions related to their education are taken collectively. It is an education system that respects the reality of the people

**Fig. 3** Climbing the palms to collect the berries (photo by Laura Santos, Paulo Santos, Wenndel Paixão, Geova Alves, Luis Fernando Iozzi)

whose livelihoods depend on the forest and rivers.

Geová explains how the açai trade is relevant to the implementation of this school. The açai producers from the cooperative agreed that 5% of the sale of every basket of their certified açai berry will go to a fund created for investing in the future of the Bailique Family School. In this way the producers are helping the whole archipelago to fund a school in their territory.

The açai season of 2017 was a special one for the AmazonBai Cooperative as it was their first season of selling a certified product. It is still very early to make a full assessment of how the certification has the potential to improve the lives of these communities, but it is possible to look at some early examples. Before the creation of the cooperative, açai producers relied solely on the middlemen to buy their products, and had no control over the price. The trader's boats would stop at their community, collect the açai and would pay whatever traders felt was the value of the product. After certification, and with the creation of the cooperative, the producers started to have full control over their product and, could influence the prices as well as the market.

Prior to the certification, one açai basket (containing about 14 kg) would sell for approximately R$2500 (approximately US$8). After the certification, the price doubled to R $5000 (approximately US$16). Although this is a considerably better price, the cooperative believes that they can get a better price for their açai, as they continue to negotiate with better buyers.

This price difference, nevertheless, has already made a significant difference in the lives of the cooperative members. Maely Lobato Martins, from the Jangada community in Bailique, is a young açai producer who sees the certification as a very important step for the community (Fig. 5). She explained how the extraction of the açai berry is a very intense labour activity, and yet the prices paid before certification were very low. She felt like she was always exploited, as the money paid for her production was just enough to pay for the expenses of extracting the berry, and there was nothing left for her family. For Maely, the creation of the cooperative and the certification are important achievements for the Bailique community, in particular, to end exploitation.

This feeling is shared by Maria do Ceo Lobato, who has been working in the açai trade for many years. She recognizes the importance of the cooperative, highlighting the important decision of the producers to use part of their

**Fig. 4** Images of collection process of berries (photo by Laura Santos, Paulo Santos, Wenndel Paixão, Geova Alves, Luis Fernando Iozzi)

revenue from the certified açai to support the Family School in their territory. Also, for her, the cooperative has many advantages over the previous system of relying on middlemen.

> The cooperative system is much better than using the middleman. Everything in the cooperative is put down on paper, everything is written down. The cooperative gives us a receipt for the transaction. The production of the cooperative is also very clean, there is no contamination from water or dogs. We have now a product of high value that is good for our health. And this is very important so when we get to the external market, we are going to succeed, says Maria do Ceo Lobato.

Geová Alves explained that soon after the end of the 2017 açai season he started to receive a lot of positive comments about the certification process and its outcome. He was happy to note that producers who were sceptical of the process at the beginning, were now interested in joining the cooperative. The Cooperative started with 75 certified producers, and in less than a year after its establishment. It now has 120 producers. These new

**Fig. 5** Maely Lobato Martins (left) and Maria do Ceo Lobato (right) (photo by Laura Santos, Paulo Santos, Wenndel Paixão, Geova Alves, Luis Fernando Iozzi)

**Fig. 6** FSC workshop with the açai producers of Bailique (photo by Laura Santos, Paulo Santos, Wenndel Paixão, Geova Alves, Luis Fernando Iozzi)

producers are now going through a series of trainings to receive FSC certification and join in for the next season of certified açai berries picking (Fig. 6).

Another direct outcome of the certification is that the açai from Bailique began to be viewed as a high quality product in the external market. Whereas previously the Bailique archipelago was seen as producing a low quality açai, after the certification there was a general assumption that their açai was of better quality than most açai in the region. According to Geová, the interesting thing about this is that this spread over to the

whole territory, where even the non-certified producers were able to sell their açai for a much better price than before. However, the plan of the Bailique cooperative is to go beyond the sale of the berry and increase its value by having their own industry (or finding a suitable partner) where the berry can be processed and transformed into final products such as juices or ice cream.

The long-term vision for this industry is to be able to produce a freeze-dried açai powder, which will be a highly nutritious product and will allow them to access niche markets. Other than being a good source of revenue, the collective vision is that this açai powder could be used in school meals in the region, giving the children the chance to have a nutritious meal using a local product.

The Bailique Cooperative is aware that this is part of their long term development project and one that will need strong external investment and business partners. Nevertheless, they are already doing some of the groundwork by preparing the young Bailique generation to be food technicians in this area. The Brazilian Ministry of Science, Technology, Innovation and Communication is funding a Centre for Technological Vocation in the Bailique community, where local students are receiving technical education on Food Technology. This course started in February 2017 and there are currently 17 students enrolled from the Bailique communities. This course is focused on the socio-biodiversity of the region, mainly the açai berry, and one of the aims is to train these students in the dry freeze technique. Therefore, the community is investing in the education of young people who can support the açai industry in the future.

> Our Community Protocol was the basis for everything we are achieving today. Through the protocol, we were able to organize, better understand our rights, understand our territory and develop a strategy that we believe is the best for our territory. It is the first time that we, as a community, have the chance to construct something that is truly relevant to us. We are not told what to do but we meet up and discuss collectively what is best for us. It was in this way that we decided about the açai certification and the implementation of the Family School. I am happy to see that other communities want to become empowered as well, concludes Geová.

# Honey Production in Urban Cameroon

Fonyuy Thomas Tata and Ojong Baa Enokenwa

Inspired by his uncle, Fonyuy took up beekeeping at age 15 and gradually increased the number of hives and now, 25 years later, he produces up to 1000 L every year. Fonyuy was from Kumbo regon in Bui division in the northwest region of Cameroon but he currently resides in Molyko, Buea, in the southwest of the country. He has been able to build a successful honey production business through sheer hard work and dedication and is inspiring many people to start honey production in his community.

> I used to visit my uncle who kept traditional bee hives and was so courageous that he will take me along to harvest when I was a child. He will say 'eh tata lets go and harvest bee', while other children will run away, I will be so glad to follow him. Bee sting for me was nothing so I was always willing to follow him. From there when I grew up and came to Buea, I started keeping mine around the 90′s, and from then I have been adding the number of the hives I have yearly.

Fonyuy gradually improved his beekeeping skills by attending several training courses and he learnt the basics of beekeeping, hive construction and so on.

> In constructing a bee hive, you must know the type of wood to use. We do not use any acidic wood like eucalyptus tree. You can easily know it when you get the pepper smell from the wood. When you construct a hive with such a toxic wood they will not survive it. I have my boy who I have brought into beekeeing, he is a carpenter by profession and is very good in knowing wood for bees. You see bees have very little ventilation except the entrance that is left for them to enter inside. So, if the hive is constructed with a poisonous or acidic wood they can enter and die or may not enter at all. They are 'confined and so with very small ventilation, when they keep getting that smell they may die.

Fonyuy lives in an urban area which has many trees and his beehives are in his backyard (Figs. 1 and 2). He uses the "Kenya top bar hive" which is a modern beehive. Although costlier that traditional beehive which most people use in the northwest region, Fonyuy prefers this.

> I have learned to live with bees that whenever I have a new tenant I teach them how to live with bees. The bee hives I have around the house are used to people unlike the ones in the bush. I tell the people around me when you see a bee do not act like you are in danger. When we harvest honey, most of them follow us to the house and will be there until all is packaged in containers. When they come to the house, they do not sting because they have nothing to defend. But they do sting around their house because they have a queen inside the hive to defend.

Fonyuy uses protective clothing while working and he feels that he has become an expert having worked in beekeeping for so many years.

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**Fig. 1** Fonyuy Thomas Tata in the backyard of his house, with two beehives in the background

**Fig. 2** Beehives used by Fonyuy in the urban setting with several trees around

> Most often, what I do is when I construct a bee hive, I burn fire inside to kill any other insects that could be inside. One thing you must know is that bees do not cohabit, a hive is either for them or another insect. They do not share at all. But the lizards continue to worry them a lot. I have had to reconstruct the shape of my bee hives just to avoid lizards entering inside. Now what I do is, I try to surround the bee hive with nets so that the moment the lizards climb on the hive they get hooked to these nets and cannot go inside.

Besides being particular about generating the best quality honey, Fonyuy is also helping others begin beekeeping in his community.

> You know the quantity of honey you harvest will depend on the number of bee hives you have. I have so many bee hives now that I try to concentrate now on encouraging young people and anyone interested in bee keeping building their hives. I try to put my hives where there are enough trees for shade, there is nectar, and water. But what I do is I try to measure the level of water inside the honey as most people tend to dilute their honey with too much water. I belong to an initiative group which am one of the leaders there. We produce hundreds of litres of honey. For my own personal business, I go up to 600 to 1000 litres per year for my honey production. I do package them them in smaller containers like 1 litres, 0.5 litres as

well as 0.3 litres bottles. So, you see, this is a good venture. I make a profit of about 1.8 million to 3 million Francs (US$3,200–5300) a year and this has really enabled me to build my houses.

The business was such a success that Fonyuy has been able to sell honey in a number of agricultural shows in Buea and other regions.

Every month end when I sell, I use the money to do something meaningful. I have been able to construct my house just from my honey business (Fig. 3). You know I have this other house I now rent to university students thanks to the honey business. I have marble tiles in my house. They are not cheap but I can afford buying them because I get the money through the sales of honey. I have one big room in this house which is a storage place for honey that I harvest. All my equipment and containers are kept there so that anything related to bee keeping is found there (Fig. 4). I now have many protective suits to protect myself from bee stings unlike when I started with one. I need a lot of containers especially as my production goes up to 1000 litres sometimes.

Fonyuy is looking at exporting his honey to external markets especially to neighbouring countries like Garbon and Chad. He believes that he is the main producer of honey in Cameroon and he supplies to all parts of the country.

I try to really encourage many people to move into this business so that we can meet the demand of honey. I have a project with a Canadian NGO that has been approved and will start in November, 2017 in Akwaya (Manyu division) to train people on bee keeping and teaching them on how to set up bee hives. One thing I noticed is that the cost of setting up a bee hive in the southwest region is quite expensive than in the northwest region. Just paying for the cages is not cheap since you must use the best type of woods which are usually very expensive. I however, have seen the profits to be far higher than the cost especially as you do not change the bee hives every year. That helps us to reduce expenditure.

Formerly a guard at the Prison Service Department, Fonyuy is now retired and is happily working on honey production full time. After retiring, he began teaching of about honey production part-time to students of the agricultural department in the university. As a guard he earned 150,000–200,000 Francs (US$ 270–360) a month, which was not adequate for his family

**Fig. 3** Fonyuy's house exterior on the left and interior showing wood paneling on ceiling on the right


**Fig. 4** Some of the containers used by Fonyuy to store honey

and hence since the 1990's he began honey production. Beekeeping helped him supplement his income to approximately $300–500 per month.

> When I was working, I will mostly be seen on my bee hives only after 3:30 pm when I close from work and during weekends that I do not work. Now I can say all the time is mine. I have been recently accepted to train students in the department of Environmental Science at the University of Buea on bee keeping. This too am happy as it will enable the young students to pick interest in bee keeping. My children have gone to school, and continue to school thanks to this venture, and I have 12 children plus a wife under my care. If I didn't do this, I would not have been able to cope.

# Cameroon's Elixir: Palm wine

Joseph Ntoh and Ojong Baa Enokenwa

Legend has it that Buea, a small town which is the capital of Southwest region of Cameroon, was a village founded by Njia Tama Lifanje, a hunter from the Bomboko area. He named the land "Ebe'eya", meaning literally a "place of happenings". The town, which was previously the colonial capital of German Kamerun is known for its tea plantations, diverse peri-urban landscape and is the home to the only Anglophone university, the university of Buea. A lesser known aspect of this area is that of palm wine production. Wine from palm has been an important part of the traditions of Cameroonians for centuries. Palm grows in the wild and is also planted in households and the wine is made by tapping the palm tree's sap. This case study is about Ntoh Joseph, a 48 year old security guard who considers himself a part-time security guard and a full-time palm wine tapper. A lucrative business, palm wine tapping provides Ntoh with income far greater than what he earns as a security guard.

> I come from the north-west region of Cameroon, but I have been living in Buea almost all my life. I am married and have four children with 3 grandchildren, all living with me. I started tapping around 1999, so it has been 18 years now. I was able to bring up all my children from the income I get from tapping. I don't have any other farm like cocoa or coffee and so that's what I harvest (palmwine) and it is what gives me money

The process of tapping palm wine involves first felling or cutting down the tree, leaving the felled tree for a period of about 2 weeks for the sap to concentrate, followed by tapping for up to 3-4 weeks (Figs. 1, 2 and 3). The freshly tapped wine is usually very sweet and has very little alcohol, but it becomes less sweet and the alcohol content increases when it ferments. Usually tapping starts in the morning and the wine is sold the same day. A beverage of high demand, Ntoh has a number of regular customers and is often able to sell all his stock in time.

> Of a day like today, I come back home with 30 litres of palm wine especially when the tree starts producing. It has a life span of three to four weeks but its peak of production is in the second week. Sometimes, I return home with 10 litres of palmwine when trees start to die and produces less. Years back, we used to sell a cup of palm wine for 50frs CFA (approximately 0.09USD). While other people will sell their palmwine at 50frs, I sold mine for 75frs (around 0.13USD) because I do not add water into it. Now they say we must sell a litre at 200frs CFA (0.36USD) but I sell mine for 300frsCFA (0.54USD). This is because I do not dilute my palm wine. I remove from the tree's mouth (the eye) and sell as it is. I only mix water when my customers demand I mix for them.

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**Fig. 1** Ntoh prepared the palm for tapping by cutting its head into a conical shape

Ntoh buys the palm trees that he taps. The price varies according to the size of the tree and distance from the community. It can cost between 300frs (0.89USD) to 700frs (1.25USD) per tree. If the trees are exceptionally large, it costs 1000frs (1.8USD). One can buy trees from CDC (Cameroon Development Cooperation) which deals with the production of palm oil. Palm trees which have been used for oil extraction and "spent" are put for sale, however, this is not done regularly and one needs to wait for the sale to be announced. Ntoh found that middle men inflate the prices when buying through the CDC, and therefore he buys palms from individuals.

> So, you see, this is my life and I love this tapping business. It is less strenuous like the security guard job that I do. When I return from tapping my palmwine I go for my job which begins from 4:30pm in the evening till 5:00am in the morning. When I return home, I go straight to the farm by 6:00am to start tapping from the different trees. And you know sometimes you must move from one farm or forest to the next to collect what has entered the different jugs I set under the tree. That

**Fig. 2** The head of the palm tree is tied with the bark of the tree and sap is allowed to flow into a container

job to be honest, does not pay me like the tapping I do. In a day if I estimate. I must get at least 6000frsCFA (10.8USD) from tapping palmwine only. So, you can imagine, it's a good business many people don't know. In one week, I sell 42000frsCFA (75.6USD) since I sell Monday to Sunday which means by the end of one month, I make a profit of 168000frsCFA (302.3USD). This is not bad at all as it is even almost three times more than what I get from my security job. So, I do my best to get palmwine for sale as much as I can especially as work does not pay like palmwine.

The palm wine tapping work is not without challenges, says Ndou. When cutting a palm in an individual's farm, if it falls on crops, the buyer is often fined or taken to the police for charging for damages caused. Damages paid could be up to 10000frsCFA (18USD) and if a brawl breaks out, the seller of the tree could throw away the jugs used for tapping, causing losses for the tapper. Challenges from customers include late payment and sometimes even refusal to pay.

In some cases, some customers will come to drink palm wine at the bar and will pour all sorts of insults on you but they will still stay and drink. And what can you do, except to bear all the insults…ha ha ha, you are the one who needs the money you know. There are many who owe me money from drinking but will refuse to pay their debt. For such people, I just sit and wait and if God will help them remember. When they pay for another drink and come to pay, I just include the past debts. Remember, the man who borrows from you can forget, but the one who gives to him can never forget. I have seen cases where customers deny that they have money and claim that their money belongs to someone else, even a lady. They may even go ahead to bring someone to claim the money belonged to him/her just because he does not want to pay his past debts

Ntoh noticed that over the years, the business has gradually been dropping. But, he has made enough money previously and was able to send his children to school and continue to send the younger children to school.

I did not tap for the month of June and July because I barely had trees to tap from especially as it was also the rainy season. If I had a huge capital, I would have left my security job for this palm wine business. When I am in the farm, I must think of returning home early so that I can sell and rest before going out for my job. You must go to the farm or forest two times a day to collect the wine that has entered. If you tap just once a day, you make a lot of loss. But if the distance is far, you go just once.

I plan to continue with my tapping till I die or stop to have strength to go into the farm. Unfortunately, none of my kids have picked interest in it. I continue to pray that I have money from it so I can send my kids to schools especially as my three grandkids live with me. Now you know that even in a good business, you still have challenges. But I really love tapping palm wine.

**Fig. 3** Ntoh tying the bark around the head of the tree after he has tapped wine

**Fig. 4** The containers of palm wine tapped by Ntoh for sale to customers

The local community enjoys palm wine, which they claim possesses health benefits such as maintaining good eye sight, reducing chances of cardio-vascular diseases and being useful for maintaining a normal hair, skin and nails (Fig. 4). With people like Ntoh, Cameroon's elixir continues to be consumed in Buea, the "place of happenings".

# A Full Circle

Zhou Rong and Saurabh Upadhyay

Known as the Kingdom of Bamboo, China has the greatest number of bamboo species and abundance of bamboo plants than any other country. A plant that is so versatile that it can be made into furniture, firewood, tiles, paper, chopsticks, crafts such as baskets and hats, shoes, medicine and even a popular edible dish (bamboo shoots), bamboo is an exceptional plant contributes to livelihoods and local economies. A plant closely associated with daily lives of people, one cannot imagine life without bamboo. This is particularly so in Chishui, located in southern China. Chishui is famous for its picturesque landscapes and has a bamboo forest, which is so big, that it looks like an ocean of bamboo (Fig. 1). It is at this scenic town where the Guizhou Chishui Zhuyun Bamboo Furniture Co. Ltd, a bamboo enterprise, has successfully functioned since August 2015. It now employs 60 people, helps local farmers and is run by a young lady, Zhou Rong with support from her husband and son.

Born in Luzhou, Sichuan Province, Zhou was one of three children of parents who were employed in state-owned enterprises. Her older brother works in the construction industry, while her older sister is unwell and stays at home with her parents. She thought of starting a small business selling paint, but bamboo attracted her as it was a renewable resource, available locally with a far lower carbon footprint than other timber resources. Therefore, with the support and guidance of her husband, Zhou hired five rattan furniture technicians and started making furniture in October 2015. This became successful and gradually she employed 20 people as her business started to expand. Now, her 60 employees are directly involved in the production process of Zhou's bamboo enterprise (Fig. 2).

Often drawing inspiration from China's rich legacy of bamboo usage, visible in paintings, sculptures and woven products all over the country, Zhou and her husband innovated and created multiple products. Both of them continually tried to introduce better usage of raw resources and better production quality. In the first year of operation, the profit was only RMB 20,000 ($3,014) (China Yuan Renminbi), but since then profits have grown annually by RMB 100,000 ($15,071) to RMB 200,000 ($30,143).

> Initially it was an uphill struggle to help the community while also making a profit. A model of quality production had to be created from scratch. More importantly a value-chain had to be established – from the resources to the production and the marketing.

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**Fig. 1** Bamboo forest at Chishui

**Fig. 2** Zhou Rong seated on bamboo furniture made at her enterprise

Zhou received support from both her family and the local community. Furthermore, the local and provincial government offered several training opportunities from which she benefitted. The community was aided by her enterprise as there are about 2000 bamboo farmers who sell their bamboo to Zhou. Her enterprise offers training to community members and realising the benefits they offer wholehearted support for the enterprise. By producing products of high quality and by learning about the role of the enterprise in "giving back" to the community, customers came in large numbers. Retailers from as far as Xianghe (2000 km away), Hebei province (1700 km away) and Hainan (1500 km away) come to buy her products.

> Bamboo has seen greater innovation over the past few years. Apart from my interest in sustainability I was keen on exploring an area that created value-added opportunities for the community as a whole.

To make the enterprise a success Zhou ensures that every part of the bamboo is utilised

and wastes are kept to a minimum. The business model employed by the unit encompasses a range of activities which support each of the processes, while also being co-dependent on each other. Using a 200 hectare land area to grow bamboo, the company also has approximately two hectares set aside for by-products like shoots and fungus. Producing Moso bamboo, the average yield is about 15 tons of Moso bamboo poles per hectare. On the two hectares of land set aside for by-products two kinds of bamboo fungus are grown which fetch an attractive price in the market (Fig. 3). While the poles of Moso bamboo are used directly for the purpose of creating furniture, the branches and the pole tips are used for creating bamboo brooms and for bamboo charcoal. The bamboo left behind from making furniture is used for a number of purposes. While the powder is used for making charcoal, incense sticks and as a seedbed for fungus growth, the bamboo poles base on the other hand are used to power the boilers. This ensures that 100% of the bamboo is utilized and there is no wastage.

**Fig. 3** Eggs from the hens reared at the farm

Being versatile is something Zhou prides herself in. This is illustrated by the integration of poultry farming on the land for growing Moso bamboos (Fig. 4). Approximately 30,000 regular and black boned chickens or "Silkies" are raised. Raising chickens on this land offers a number of benefits as the chickens consume the weeds as food, the droppings provide natural fertilizer which in turn supports a healthy crop and finally the chickens also lays eggs which are sold separately. From bamboo poles for furniture, to bamboo charcoal and brooms from pole tips and branches, along with several by-products such as fungus and eggs, this innovative approach by the furniture making enterprise ensures optimal utilization and growth of return on investment. Although 60 people are employed full time at the furniture making unit, the company also supports more than 10,000 farmers that form a part of this incredible value chain.

The output for the furniture making unit, which focuses only on creation of furniture and

**Fig. 4** Edible fungus, a by-product of the farm

**Fig. 5** Chickens at Zhou's farm

**Fig. 6** Art work using bamboo at Zhou's enterprise

other home décor items was pegged at 20 million RMB annually. While the yield from by-products in the bamboo forest (fungus, chickens and eggs) averaged around 10 million RMB ($150,700). This also played a key role in strengthening the financial opportunities of the farmers involved in this value chain and improved the average earnings bringing it in the range of 3500–5000 RMB ($452–754) per month per person. The furniture unit is also collaborating with the Sichuan Arts Academy, to create bamboo lamps and souvenirs for tourists (Fig. 5) . Charting an innovative path through this unit, Mrs. Zhou Rong is hopeful that with the increased participation of the local populace the bamboo sector development in Chishui is set to get stronger. Zhou looks at her entreprise as one that receives raw materials, produces, sells and gives back to the community, in a circular fashion.

Zhou took a loan from Government and has expanded the business to include larger sections of the community. She is currently exploring the production of a range of products from bamboo and rattan. With the aim of exporting to Japan, South Korea, Singapore, Indonesia, Zhou hopes to employ at least 450–500 people who would be directly involved in the production process. Her family bought land, a house and a car from the profits of the enterprise. Zhou could educate her son in the university and he recently graduated and joined the family business. Zhou is now 45 years old and her advice to other women who want to become entrepreneurs is: "*While tenacity is important, perseverance is what leads to victory*". Zhou's enterprise creates a full circle of service benefitting many.

# Guatemala's Nutritious Green Gold from the "Tree of Life"

Angela Izabela, Fajardo Barrientos, Giulia Muir, Julio Javier Madrid, Elena Baumanns and Luisa Vanderwegen

The Ramón seed, also known as Ramon nut or locally as *Ojite, Masica, Ojoche, Mojú, Ujuxte, Xoxte, Iximché*, derives from the fruit of the Ramón tree (*Brosimum alicastrum*), which grows naturally throughout Mesoamerica. It is known as the "Tree of Life" for the nutritive properties of its seeds and its important role in forest ecosystems as a source of food for wildlife. The consumption of Ramón seeds is believed to date back to the Ancient Mayan civilization, which gathered the seeds and also planted Ramón trees near ceremonial and archaeological sites for subsistence. Literature suggests Ramón seeds were an important alternative food when yields of traditional crops were low (although the extent to which the seeds contributed to diets is a matter of debate among scholars). The seed is high in vitamins, fibre, protein, folic acid and is naturally gluten-free. In addition to its nutritive virtues, the Ramón seed also contains curative properties, for example a high amount of tryptophan, which helps to lower blood pressure. The leaves, twigs and seeds of the tree have also been widely used as forage for livestock, with excellent results.

This case study is about Angela Izabela, a 39 year old mother of three daughters who lives in Petén, the northernmost department of Guatemala, where Ramón is one of the three most frequent species in abundance and distribution in the natural forests. Angela is from the community of Uaxactún, which is situated in the Maya Biosphere Reserve, located 24 km from the archaeological site of Tikal. As a member of the "*Organización Manejo y Conservacion - OMYC*" she is part of the Ramón commission, where she is an internal inspector in everything related to the organic certification of the Ramón seed.

> When I was very young my mother cooked Ramón seeds and we ate them with salt. We knew it was healthy food, but we did not know it had a high amount of nutritive properties. We also had no experience and knowledge on how to prepare Ramón in different ways like we do now by drying and grinding the Ramón into flour and using the flour in products like cookies and in other recipes and plates. My whole family loves Ramón and especially, atol of ramón, a hot drink we make. I also include Ramón in several dishes. It does not only have a nice nut-chocolate taste but it is very nutritious. My mother told me that during a bad season or a bad harvest of corn she would cook Ramón to supplement our meals.

The families who live in the forest communities in Petén collect Ramón seeds (Fig. 1) to increase their incomes and resilience by diversifying their livelihoods. A lot of them are also involved in the sustainable and certified

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**Fig. 1** The Ramón seeds

extraction of other timber and non-timber forest products, like xate and chicle.

> My community has the biggest potential for harvesting non-timber forest products and it is also the community that extracts the most the Ramón seeds in the country. There are 160 collectors in my community and the families are always happy when the harvest season starts. There are two harvests a year. The first one is around March and April and the second one starts around August or September and ends around October or November. In a good harvest we can collect up to 90 kg in a day and up to 450 kg in a week. 90 kg of the green seed equals 400 quetzales (USD54.50) (which is more than the minimum salary). This is a big support to households. Most of the money collected from the Ramón is used for educational and additional food needs for my children, like most families in my community.

Harvesting takes place in an ecologically benign way as the trees grow naturally in the forests and seeds are picked after they fall to the ground (Fig. 2). Moreover, collection is regulated by a Management Plan that is authorized and monitored by CONAP (*The National Council for Protected Areas*) and the product also qualifies with organic certification requirements, according to NOP-USDA and EU standards. Collecting Ramón is a relatively easy and seasonal activity; more women participate in collection than any other NTFP harvest. In Uaxactún, 90% of the collectors are woman, says Angela.

After collection, families take the seeds home (Fig. 3), put them in water for a night and clean the seeds. The seeds have to dry in the sun for one day on a filter made of nets. When the seeds are dry, the families bring their products to a collection centre (Fig. 4).

> During the harvest season, we receive Ramón seeds in our collection centre every two days. Every collector has a collector code and they are paid every three to four days. The product gets controlled in the collection centre and we also need to assure that only 80% of the seed has been collected because 20% needs to stay in the forest as food for animals and to ensure regeneration of trees. By consuming Ramón, we not only contribute economically to the community families who harvest Ramón, but we will also contribute to the conservation of the forests.

**Fig. 2** Angela collecting Ramón seeds

According to Angela, communities and families have been extracting ramón for a very long time and she has been selling Ramón since 2004. In 2012, Guatemalan and international organizations, led by the umbrella organization of the forest communities in Petén ACOFOP (Asociación de Comunidades Forestales de Petén) and the collecting community organizations, including OMYC of Uaxactún, formed the Committee of the Ramon Value Chain in order to unite efforts to promote Ramón, looking for markets and facilitating the harvest and processing.

> 2012 was the best harvest year for the community as we sold 58 300 kg of the seed to national buyer, which exports the product internationally, mainly to the US.

Thanks to the Committee, explains Angela, which has grown since 2012 from four to nine collecting community organizations, they were able to buy machines that dry the seed.

> We also need to promote the nutritional value of ramón in our country because there are still a lot of people in this country who do not know the product. In many rural areas we know Ramón exists, but we are not aware of its potential. However, recently people in my and in other communities are being trained on how to include ramón in our food and recipes.

Angela says the 2017 harvest was very good and they were able to sell 4130 kg. Notwithstanding, a significant part of the harvest was lost as they did not have enough money to buy the seed from the collectors. The biggest problem Angela and her organization face is being able to continue to buy seeds, develop products and enter into formal markets. She hopes access to markets will become easier. A lot of the seeds still stay in the forests because of insufficient access to markets. Fortunately, the machine to dry the seeds (Fig. 5), which was used this year for the first time, helped her organization store

**Fig. 3** Ramón collectors on their way back after collecting seeds

**Fig. 4** Angela in the collection center checking the quality of the collected ramón

**Fig. 5** Women moving the Ramón in the drying machine (secadora)

**Fig. 6** Products from Ramón include flour, cookies and coffee substitute

dried Ramón seeds. Thanks to this drying process, the seeds can be kept for up to two years while the undried seed cannot be stored. Additionally, the machine makes it possible to have a constant source of income, even during years of small harvests (Fig. 6).

My hope for Ramón is to be positioned in the international market in five years and at the same time to see people here in Guatemala, and especially children in schools, consuming products with Ramón, not only for our economic benefit, but also for its nutritional and health values.

# Crafting Out of Poverty

Gira Ben, Ann-Cathrin Jöst, K. Rathna, Charlotte King and Saurabh Upadhyay

The Kotwalia tribe, resident in parts of Gujarat state in India, is an indigenous bamboo crafting tribe. Being a landless tribal community in south Gujarat, they typically live on the edges of forests and river banks. Almost all of the approximately five thousand families of the tribe live well below national and international poverty levels. The Kotwalia tribe has a literacy level of below 50% which prevents most from gainful employment and they remained trapped in poverty. But this is changing for some, as this story of a young woman, Giraben, illustrates.

Married at the age of 18 to a basket weaver from the same tribal community, Giraben, from Mirkos village in Tapi District (Gujarat) found herself in a similar poor existence that she was born into. During childhood, Giraben faced a lot of hardships due to her family's poverty as they earned very little income from her parent's basket weaving activities. The family lived in a small hut and often would go without sufficient food and they rarely had money to purchase new clothes. After marriage, Giraben's life followed the same trajectory as she and her husband had to work 16 hours every day making craft from bamboo, to just make enough to buy food and survive. Giraben had only primary schooling and hence had no prospects of formal employment. Often Giraben's husband worked as a construction site labourer to supplement their income.

Giraben stays in an intergenerational joint family spanning three generations. She makes bamboo baskets during her free time, as being a Kotwalia, basket weaving was considered a traditional craft. Although, it was a craft Giraben enjoyed doing, the time taken to collect bamboo from the forest was too long, says Giraben. It was an easy changeover for Giraben when she was given the opportunity to participate in a bamboo enterprise. The "Bamboo livelihoods business enterprise project" funded by the Development Support Agency of Gujarat, within the Tribal Development Department of the Government of Gujarat, is implemented by the Centre for Indian Bamboo Resource and Technology (CIBART) with the International Bamboo and Rattan Organization (INBAR) which is a technical partner. At the beginning of the project, CIBART conducted a test for the artisans and asked them to make a craft or utility product using bamboo. From these tests, 45 artisans were selected for undertaking an intensive four months' training course on bamboo furniture making and Giraben was amongst the

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ones chosen. Basic tools were provided to all the trainees and a stipend was paid for all training days which amounted to INR3,000 (US$50) during year 2010. Since the training was organized as part of the project intervention, capital investment by the artisans was not a requirement.

Giraben had the opportunity to learn new skills during the four months' intensive training of making bamboo furniture sponsored by INABAR. Soon she was training other women from her community. Her income improved markedly as she received better income from making furniture than from baskets (Fig. 1). Seeing that this craft was lucrative, her husband joined her to make bamboo furniture and together they created new designs which have become popular with their customers whom CIBART connects them with. Giraben would like to gain more skills in marketing her products.

Although the Kotwali do not own land, they are allocated land by Government and Giraben has planted two bamboo plants on her land (Fig. 2). Giraben is all praise for the natural product that has transformed her life

> Bamboo is an environmentally friendly plant and helps with green cover, as well as for biomass and firewood and in making products and building strong structures.

With the income both Giraben and her husband get from bamboo furniture making, they bought a two-wheeler vehicle within a year, bought a *mangalsutra* (which they could not afford previously) a gold necklace worn by married women to signify that they are married, a television and plan to upgrade their mud dwelling into a brick house. They can now afford to pay for their children's education, to buy food and groceries, buy gifts for marriages, spend on family get-togethers; expenses which were not affordable previously. Previously, they would rarely have eggs, milk or fish, but it is now more common in their diet due to their improved income.

> Our children are going to school and I have an ambition to send my daughter for nursing studies and for my son to become a policeman, which will soon come true.

**Fig. 1** Giraben uses a drilling machine while making furniture out of bamboo

**Fig. 2** Giraben and her husband stands in front of bamboo which has transformed their lives

Another benefit enjoyed by Giraben's family is the honour and respect they enjoy amongst their community. The society looks at their family differently and extend invitations to them for social events such as weddings and festivals. Advice is sought from her family when it comes to decision-making at community level. This newfound respect has boosted their confidence and Giraben stood for election as a Member of the Local Government and was successful. Giraben continues to work and inspire other women of the Kotwalia tribe through the bamboo enterprise.

# The Uplifting Fragrance of Incense

Mira Das, Ann-Cathrin Jöst, K. Rathna, Charlotte King and Saurabh Upadhyay

Nestled in the north-east of India neighbouring Bangladesh, is Tripura, one of the smallest states in the country. It is home to 19 indigenous communities (known as Scheduled Tribes) that represent 30% of the population of the state. The Tripuri dynasty ruled this state for many centuries, and was a princely state at the time of the British rule, until 1949, when it became part of independent India. There has been violent ethnic strife between the Bengali population and the indigenous communities in the past, but it has calmed now and there is relative peace. A picturesque state with hills, valleys and many rivers, the major economic activities include mining, forestry and agriculture. Tripura is famous for its handicrafts, particularly those made from bamboo for decoration and utility.

This is the narrative of Mira Das, a bamboo crafter, who was born in West Tripura in Narsingur village. Mira's father was a weaver and craft worker, a well-known expert in using a weaving handloom and making bamboo and wooden handicrafts products. Her father generated enough income to support his wife and Mira, but tragedy struck after he died when Mira was 14 years old. Being accustomed to being a housewife, Mira's mother did not have the required expertise in making crafts or to weave. To survive, she took up domestic work and served at a few houses in the village. Mira's education also ended after standard six due to the family's circumstances. Mira had to go without new clothes, ornaments and slippers in her childhood and rarely went out of her house and immediate surrounds. She decided not to get married, but to dedicate her life to looking after her mother. She felt that finding a life partner who would treat her mother, a widow, with respect would be difficult in a society with a propensity to isolate and ostracize widows.

Mira picked up odd jobs to help ends meet and often worked as a labourer under the Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA) which gave INR100 [USD1.53] per day for a maximum of ten days a month for each person. The money earned by her mother and Mira was barely enough for food and life was bleak. But things turned around in 2008, when Tripura Bamboo and Cane Development Centre (TRIBAC) started an incense making project, which became a blessing for Mira. With support from the Overseas Development Institute

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(ODI), International Development Research Centre (IDRC), International Funds for Agricultural Development (IFAD) and International Network for Bamboo and Rattan (INBAR), the incense sticks project was operational in Tripura from June 2008 to May 2012.

Mira gathered together a few women in the village and started a Self Help Group (SHG) called 'Sardamani' and the group received training through TRIBAC. Sardamani was the name of the wife of Ramakrishna Paramahamsa, who is considered an enlightened soul. He made his wife sit on the altar with him, thereby elevating her as Universal Mother, ever pure, and even worshipped her. The respect Ramakrishna gave to women through this gesture was a message to others who considered women lower in stature than men. Mira Das received external support from TRIBAC and the Government Entrepreneurship Development programme which was meant to encourage budding entrepreneurs. Mira Das benefitted from being part of group meetings, gaining exposure to well established business units through visiting them, received training in process costing, enterprise management, book-keeping, stock register management, and small business plan preparation. She was 26 years old at the time, a self-starter, proactive and dedicated, equipped with readily available bamboo resources in her homestead and farmland. Her enthusiasm and energy motivated other women to elect her as the leader of SHG. The SHG, an all women group, was set up to generate income for their families. The primary income generating project was the rolling of incense paste onto bamboo sticks and selling them as *agarbatti* or incense sticks. This has substantially improved their incomes.

> Due to this SHG I have become a confident person today, and earn a decent amount – INR5,000 [USD76.92] per month – through the production of rolled battis [incense sticks]. I am also working as part time staff in TRIBAC and earning INR3,500 [USD53.85] per month as a business entrepreneur. I still take [a reduced amount of] labour work for ten days in a month and get INR172 [USD2.67] per day, which all add up for INR10,220 [USD157.23] per month.

Incense involves using a "masala" which is a mixture of "jiggat" or resin from tree bark and charcoal paste and rolling the masala on bamboo sticks (Fig. 1). The bamboo is harvested from local forests and the SHG was trained on the job to make good quality sticks. Initially the SHG got the masala from TRIBAC but later they secured a bank loan to purchase masala from them.

> Our SHG group maintained the cash book and approached the Regional Rural Bank for a SHG loan for buying the raw material. Group records were scrutinised by the bank and grades were awarded. From the first gradation, the SHG was given a loan of INR25,000 [USD384.62] to buy the raw materials required for agarbatti making.

The SHG is driven by the dreams of its members. Every member has a different dream to achieve through the incense making, but there is also a collective dream; that of improving incomes for all. Hence the money from the loan was used prudently to buy raw materials and tools for the group. Later on the group received a second loan to buy small tools to reduce the wastage and for the incense mixture.

> Now our business is growing and we are proud members of our SHG, earning enough to meet our household expenses. In the business of making incense sticks, each member earns around INR120 [USD1.85] to INR150 [USD2.31] per day. We have repaid the bank loans and now have surplus in our bank account to buy the materials required for rolled battis. We continue rolling the battis and I took the leadership as a 'Self-employed Business Agent' (SEBA) to run the business.

The group of five women produces 1500–2000 kg of battis every month. They work 20–22 days a month for 6–7 h on a pedal operating agarbatti machine. Approximately 1500–2000 kg of battis are produced by the group every month. As a result of the good quality, the incense sticks fetch INR70 [USD1.08] per kg, which gives the group a profit of INR10,000–15,000 per month [USD154–231] from the sale of incense sticks. Mira alone makes 500 kg of incense sticks per month and earns a profit of about INR5000 [USD76.92] per month. She usually works longer hours than any other member in the group and others receive profits based on their efforts, time and volume they produce. The group is prudent in the use of resources and they are generating.

**Fig. 1** Mira Das making incense sticks using bamboo

They use the charcoal made from bamboo waste in the masala preparation, thereby saving resources further. Currently, the TRIBAC office work shed is used as the centre for making and storing the sticks but the group has ambitions to move to a larger space.

Often the women gather at Mira's house to discuss ways to make more income through crafts such as making bamboo mats or sewing. Although they all have heavy household responsibilities and workloads, they nevertheless find time to discuss new ideas and problems and learn from one another. Mira considers the training provided by TRIBAC to be her breakthrough and more women are now coming forth to undertake incense making.

> The newer skills acquired through training and working here help us to earn a stable income on a monthly basis. Initially we produced a maximum of 100 kg in a month; now we make 2,000 kg per month. We now have personal savings and I have even helped my mother buy household items like a steel cupboard, a television set, two cots and a few household items. I bought gold earrings and two bangles for myself from my savings. My dreams are coming true step by step. My life is now changed; I do not worry anymore and my life is not so tough now.

Mira also can now afford to take a day off from work to go to the market to buy food and vegetables for a week, which was not possible earlier. The informal meeting place in front of her house will soon be converted into a roofed area for group meetings and other social activities. Mira now attends family functions with gifts and spends money on preparing meals for her friends and relatives during cultural festivals, all of which give her tremendous satisfaction.

> What I personally found is that having money for our expenses gives us strength. I can now afford the medical expenses of my mother, can buy fruits and vegetables, can buy new clothes on occasions – all are positive benefits. I lead my SHG and have also helped many women to learn the business. If we give sincere efforts, we can grow in our business activity and we are confident today to run our business efficiently.

A proud moment in Mira's life was when she was invited to give a speech at the 'International Summit on Transforming Women's Lives: achieving economic empowerment and justice' in February 2017 in Kolkata, India. Here is an excerpt from her speech:

> When a woman is economically empowered, she can get a recognition in the society and she can be of a great help to her maternal and paternal family. Women face great economic risk when the support system collapses (which she faced at her young age). Even women who support household activities and support the male member in earning, her work is often undervalued and contributions go unnoticed. If she becomes an entrepreneur they are valued.

She also urged the women to look around in the society to learn new skills which will give them the financial freedom to pursue their dreams of which they may otherwise be deprived. She recommended that all women send their daughters to school and if needed they work to raise the children in a healthy atmosphere. A role model for her society, Mira says:

> Women have the potential to change their own economic status, as well as that of the community if they wish to.

# From Weed to Furniture

Chinnatai Rangasamy, Maya Mahajan
and Aravind Radhakrishnan

The lush, green and dense forests found in Siruvani hills in the Western Ghats bordering the states of Kerala and Tamil Nadu in South India, holds many deep secrets. Believed to be Lord Shiva's mountain, the square shaped pond found in these hills was thought to have been built for the Lord's wife, Parvathi. Siruvani waterfalls, a tourist attraction, originates from this pond in the hills. Located 25 km west of the city of Coimbatore, these hills are home to the Irula tribe, who were known for their snake catching skills and more recently for their crafting skills using an invasive shrub, the Lantana. Having a population of 550 people, and only 45 ha of agricultural land, which are threatened by raids from wild animals such as elephants, the six hamlets that form this tribe are dependent on non-timber forest products for their livelihoods.

This is the story of Chinnatai, a 40 year old resident of Siruvani hills. She was born to Rangan and Madhavi in Satyamanngalam tribal area, which was affected by water scarcity, forcing them to move to Singampathy tribal village in search of livelihoods. Chinnatai grew up in Singanpathy, witnessed regular movements of elephants, wild boars and hares. She went to a local school at Muttatavayal and after the 8th Standard, she took to manual labour to support her family financially. As an agricultural labourer she earned Rs. 40 (less than $1) as daily wages. "*Now wages have increased and we can get up to 200 rupees per day, but we do not get work regularly*" says Chinnatai.

Chinnatai got married at the age of 19 to Rangaswami but life was not easy as their agricultural yield was affected by water scarcity and trampling by elephants. Moreover, it was difficult to get regular labouring work and so daily wages were inadequate to have a decent life. The breakthrough for Chinnatai came with a craft training initiated by a team of lecturers from a nearby university, Amrita Vishwa Vidyapeetham. This team, lead by Maya Mahajan, helped some members of the tribe use *Lantana camara*, an invasive weed found in abundance in the area to make crafts. In May 2015, about 40 members of the community in Singampathy were trained and Chinnatai and her husband Rangaswami were part of this group.

*Lantana camara*, an exotic aggressive weed of South American origin, is invading forest areas and replacing native vegetation in the Western Ghats including Siruvani hills (Fig. 1). The forest department in Coimbatore is looking for different options for management of this invasive weed with the participation of communities. Tribal communities are involved in mechanical control of Lantana by manually cutting and uprooting it (Fig. 2) to develop sustainable livelihood options for the

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**FIg. 1** Lantana camara

community through craftmaking. The tribal folk are being trained in making value added products such as low cost furniture, baskets, handicraft, toys and other utility articles using the Lantana wood by the team from the university. They received funds from Government of India's Department of Science and Technology, under a project: "Science for Equity, Empowerment and Development". Assistance is being provided to the communities in marketing the products in Coimbatore and other major cities involving local organizations, departmental stores, malls and organizations such as Tribal Cooperative Marketing Development Federation of India Limited (TRIFED).

**Fig. 2** Irula tribe members collecting Lantana

> Initially we were not very confident to join this training program. Earlier many NGOs came and gave us some training which was not sustained on long term and was not of any use. After witnessing the successful production of Lantana furniture during the initial training program, we gained confidence and started training under the program. I was very surprised to see that the plant which used to grow very abundantly and was considered as nuisance in our backyard forest area was used to make beautiful and durable furniture which exactly looked like cane and bamboo furniture. We used to go to collect Lantana wood in the nearby forest area in a group as we are afraid of sudden encounter of elephants. If you are in a group there is less risk.

The craft making process involves boiling the lantana in drums (Fig. 3), smoothing the poles by removing the bark, drying it and then assembling the furniture under the guidance of master trainers.

> Initially when we made a stool independently we all were very happy as we had learned a new skill that enabled us to make furniture using a wild weed thriving at our area. Even though raw material was available free of cost, we had to spend a lot of time travelling inside the forest and collect the Lantana, and sometimes we were afraid of elephant attack.

The products produced included furniture like sofas, coffee tables, chairs, tables, shelves, pen stands, laundry baskets, baskets for religious purposes and trays (Fig. 4). During the training period a furniture exhibition was held at the Amrita University campus and the team sold furniture items for Rs. 100,000 (approx. $1600). This boosted their confidence and they began producing many more varieties of furniture including cots. They received orders from parents of students studying at local schools and also from some tourists. The team has plans to register a small enterprise called Siruvani Lantana Craft centre. Officers from TRIFED have offered support for marketing.

Chinnatai's 18 year old daughter who is physically disabled and discontinued her education after the 8th Standard has joined her in furniture making as well as toy making activities (Figs. 5 and 6). Chinnatai earned Rs. 10,000 (US$160) by selling Lantana furniture that she made during the training period. The Lantana craft centre established in Siruvani hills will be able to help Chinnatai and her family earn


**Fig. 3** Boiling Lantana poles in a drum

**FIg. 4** Furniture made from Lantana (left). Maya Mahajan with the Irula tribe (right)

Rs. 10,000 per month by selling Lantana furniture through them. Prior to joining the training program she used to get Rs. 75–150 (US$1.20–2.40) per day as labourer and the work was not regular. The income from Lantana craft was used for health and food related expenses.

After getting training in furniture making now we are also learning how to make small toys using lathe machine. Trainers from Chennapattanam who are specially trained in making wooden toys using natural vegetable colours and lac from forest are training us. We have learned to produce many beautiful colourful small toys, key chains, pen stand flower vases, necklace, Ganeshas (A Hindu deity).

**Fig. 5** Chinnatai (picture on the left) making shelves and with her daughter (picture on the right)


**Fig. 6** Chinnatai using the lathe machine for making small toys

**FIg. 7** Chinnatai and others from the Irula tribe making furniture

As the location of the tribal hamlets are close to Kovaikuttralam water falls which is a popular tourist location, they plan to sell these products at stalls located near the tourist centre. Chinnatai says that Lantana furniture is an eco-friendly furniture as they are removing the weed which is posing a threat to biodiversity in the forest and reducing pressure on cane and bamboo. Lantana furniture looks like cane and is equally durable (Fig. 7). Chinnatai is thankful to Maya, Aravind and Kalidass from the Centre for sustainable future of Amrita University who helped them to learn this skill and improve their livelihood.

# Truffles: The Precious Mushroom

Enrico Vidale

Known as the "diamond of the kitchen" and one of the world's most expensive foods, truffles are a gourmet delicacy. This culinary treasure is found and harvested only a few months in a year and, Italy is known as where the best truffles are found. This rare edible fungus (ectomycorrhizal fungi) grows mainly underneath hazel, poplar and oak tree in a symbiotic relationship with their roots. With a garlic like flavour and musky aroma, restaurants buy black truffles at a price of 35–90€ and white truffles (which are rarer) at around 800–1800€ per kilogram from the hunters. But when they sell it to the end user, it is usually more than twice the price bought from truffle hunter. In Italy, truffles are in high demand in restaurants and consequently there are many who take the trouble to harvest truffles in the forests to benefit from the handsome remuneration. This is the case study of a retired woman from northern Italy who picks truffles to supplement her pension. What started off as a hobby for Claudia (not her real name[1]), became a substantial source of income for her and she now harvests truffles every year to supply to restaurants.

Piedmont, Emilia Romagna, Tuscany, Umbria, Marche and Abruzzo are the most important region for truffle productio and truffle hunting tours are popular amongst tourists. Truffle hunters have organized themselves into associations and individuals can get certified to operate hunting tours for tourists. The truffle hunter who leads the tour shows tourists how to find truffles while walking through the woods and how to use them in the best way for cooking. The truffle hunter is often accompanied by their dog. Frequently, these hunts are combined with wine tasting tours, which usually culminate in a cooking lesson and a decadent meal. Many chefs say that the truffle is one of the best condiments which can be used in the kitchen. It is advisable to use it fresh, as when fully ripe, it best displays its qualities. Each specie of truffle has its own particular, typical aroma, which is suitable for specific culinary uses (Fig. 1).

In Italy, truffle hunters use breed dogs to find truffles following the strong smell of mature truffles underneath the surface of the ground. Black truffles are more plentiful, but they cannot be cultivated. Claudia took a lot of effort to train her dog "Bella" to find truffles based on its smell.

> I remember when I took "Bella", my small little dog from the pet shop. It was the last dog in a box and nobody wanted it because she was too small. So I decided to take her and after nine years I may say it was good choice. "Bella" had all the characteristic of a good truffle dog that I read in some

[1]Claudia preferred that her identity be not revealed.

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books; she was very shy but at the same time very active. Well to be honest, nine years ago I trained my dog to search for truffles, but at the same time, she trained me to find the best place for truffle hunting. I trained her as a daughter, but only after one year of the truffle hunting I could see "Bella" was perfectly trained.
You should start training the dog very early in its life, roughly speaking, when the dog starts to walk. First you start to play with a truffle so that the dog will associate the truffle with play time. Then you can add tasks day by day, for instance you can throw the truffle and train the dog to fetch it. This has to be done every day, otherwise the dog will forget everything. Then you start to play with the truffle in the high grass, forcing the dog to use its nose and not it's eyes to search for the truffles. Once the dog brings back the truffle from the high grass, it is ready for digging out the truffles from the ground. This is the most important part, because it must follow the smell of truffle and not your scent. Therefore, you need to hide the truffle the day before and let the dog search the day after. Initially, the truffle should be hidden half inside and half outside the ground. Then, gradually, you hide the truffles until it is all inside the ground. A few days after the dog does this exercise correctly, you can take it to the forest and start to search for truffles. The dog should never be stressed or tired when it searches truffles, otherwise it gets annoyed.

Truffle hunting has become more and more popular, according to Claudia, as more and more people are joining this line of activity. She sells the truffles to both restaurants and middlemen.

> At the beginning it was quite easy and I was almost alone to go inside some forests, but now it is incredibly crowded at every hour of the day and night. The economic crisis boosted truffle hunting as an alternative source of income for many and this lead to decreases in prices. I am a bit scared about the future of truffle hunting, but probably it is a simple impression I have on the scarcity. I think too much competition would mean that I will find less and less truffles in the forest.

Claudia has been observing changes in climate and truffle productivity in the forest. She feels that the quantity of truffles have not changed much from one season to another. Rather, she feels that the problem of scarcity is related to abandonment of land.

> Ten years ago, there were a lot of people going in the forest to cut trees for firewood, but now the land owners prefer to buy ready firewood delivered at home by companies. The land was actively managed and now there are only small parcels of forest that are actively managed. Changes in climate affect truffle size and more truffle pickers, which means more competition. But forest abandonment remains the core problem affecting truffles productivity. In these last two years, there is a new phenomena in which the timber companies

**Fig. 1** White (left) and black (right) truffles found in whithish

**Fig. 2** Whitish truffle (left) and "Summer" truffle (right)

clear large areas of forests. This makes the truffles disappear.

The white truffles fetch a better value in the market than black truffles (Fig. 2). Finding the right type of truffles depends on how frequently one goes hunting and which forest is visited.

Personally I prefer summer black truffle, because you find them abundantly and you enjoy to see the dog digging it for you. Of course, the prices are very different. For example if you harvest half a kilogram of white truffle, it is comparable to 10 kilograms of black truffles in terms of prices. The price gives you just an indication of rarity but if you collect for commercial purposes, you should look just at the quantity you can get. White truffles are rare and if you are lucky you can collect 200 grams, while you could even harvest 15 kilograms of summer black truffles in a day.

Claudia was a self-employed truck driver and had contributed 10% of her annual income to her pension fund for 42 years. Upon retirement, she began receiving the pension, which is paltry and barely meets her needs.

You know the pension of a self-employed person is practically zero, and I was struggling to cover my costs and that of my extended family. At the beginning, I started to think which "remunerative hobby" could take me out of the house while gaining some money for my family; so almost 9 years ago I started to collect truffles.

Through truffle hunting, Claudia derives an income which is nearly half of her pension. This income is used by Claudia to buy food, fuel for her car, and to go for an outing with her family once a month. She notes that her pension is inadequate for her to afford these expenses. Occasionally, Claudia's nephews follow her to learn about truffle hunting. She feels that truffle hunting should be exempt from tax, so that those who hunt may declare their income. There are many who hunt truffles, but do not declare this income to avoid taxation. Claudia is 70 years old and wonders how long she can continue collecting truffles. "Bella" is getting old and in a few years when Bella is too old to hunt for truffles, Claudia will end her lucrative forest activity. But, Italian truffles will continue to be a celebrated culinary item as the demand for this precious mushroom does not seem to wane.

# The Hidden Master

Morris Foit and Deepa Pullanikkatil

> My mother was not educated and I had to stop my schooling after primary, so that my siblings could go to school. But, by selling my wooden carvings, I educated all my five children more than me.

Handicrafts made in Kenya are popular with tourists and provides income to many artists. One such artist is Joseph Morris Njau Mung'othi, who renamed himself Morris 'Foit' out of respect for a Czech professor, Francis Foit who mentored him. The use of natural materials [non-timber forest products (NTFP)] for making handicrafts is common, but what is less common is the use of dead wood for making sculptures. This is a case study of a Kenyan sculptor who uses deadwood for carving, and has risen out of poverty by selling his art. He educated his five children and accumulated assets including a two-storeyed house-cum-studio and a car. Furthermore, his art gave him opportunities to travel to Uganda, Botswana and the United States. He is also the founder of an art center in Nairobi called the Kuona Trust, which supports local artists to exhibit and sell their work. This case study clearly demonstrates how the use of a NTFP product (in this case deadwood) helped Foit's family rise above poverty.

Morris Foit was born in Kiambu in Makueni District in Kenya in the 1940s.[1] His father used to work in the security services and was incapacitated by injuries he sustained during the independence struggle of Kenya. Morris had seven siblings, and he was the seventh child in the family. He recalls that during his childhood the family lived in a two-roomed house with only one basin for washing. He used to get up early in the morning to use the basin for washing himself before going to school. Foit's mother used to make and sell clay pots, as his father could not work. She was a loving mother, but she was not educated and looked down upon artists as they symbolised anarchy in Kenya at the time. Foit recalls a time in his childhood when his mother destroyed a guitar he had bought, and how his interest in craft grew in school.

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[1]Morris's mother could not remember the exact year of his birth.



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> As a child, I used to cut pyrethrum[2] with my friends in our spare time to get pocket money, and once I accumulated 3 shillings, enough to buy a guitar. I bought the guitar home and I used to sleep hugging it near my chest. My mother thought musicians were criminals, as in those days, some musicians were part of the Kenyan freedom struggle, and came as spies to check on people. Seeing my guitar, my mother got angry and destroyed it, I was very sad. I was eleven years old at the time. I protested by not eating breakfast and lunch and was sent home from school as my teacher thought I was ill. My mother scolded me because she thought I stole money to buy the guitar. I told her I made three shillings from cutting pyrethrum and that I was so sad to lose my guitar. In standard 7, the school curriculum included craft, which became my favourite subject. I now had a chance to do what I loved and I made spoons, knives and combs and decorated them with carvings and the use of natural colourings. The teacher gave me high marks and would take my craft work to her home. I was coming second position in class all the time because of my craft.

Morris discontinued education after the seventh standard as his parents could not afford school fees. He started to assist his mother in pottery, and expressed his artistic flair in making clay sculptures such as cars with rubber wheels which could roll very fast. One day, Francis Foit, a lecturer of fine arts at Jomo Kenyatta University in Nairobi, came to buy pots from Morris's mother and noticed the clay car. Francis Foit was a Czech national who had escaped from the Soviet Union and moved to Kenya. He took a keen interest in the young Morris and requested Morris's parents to allow him to mentor the child (Fig. 1).

> Mr. Foit talked to my mother, I don't know what they talked, but when she returned, my mother told me that one day I will be a "Professor". She said that Mr. Foit will collect me and I will stay with him in Nairobi. The weeks went by and I got ready with my box of clothes to go with Mr.Foit to Nairobi. He came to collect me and I said bye to my mother and went to the car. That was the first time I was carried by a car to Nairobi.

Morris stayed with Francis Foit for four years and learnt sculpting, and later on took his surname in his honour and memory. Francis Foit bought many sculpting tools and taught Morris to use them. After the first year of training at home, Foit began taking Morris to the university and showed his work to students there. Foit praised Morris in front of his students and he felt that the students could learn from Morris and vice versa. At the end of the fourth year, Mr. Foit had sold some of Morris's work and bought him a mountain bicycle with seven gears, which Morris used to cycle home and back to Nairobi. Despite his mother urging him to continue learning with Francis Foit, Morris felt that he had learnt enough. Morris thanked Foit and left to a relative's house. That relative helped him to join the Kenyan army, where Morris worked as a soldier for 14 years.

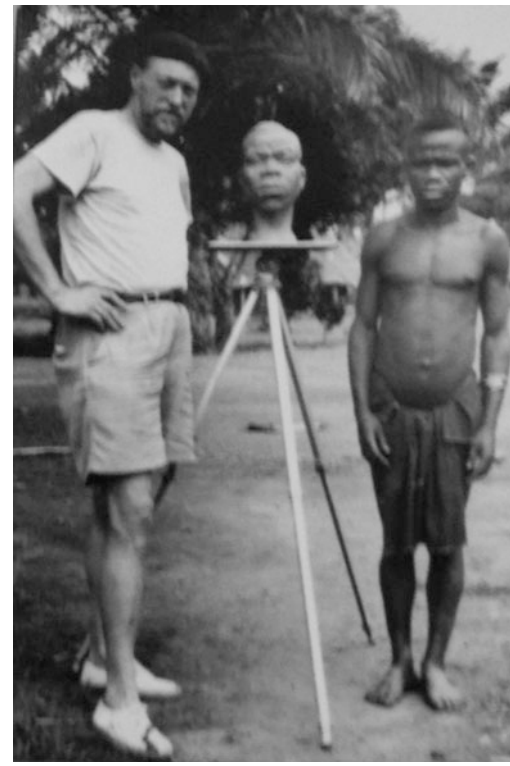

**Fig. 1** Francis Foit, who mentored Morris Foit for four years, with one of his sculptures at Jomo Kenyatta University

> Mr.Foit was very sad to let me go to join the army. I told him that I wanted to support my mother who is now getting old. He said that if I have gone to the army to help my mother, I should go ahead and finish it and then come back to the art that he taught me. That art will always be my friend, he said.

[2]A white-petal flower used in the manufacture of insecticides.

Fourteen years went by working in the army and Morris felt that he did not have the freedom he wanted, as he was always following orders of his superiors in the army. He left the army despite his superior's insistence that he continue in the army and went to the village where he had a wife and a child. Life was tough in the village, as he had few friends, few work opportunities, and little money. That was the time he dreamt of Mr. Foit and he remembered his art, which he had not practised for the past fourteen years.

> One night I saw Mr. Foit in my dream. I woke up and tried to sleep again. After half an hour I dreamt of him again and this time, I saw that Mr. Foit put his hand on my face. The next day, I told my wife about this. I told her that before we got married, there was somebody who was teaching me some work and I'm not doing it now. In the dream, he is asking me if I am still doing what he taught me. My wife told me to put a bible under my head and sleep. But the following night I got the dream again.

Morris's wife used to cut Napier[3] grass on a small bench to feed their cow. Morris helped his wife by covering the bench with rubber from an old car tyre, to avoid damage of the bench while cutting grass. Soon his artistic side took over and he wanted to convert the bench to a piece of art. He did not have tools for carving and so he bought the cheapest available material, six iron nails, which he heated and moulded to make chisels and tools for sculpting. When he finished carving the bench, it looked like a piece of art. Morris went to the nearest trading centre and looked for artists to ask them where they sell their art.

> I asked the artists where they take their work and they told me that on every fifteenth of the month they take their work to Gallery Watatu in Nairobi. Gallery Watatu was so famous and there was no other gallery in Kenya at that time. I took my bench and wrapped it in a newspaper and took it to Gallery Watatu on the next fifteenth. I met with a long queue of artists and reached the art collector after several hours. The collector asked me where I sell my work. At that time, I was thinking that if the collector refuses my work, I would throw the bench into the Nairobi River. I told the collector that I don't sell my work anywhere. Then she asked me how much I wanted for the work. I said KS[4]38,000 (approximately $2500 in 1980) as advised by some artists whom I talked to while standing in the queue. The collector accepted the price and took my work and gave me a receipt, but no money as they would give money only after selling it. I went home and told my wife that I threw the bench into Nairobi River as there was no money to be made with it.

After two weeks a car from Gallery Watatu drove to the trading centre close to Morris's home. The driver recognized Morris and told him to visit the art collector at the gallery the following day to collect the money from sale of his work. Morris borrowed ten Kenyan shillings from a shop nearby and took the minibus to Nairobi. At the gallery he was received warmly and the collector offered tea and got the cheque for KS30,000 cashed (as Morris did not have a bank account at the time) and gave the cash to Morris. The collector told him that they will keep the balance of KS8000 for any emergency needs and he can collect from the gallery when needed.

> The money was given to me in an envelope and I put my fingers in it to count but I did not count. I did not remove my hand from the envelope throughout the journey back to the village, until my hands were wet from sweat. The notes were new KS100. I laid it out on my bed in three rows of ten and called my wife. My wife was afraid to see so much money and asked if I stole it. I told her that I have never stolen money and asked her to make a list of things for our house including things for the kitchen and needs of our children. My wife made the list and said the total was KS6,000. I gave her KS10,000 and said she can go shopping. I bought barbed wire and a gate for my house using some of the remaining money. I bought new tools, not nails, and started working with other artists. I kept selling my work every month. One time I appeared in the newspaper with the headline "Hidden Master surrounded by coffee trees". As there were many

[3]Napier Grass (*Pennisetum purpureum*) also known as Elephant grass is used as fodder for cows.

[4]Kenyan Shillings.

> coffee plantations around my village. People here know me by the name of Master. Children in the village call me Master. I appeared in many papers and magazines. I remembered my mother, who said a long time ago that I will be a "Professor" which is like a "Master".

In 1995, Morris and other artists came together to start "Kuona[5] Trust", a centre for visual arts in Kenya. The centre provides studio space, art training, international exchange of artists, organizes outreach art projects, and holds exhibitions and workshops. Kuona Trust soon became very well known as an organization that has increased the profile and role of visual arts in Kenya.

Years later, the management of Gallery Watatu changed and the gallery eventually closed down. An art enthusiast, Rob Bernard, who used to work at the gallery approached Morris and asked if he could join a team of travelling artists. He offered to organize a large bus with which to travel and hold art shows in Mombasa and other places in Kenya. Morris thus joined a large group of artists lead by Rob Bernard and travelled by bus around Kenya as well as flew to Uganda, Botswana and finally to the United States (US). In the US, he was at a Carving Studio and Sculpture Centre[6] in West Rutland in Vermont (New England Region) where his work was much appreciated. At Johnston State College, a public liberal arts college, founded in 1828 in the U.S. State of Vermont, Morris was given a certificate of achievement. Morris and his fellow artists visited many workshops and studios in the US and after some months he returned to Kenya (Fig. 2).

Morris continued creating beautiful works of art, and inspiration for some of the sculptures came from rather extraordinary events. One such sculpture was the "Birth in the garden" which he made in year 2000 (Fig. 3).

> Once I was working on a sculpture for the Jivanjee park in Nairobi for the National Museums of Kenya. I was given the tools and materials to work on anything I like. I was making six holes for a sculpture when some street women came to me. They took me to the corner of the Jivanjee park. There were about ten women and at the centre was a new born baby! I asked if they had a doctor, and one of the women said she was the one who helped the woman give birth. I said that if the mother forgets the day the baby was born she can check behind my sculpture. And I began carving a wooden sculpture of two women and a child and carved the date of the child's birth behind the sculpture. The child will always know his date of birth unlike me.

The sculpture titled "Birth in the garden" stands today at the Jivanjee gardens in Nairobi and is one of the landmark sculptures of the city. The Jivanjee park is a five-acre recreational park donated to the residents of Nairobi in 1906 by Alibhai Mullah Jivanjee, an Asian businessman. It is one of few green spaces in Nairobi and was planned to be converted to a built environment in 1991 and 2007 by the Nairobi City Council in collaboration with development partners. These plans were objected to by Zarina Patel (Jivanjee's grand-daughter) in 1991, and by Wangari Maathai's Green Belt Movement, and other activists in 2007, when some activists were arrested and remanded in jail for some days over this issue. Morris thus has a sculpture in a prominent public place just like his mentor; Francis Foit also has a sculpture at the Jomo Kenyatta University's park.

Morris had lost contact with Francis Foit for thirty years since he left to join the army. He heard that Francis Foit and his wife travelled on holiday many years ago and died in a car accident. Much later, a Czechoslovakian art collector, Daniel, who lives in Tanzania, approached Morris and was curious to know how he got the surname "Foit". Morris explained that Francis Foit was his guide, and this was the reason why he had a profession today. Morris told him that Francis Foit and his wife had died, but they had a daughter named Regina, who used to live in Czechoslovakia and visit her parents in Nairobi from time to time. Daniel offered to go to Europe to find out Regina Foit's whereabouts. Morris prepared a sculpture as a gift for Regina and sent it along with Daniel. A year later, Daniel met with Regina in Czechoslovakia and told her

[5]Kuona means "to see" in Swahili. Kuona Trust means "To trust what you see".

[6]https://carvingstudio.org/.

**Fig. 2** Morris Foit at his studio in Kiambu with some of his art work and his certificates on the wall

**Fig. 3** "Birth in the garden" a sculpture with bench created by Morris Foit in year 2000

about Morris. He returned with photographs of Regina's house which he gave to Morris. Regina had aged and did not seem to remember Morris, but had accepted his gift.

The skills Morris learnt from Francis Foit remain useful fifty years later, and he continues creating works of art which are now in art collections around the world. He also teaches art to students at the International School of Kenya. He lives alone in Kiambu at his two-storey house cum studio. Morris's wife passed away in 1994 and he never remarried. He has five children, four girls and one boy. He is proud of the fact that he could educate all his children better than himself through selling his art (Fig. 4).

> All my money from selling my art went to my kid's education. They all got more education than me. They all finished Form Four (Secondary school) and I said thank you very much for getting the Form Four certificate. If you are educated no

**Fig. 4** Morris Foit next to his sculpture "Family Justice" at the reception of Sankara Hotel, a five star hotel in Nairobi

one can give you any problem, even if you are a housewife but have education, your husband will not give you any problem. I have no land other than the land for my house and studio, but I have children who have more education than me. One of my daughters went to college and became an accountant and said she doesn't want to get employed. She got a diploma in hair dressing and started a salon. She even could afford a white wedding for herself. My son is a driver of matatu[7] and has a mobile phone. I say he is part of the new digital generation. All my kids are married. I bought my car only after educating my kids, as I saw that I was still getting money. I thought I can use my money to buy myself a car. If you go to Sankara Hotel,[8] there is a sculpture 7 feet long called "Family justice" which is from the Masaai culture, and it is in the reception of Sankara Hotel. It shows Masaai families having an argument about cattle, and it shows people holding money discussing with other family members. Many people have seen it and searched for me and asked for me. So I drive my car to go to meet them. It's an old car, but it can go well.

Between 20 September 2016 and 2 January 2017, Morris Foit's work was exhibited at Sankara Hotel in Nairobi, along with some prominent artists from Kenya and South Africa (Figs. 5, 6, 7 and 8). The exhibition entitled "A narrow band of wavelengths" was in conjunction with One Off Contemporary Art Gallery in Nairobi. Morris uses deadwood from forests around his village to create his works of art. He has noticed that deforestation is happening rapidly due to charcoal making. He sometimes buys wood from charcoal makers. The images of sculptures comes into his mind when he looks at the wood. Sometimes he looks at the wood at night by shining a torch on it and when he imagines what he wants to carve, he draws on the wood with a piece of chalk. Morris Foit's work continues to be exhibited in art galleries in Kenya, his life being a testimony of how the use of NTFP (deadwood) for sculpting lifted his family out of poverty and brought international fame to the "Hidden Master" of Kenya.

[7]Local transport—minibus.

[8]Sankara Hotel is a five star luxury hotel in Nairobi. http://www.sankara.com/.

**Fig. 5** "Buffalo Head" (83 cm) by Morris Foit, created in 2010, displayed at Kuona Trust

**Fig. 6** "Happy bird" by Morris Foit (at an art exhibition in Sankara Hotel)

**Fig. 7** "Relaxing" by Morris Foit (at an art exhibition in Sankara Hotel)

**Fig. 8** Vulture by Morris Foit (at an art exhibition in Sankara Hotel)

# Busy as a Bee: Breeding Industrious Bees in Malawi

Arnold Kasumbu and Deepa Pullanikkatil

> Bees are my very good friends. I have developed my business because of the bees, and I can pay my staff because of the bees. I tell people in my village not to destroy flowers, and not to kill bees as they are our friends.

A trial and error venture at beekeeping by Arnold Kasumbu in central Malawi, is now a successful integrated farming enterprise incorporating 160 beehives and producing honey for customers in Malawi and Kenya. It is also a site for educational visits for university students learning about agriculture. Arnold's parents were tobacco farmers living in the Mitundu area of Lilongwe District in central Malawi. He recalls that his childhood was steeped in poverty as he observed his father put in a lot of effort in his farm with diminutive returns. Being the eldest of three children in the household, Arnold was forced to end his schooling in Standard 8, as his family could not afford the school fees. Resolving that he would not do tobacco farming, he began exploring other means of income generation that would entail fewer struggles. He wanted to become wealthy and take care of his family. Through his integrated farm and beekeeping, he has done exactly that! This is Arnold's life story.

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Born in 1968 in Chakhunta village in the Mitundu area of central Malawi, Arnold began beekeeping in 2005 without any formal training or knowledge. He had observed people using clay pots in the traditional way of beekeeping in the neighbouring villages. He tried to imitate them by buying a large clay pot, placing wax from another farmer's beehive and setting the pot on the branch of a tree on his land. Soon the clay pot became a bustling beehive and within a few months, sufficient honey was produced, and Arnold sold the entire hive. The money that he received from the sale of the hive was encouraging, and motivated him to continue.

> Beekeeping is easy. Put wax into the pot and the smell of wax will attract the bees. Bees come to collect wax from the pot to make their hives. They go and tell other bees to come and live in the pot. Soon they start building their hives inside the pot.

Arnold looks back with pride at his humble beginnings. He began with one clay pot and expanded to five pots the following year and then to 15 pots by the third year. He used his income to send his children to school and the surplus was used to buy more pots and develop his beekeeping business. By 2012, he had 160 beehives consisting of both clay pots and wooden box beehives. He continues to use his original clay pots as a remembrance of when he began his business and does not want to completely convert to modern wooden hives (Fig. 1).

Initially, Arnold sold unprocessed honey in the local areas. Before long, Agricultural Extension Workers came to guide him and raise his



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**Fig. 1** A clay pot and modern wooden box used for beekeeping at Arnold's farm

profile. He then learnt that many diseases could be cured with honey and that honey was in high demand. He was soon selling honey to Kamuzu Central Hospital in Lilongwe, Agriculture Development Division shops and to lecturers from the nearby Lilongwe University of Agriculture and Natural Resources (LUANAR). There were many traders who bought from him and sold honey at their shops in the city. A trader from Kenya heard about Arnold and approached him for an arrangement to buy honey in bulk. This trader regularly comes to Arnold's farm to collect the honey and offers advice and support for Arnold's work.

> I only learnt later on that honey has so many medicinal purposes. It is useful as a remedy for coughing, to treat wounds and diabetic people use honey to sweeten their tea.

Arnold's farm is an integrated one with crops, fish ponds, beehives and livestock. It is well designed with beehives on fruit trees (mango, guava) and with vegetables grown to feed the fish along the sides of two large fish ponds. His farm is spread over three plots, one of which he inherited from his parents, while the other two were purchased by him from the income of the farm. Realising that beekeeping goes hand in hand with nurturing nature, Arnold started planting trees in 2008. He understands that bees are important for pollination. So far, he has planted over 50,000 trees in three woodlots. The tree species planted include *Acacia polyacantha*, *Eucalyptus sp*., *Faidherbia albida* and *Moringa oleifera*. The Moringa trees were planted following the advice of the Kenyan trader, as it was believed to have medicinal qualities, thereby contributing to improved quality of honey.

> Honey is made from bees that collect pollen from maize, vegetables, fruit trees and flowers in the area. In my farm I also have a fish pond so that the bees can drink water, and I can use the water to irrigate my crops.

On Arnold's farm, the beehives are mounted on fruit trees such as mango and guava. He grows crops such as maize and cassava with fruit trees inside the fields. He also has two fish ponds and small vegetable patches where organic manure is used to grow vegetables meant for fish feed. The farm does not use any chemical fertilizers, and uses animal dung from the farm as manure. The farm houses seven cows, nine goats, 19 pigs, several pigeons, ducks, rabbits and chickens. Arnold owns an ox cart and a motorbike.

Operating close to nature, Arnold does not believe in using fire while extracting honey. He considers it destructive, as it kills the same bees that provide a livelihood for him. The sting of a bee is greatly feared, so protective clothing is essential when harvesting honey, says Arnold. When he began bee-keeping, he could not afford to buy proper protective clothing. "So, *I made my own protective gear, using overalls, wire gauze, and synthetic leather*", he says with a smile. Now he has several sets of protective clothing gifted to Arnold by the trader from Kenya and visitors from Spain, and they are used by his staff (Fig. 2).

Explaining the steps of harvesting of honey, Arnold explains that after wearing protective clothes, he opens the hive to check which part of the hive has honey and which parts have bee eggs. He makes sure he does not disturb the areas with the bee eggs and only breaks the parts of the hive with honey into small pieces and puts them into a container. The container is covered with a black plastic sheet and has a perforated bottom. Below this another container is kept into which the honey filters through the perforations. One more filtration process is carried out by passing the honey through a fine cloth. After this, the honey is then packaged and sealed in plastic bottles custom made by a local manufacturer. Labels are printed at a local printing shop and stuck on to the bottles. Arnold sells honey for MK 1000 (equal to $1.35) per 100 ml. The beekeeping business brings in good income annually for Arnold. In 2015, Arnold produced

**Fig. 2** Arnold displays the original protective clothing he made himself (left) and the new clothing gifted by visitors to his farm (right)

**Fig. 3** Arnold Kasumbu at his house holding bottles of honey that he sells to the local hospital

1000 L of honey, while in previous years he has produced 500 to 800 L of honey (Fig. 3).

The beekeeping and farming enterprise provides jobs to 15 people, who are employed on a permanent basis. Arnold also hires up to 30 people as casual labour (on a temporary basis) during the harvest season. Furthermore, he conducts "Field days" where community members are trained at his farm. So far he has trained 16 men and 14 women in beekeeping and they have formed a beekeeping club at the village. One of the women from the club had the opportunity to attend a farmer's fair in South Africa in 2015. Honey from Arnold's farm was showcased at the fair. "*They sold like hot cakes*!" said Arnold, and from that single event he made a profit of MK 320,000 (equivalent to $430).

Life was not always this prosperous, recalls Arnold. He had to discontinue his education after Standard 8, due to lack of resources in their household. However, with his successful beekeeping and farming, he was able to educate all his four children. His older sons (ages 22 and 20) have completed secondary schooling and his younger son and daughter (ages 17 and 14) are currently in secondary school. He hopes that at least one of his children would become an environmental scientist. In his four roomed house, Arnold has neatly displayed a television, music system with large speakers and several photographs of visitors who came to see his farm adorn the walls (Fig. 4).

"*This is not the only house I built*" he says with pride. He built a second home which he has let in the village, and has a third house in Kawale Township in Lilongwe City, which is also given for rent. Arnold also built a house for his mother in the village after his father passed away. Arnold's brother is a tobacco farmer with five children. A number of shops were built for his brother and Arnold also provided school fees for his nieces and nephews. "*All the houses I built are wired (electrified)*" he says with a smile. This shows how his earnings have reduced inter-generational poverty within his household (Fig. 5).

The Ministry of Agriculture's extension staff, Fisheries officers and lecturers from LUANAR have influenced Arnold's work. He received training for one year at the Farm Business School in 2012. Having good business skills have helped Arnold to grow his business. Branded as "Fish

**Fig. 4** Arnold Kasumbu at his home in Mitundu

**Fig. 5** The house Arnold built for his mother (left) and shops built for his brother (right)

and Green Garden", Arnold has a number of shops that sell products from his farm. Arnold understands that his source of money is from nature, so he plants trees every year and provides seedlings to the villagers. He does not shirk from providing advice to communities about stopping of wanton cutting of trees. Arnold does not support spraying of chemicals on crops and trees, as they impact on the bees and he uses organic manure in his farm (Figs. 6 and 7).

In 2016, Malawi suffered a drought and due to shortage of water, Arnold could not cultivate crops all year round. From the water stored in the fish ponds, he managed to irrigate some of his crops and harvest some fish, but honey production was low that year. However, he is hopeful 2017 will be a good year for his enterprise as rains were sufficient. In future, he plans to expand his farm and build a warehouse where he can install a machine for honey extraction. He hopes at least one of his children will gain a university education and take over his farm to run it in a modern way (Fig. 8).

A moment of pride for Arnold was when his farm was visited by the Minister of Agriculture in Malawi on the 11th of January, 2017. He


**Fig. 6** One of the many shops where Arnold sells his farm products

**Fig. 7** Cassava and maize are grown in the farm along with many fruit trees such as banana, guava and mango

**Fig. 8** The fish pond is fed by a stream and overflows to provide irrigation for crops downstream

continues to get visitors from Malawi and beyond, eager to learn about his success and how he helped many come out of poverty. The term "busy as a bee" is fitting for both Arnold and his industrious bees!

# Sustainable Pride: Camedor Palm

Isidro Hernández Becerra, Guillermo Rodríguez Rivas, Maite Lascurain-Rangel, Citlalli López-Binnqüist and Raymundo Dávalos-Sotelo

Nestled in the mountains of Sierra Madre Oriental which faces northeast towards the Gulf of Mexico, is the state of Veracruz in Mexico. Known for its historical port and coffee plantations, Veracruz's landscape is covered with evergreen rainforests, oak forests and beautiful beaches along the coast. At the heart of Veracruz lives the community of Rancho Nuevo, who are traditional coffee growers and harvesters of Camedor Palm. Isidro Hernández Becerra, a 65 year old coffee and palm farmer, lives there, and this is his story.

Camedor palm (*Chamaedorea elegans*) also known as parlour palm is a native tree of rainforests in Southern Mexico and Guatemala. A versatile, no maintenance indoor and outdoor plant, it is a very attractive, evergreen, single-stemmed palm growing up to 2 m tall. It is a shade loving plant (about 70% shade) and therefore, the community in Veracruz have been traditionally growing them in coffee plantations (Fig. 1). Isidro remembers his elders, one of whom was Don Pedro, who began to collect camedor palm since the 1960's in the virgin mountain that forms part of the communal lands of the Ejido. However, the demand was consistently increasing, resulting in a decline in natural populations of palm and so he had to walk further to collect it. Now, the community members led by Isidro, grow the palms and sells them to vendors (Fig. 2). The palm leaves are used in flower arrangements and exported to US and Europe.

> The leaves are sold every week in rolls of 144 ("gruesa" or "thick") leaves to an out of town unknown buyer. Don Pedro didn't know how it was used; but what was important was that it generated income, and he hardly had to do anything, other than picking it from the hills. When community members saw that this is a good business, they tried to form partnerships to sell in larger quantities with support from the Government, but that was not successful.

The knowledge about camedor palm was transmitted from elders to the children who

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**Fig. 1** Camedor palm growing under coffee trees

**Fig. 2** Isidro at his plantation

accompanied them when they went to collect leaves. Consequently, as Isidro grew up, he saw the possibility of making his own palm plantations within the coffee plantations. Along with other farmers, he collected seeds of the best plants in the field and germinated them in seedbeds. Eight months later, when the plants were 20 cm in height, they planted them, and thus, began palm cultivation in Veracruz.

> First, we planted tree palms in furrows between the coffee lines. With experience, we realized that we should not let the plants seed if we wanted to produce good leaves. A plant can produce leaves for up to 10 years and the first harvest can be after 3 years, after which every 3 months we collect leaves. It is very rare that pests or diseases attack them and they do not need a lot of care other than maintaining the shade. Cultivation of palm is easier than corn and coffee. It does not require much labor and the costs are few, as it grows almost as in the wild. Only difference is that the palms are now in the coffee plantations, where there are also orange, lemon, banana; and sometimes we plant some beans, all that gives us money to eat.

> I started palm plantation in 2003, when I planted the first 2300 shrubs. At the beginning I cut five "thick", kept planting and came to cut 50, and to plant one full hectare. Now I cut around 600 "thick", also I am planting in the "wild" or where there is no coffee, but taking advantage of the shade of the trees that are there. We have been transferring this knowledge to our children so they can also continue with the palm crop and benefit. Although some of them do leave the community, but when they return, they have not forgotten working on the plantation and growing palm. I feel very proud of my work in the field. I am dedicated to the cultivation of coffee and palm. This activity has allowed me to take my family ahead, which includes my spouse and three children. My kids like it and they are going to continue with this production.

The transition of the collection in the wild to the intensive cultivation on coffee plantations opened up other business opportunities, forcing growers to aquire more skills and have better tools for cultivation and marketing of palm leaves.

> Earlier, we had doubts about the usefulness of the palm leaf and why the vendors kept buying it. They said that they exported it to the US and Europe. In Veracruz state there are several intermediaries, whom we call "coyotes". Previously, they asked for leaves not graded for quality and only bought simple rolls from us. A few years back, they started asking for the leaves by sizes, good color and those without any damage from insects fetched a better price. We are now selling every eight days or twice a week. We now know that they sold plenty in Mexico and abroad.

In 2010, Isidro organized the farmers and formed an association, recognizing that selling of the palm leaves was a lucrative business. This helped them get better benefits and achieve a stable price which was better than what the vendors offered. The organization created a management plan to legally harvest palm leaves according to National Forest Norms. Thus the "Group of Agricultural and Forest Producers from Rancho Nuevo" was formed with 34 producers working within an area of 45 ha.

> The experience of forming the association made us see how capable we are, but we still need to organize ourselves better, as we need the commitment of producers. However, it opened the doors for us to let us become known in other places and now we give training courses to other producers, sharing our experience. We have been given specific forestry training, and we generate employment thereby empowering our people.

The training has helped the farmers in managing their production (Fig. 3). They have gained knowledge in selection of leaves for meeting standards for export. The export grade leaves are of three sizes: 45, 55 and 60 cm, dark green in color and without damage from pests. The group of farmers produced leaves for export and sold them in bundles of 20 sheets which formed part of a package of 30 bunches per roll (Fig. 4), which was wrapped in kraft paper inside a strapped box. They now have a training program with topics ranging from production, harvesting, selection and packaging. Each member has specialised skills and offer training courses of three to four days duration, which includes theory and field practice.

> Our satisfaction is when we are compared with other producers and they tell us that we are better in terms of the culture and the quality of the palm, but mostly in the way we are organized. With the formation of the group, we learnt to collaborate better, we get along well and we all learn, because we spend a lot of time together. Government's

> support was temporary, but as a self-formed enterprise, we needed infrastructure, capital, communication such as internet and mobile phone technology; unfortunately, at the time we did not have that. Another situation that worries us is insecurity, which must be dealt with very carefully, extortion is present everywhere and is somewhat delicate.

Palm leaf has been sold for more than 50 years and is considered as a secondary income option, since coffee is the crop of greater importance within the plantation. However, due to changes in the prices of coffee and pests such as the rust *Hemileia vastatrix*, which currently has severely impacted the coffee plantations, palm production becomes more important. Wild palm which was originally extracted from the wilderness, is now grown, firstly in shade coffee plantations, and more recently on the hills. With the changes of prices and risks of coffee, they are even substituting coffee plants.

Isidro feels that the whole community has benefited, as all planters have been trained and those who do not have palms are given wages for cutting and selection work, as there are few employment options in the area. Since coffee harvesting is only done once a year, but palm leaf harvesting is done year-round, it allows farmers to generate income to meet their family's needs. If a person has two or three plots, he divides it into four and creates programs of cycles for harvesting every week. This helps to create a regular flow of income. The palm requires shade for growth and hence this has boosted afforestation activities.


**Fig. 3** The group of farmers with Isidro

**Fig. 4** Donkeys carry the palm leaves in Rancho Nuevo

Another thing for which we are very proud, is that with palm cultivation we are caring for the mountains and cattle is not introduced anymore. We need trees and where there are no trees we are reforesting. We think that in our mountains, the palms can continue growing. Coffee has more risks and we must invest our money. We can only harvest coffee once a year, while with the palm, we can cut several times a year. The cultivation of coffee for example, needs 20 to 30% shade, while the palm needs 50% to 60% or up to 70%. We, the adults see a difference in our community, which now looks more reforested, because we prefer to keep introducing palm. Palm helps us to take care of the mountains; if we're cutting, we are generating employment, earning extra money, but we are also taking care of the hills.

The management plan carried out in the community of Rancho Nuevo showed that palm is planted at a high density (on average 150,000 plants/ha) along with coffee. A leaf is harvested per plant every three months, allowing them to produce a total of 600,000 sheets per year; with an estimated income of $4600 per year from the sale of the foliage. Isidro prides himself in the fact that the palms can be sustainably harvested for many years and contributes positively to the environment and farmers.

# From Leaves to Furniture, The Story of a Furniture Builder

Raul Sebastião Nhancume and Angelina R. O. Martins

*Hyphaene coriacea* (*minala* in the local language) is a multi-use palm, widely distributed in the coastal plains of southern Mozambique. Various parts of this species are harvested by local people to develop a range of products including traditional beverages from the sap, and leaves for roofing, fencing and weaving, all of which play vital roles in the livelihoods of local people. The strength and length of the leaf fibres characteristic of this palm (Fig. 1), make them particularly suitable for use as weaving material to produce baskets, sieves, mats, brooms, furniture and other utensils. Prior to being used for weaving, the leaves are collected before fully open, split into strands and then dried (Fig. 2). Raul Sebastião Nhancume is a furniture builder who makes a living using the leaves of this palm species.

Raul Sebastião Nhancume was born in 1982 in Maputo city, where he grew up and went to school. He completed 8th grade and had to stop his studies since he could not afford to pay school fees and to buy school supplies. In the beginning of the year 2000 he moved to Xai-Xai city, in Gaza province, to help his parents in their fields. However, he did not adapt well to his new life, so in 2001 he decided to return to Maputo city. In 2002, he started working for his cousins to build furniture using palm leaves. He worked for about a year, during this period he learned to make furniture using *Hyphaene coriacea* leaves and started mastering this art. Since he was not getting a salary, in 2003 he accepted a job offer in Ponta de Ouro, a small tourist village in southern Mozambique, to also work in a furniture making enterprise using the palm leaves. He stayed in his new job for about two years. Because Raul Nhancume wanted to start his own business on furniture building, he saved part of his salary and bought a plot of land in 2005.

Since then, Raul Nhancume has been working in his own workshop and has two employees that help him manufacture the furniture. In his workshop, he manufactures sofas, armchairs, coffee and dining tables, chaises, shelves, beds and bedside tables (Figs. 3 and 4). He considers the sale of palm leaf furniture in Ponta de Ouro as profitable because there are very few other producers in the village and that it is frequented by many tourists from neighbouring South Africa, who are the main buyers of his products. To reduce the costs related to the furniture making, he had to learn to weld the iron framework on which the palm leaves are woven, so he would not need to hire a welder. He presently earns an average annual net profit from the sale of palm

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**Fig. 1** *Hyphaene coriacea* palm whose leaves are used as weaving material (top) and *Hyphaene coriacea* unopened leaves (bottom)

**Fig. 2** Splitting (top) and drying (bottom) the leaves

**Fig. 3** Furniture set made with the leaves of *Hyphaene coriacea* palm

leaf furniture, ranging between 100,000 and 160,000 MZM (Mozambican Meticais) equivalent to 1500–2400 USD per year.

> The months of October, November and December, due to the high influx of tourists, are the most profitable with monthly profits around 25 000 MZM (375 USD), comparing with the 5 000-10 000 MZM (75-150 USD) of the remaining months.

With the profits he has earned from the furniture sales he can buy school supplies and uniforms for his two, school-age children. He has built a two bedroom brick home with a dining

**Fig. 4** Raul Nhancume standing beside his work

**Fig. 5** The small shop owned by Raul Nhancume which he wants to rebuild in the future to make it more attractive

and living area and has bought two radios and two televisions. He also built a small shop where he sells alcoholic beverages to supplement his income (Fig. 5), but the furniture sales provide by far the most income. In the future he would like to rebuild his small shop to make it more attractive.

By way of conclusion he stated:

> I am very happy with the decision to open my own business and be able to earn a decent income. I think that I will always work in the manufacture of furniture using palm leaves.

# Malazi, The Palm Wine Tapper

Pedro Macie and Angelina R. O. Martins

In the coastal plains of Zitundo area, southern Mozambique, lies a palm savanna dominated by the species *Hyphaene coriacea* and *Phoenix reclinata* (Fig. 1). These palm species are used by local people for several purposes, including production of a traditional palm wine, locally called "sura" or "ntchemane". Palm tapping to produce palm wine is an ancient activity in the area and, presently the production and trade of palm wine constitute one of the main livelihood activities in the area, contributing significantly to households' income.

Mr. Pedro Macie, best known in the area as "Malazi", is one of the tappers engaged in the production and trade of palm wine in the area. Pedro Macie was born in 1962, in Phuza, one of the villages in the Zitundo Administrative Post. He grew up in this palm savanna, helping his parents tap palms to produce palm wine for domestic consumption. With the intensification of 1976–1992 civil war in the area, he fled to the neighboring South Africa, where he worked for a farmer. During his stay in South Africa, he realized that palm wine was a commercial commodity with a well-developed market there.

> During our parents epoch ntchemane was not traded, they produced ntchemane to consume. Presently "ntchemane" is a commercial good, predominantly produced for sale.

With the end of the civil war, Pedro Macie continued living in South Africa. However, he started crossing the border almost every day to tap palms to produce palm wine for sale. He was one of the first commercial tappers to be established in the area in 1994. Pedro Macie has no formal education and took on palm tapping as an opportunity to earn income.

> With the end of the war, I decided to enter the palm wine trade business as an honest way to earn income for me and my family, since there are no other employment options in the area.

Presently, Pedro Macie exploits about 200 palms, and has one employee who helps him tap the palms. He sells the palm wine two days a week, on Wednesdays and Saturdays, at Phuza market, adjacent to the Mozambique/South Africa border (Fig. 2). Weekly, he sells around 600 litres of palm wine, which provides him with an annual net profit of about R 80,000, equivalent to USD6,015 (Fig. 3). With the income earned from palm wine trade, Pedro Macie was able to send his children to school in South Africa, where they were able to finish grade 10. He built a four bedroom and one dining room brick house for him and his family and bought a bull and a cow to

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**Fig. 1** Palm species used to produce palm wine, *Hyphaene coriacea* (left) and *Phoenix reclinata* (right)

**Fig. 2** Pedro Macie standing beside a palm (left), and with containers containing palm wine, he brought to sell at Phuza market (right)

start raising cattle. Owning cattle is very prestigious in the area and is a way local people store their wealth. Currently he owns 20 cattle and they are used to supplement his annual income, since he sells one cow every year.

One of the biggest challenges Pedro Macie faces in his tapping activity is the destruction of ready in tap palm stems by the elephants. During their excursions in palm savannas, the elephants eat and trample the tapped stems, reducing sap

**Fig. 3** Pedro Macie transferring palm wine from his container to a buyer's container (left), and receiving the payment from a palm wine buyer at Phuza market (right)

production. Pedro Macie also complained about the lack of palm wine markets in Mozambique, he believes that if the market was well developed in Mozambique, there would be no need for the middlemen, who buy and sell across the border so the tappers would get a higher returns for their activity. Pedro Macie considers palm tapping as a physically strenuous activity, and showed his callused hands which symbolise the hard work (Fig. 4). He works nine hours a day and seven days a week. To summarize he stated: "*there is no Sunday for a tapper, everyday is a workday*".

**Fig. 4** Pedro Macie shows his callused hands to emphasize the physical work involved in palm tapping

# Allo: The Himalayan Giant Nettle

Gaur Singh, Yadav Uprety, Bijay Subedee and Ram P. Chaudhary

The Himalayan giant nettle (*Girardinia diversifolia*), commonly called Allo in Nepali has been a major source of income in many parts of the Himalayan region. It is a fiber yielding non-timber forest product (NTFP) which belongs to the botanical family Urticaceae. It has been harvested for many years in the Himalayan region for cultural, medicinal and economic purposes. The fiber has high economic value as it is considered superior to jute. Different parts of the plant such as roots, stems, leaves, and inflorescences are used to prepare traditional medicinal formulations to treat various diseases and ailments for the local people.

Allo has been a source of livelihood for many Nepalis and this case study is from the picturesque Khar village of Darchula, located in the far-west of the country. Gaur Singh, who is now 60 years of age, has been renowned in the region for his continuous efforts to make Allo popular in his village and beyond. The plant was used historically only to make ropes, and its other uses remained unexplored. Singh began fully exploiting Allo's economic potential when he started an enterprise in 2008. Right from the beginning, all ten members of his family, including his spouse, four sons and four daughter-in-laws, were actively engaged in this enterprise. Singh began by inviting his neighbors to help collect Allo from the forest and extract its fiber (Fig. 1), for a small remuneration. Later, Singh approached the District Cottage Industry for technical help to improve the fiber extraction technology and knitting and weaving technology.

A programme called Kailash Sacred Landscape Initiative—a conservation and development initiative implemented by the Government of Nepal in collaboration with the Research Centre for Applied Science and Technology, Tribhuvan University, and the International Centre for Integrated Mountain Development, selected Allo as a value chain product and began helping the community. Singh was the leader and he helped organize the community members into groups and they received training and exposure visits. The community members are now preparing fine cloths from Allo (Fig. 2) and selling their produce to the non-governmental organization called SABAH Nepal (SAARC Business Association of Home Based Workers)—a community based social-business organization which works towards strengthening the livelihoods of financially deprived and marginalized home based workers of Nepal.

Through this enterprise, the incomes of Singh and his family increased almost three fold. Previously, Singh and his family were living at

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subsistence level, but now they make NPR30–40, 000 (US$290–390) per month. A hundred and fifty community members, mostly women, have received training and they earn NPR8-10,000 (US$78–97) per month. One member is Jogini Manyal from Khar village, Darchula district, who has been living with her daughter in her parents' house. Jogini had been working as a stone quarry worker (breaking stone using a hammer, and carrying sand from the river which are used for building houses or in the construction of roads) to feed her family. For her, the work was hard labour and irregular; but she had no other option at the time. But since she started working in allo enterprises, she earns a regular income.

"*When I started working in 'allo' processing three years ago after getting training, I earn more money than my previous hard work; it is a very regular work and is easy. I can weave about three meters of cloth in the 'local Allo Cooperative' established in my village working for eight hours a day. I earn NRs. 400 per day (NRs. 12,000 per month or US$117) with this regular work. Allo plant is available around my village and easy to collect. Now, I will not return to my previous stone breaking work which was a very hard job for women*", says Jogini, an active member of the Allo Cooperative in 2015 (Fig. 3).

Another member of the allo enterprise is Daul Singh Thagunna from Khar Village in Darchula district. He says, "*I worked as a shepherd and a porter to feed my family. It was not easy to fulfill the daily needs of my family; and I had to stay more than six month apart from my family. After I started working on Allo, I am staying with my family and getting better income. This Allo has provided me an income generating opportunity to my wife and me. Now, women who were dependent on money earned by their husband can also earn money themselves and have been less dependent on their husbands*".

The community members have expressed need for more training in design and knitting of cloth. They are aware about the sustainability aspects of Allo from the forests and have received training on sustainable harvesting and propagation of Allo. Fuel efficient stoves have

**Fig. 1** Gaur Singh with a bundle of Allo fiber

been provided by the Kailash Sacred Landscape Initiative for processing Allo.

Singh considers his life to be a success and he proudly says he is able to provide basic education to his children. With his earnings from Allo, he was able to buy a piece of land next to his property in one of the rapidly growing cities of Nepal. His future plans are to continue working on Allo and also include and engage more members of his communities. He is highly encouraged to know that the communities nearby his village are also interested to engage in Allo businesses. He says he is always there to help anybody who wants to start the Allo business.

**Fig. 2** Allo fiber and the cloth

**Fig. 3** A woman weaving cloth from Allo fiber in Goddhani, Darchula

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# Pine Needles: Sustainable Creativity

María Elsa Díaz and Ivania Andrea Cornejo

Nicaragua, nestled between the Pacific Ocean and the Caribbean Sea, is known as the land of lakes and volcanoes. It is also known for its interesting culture, which was influenced by the Spanish and the British, who had historically colonised parts of the country. The blending of different cultures resulted in the birth of a creative, varied, happy, and harmonious nation. Nicaraguans are also known for their resilience and perseverance, despite the hardships they face. This can be seen in their crafts, where even pine needles shed from trees are used to make beautiful pieces of art and craft to sell to tourists and for locals to secure a means of living.

In Nicaragua, the pine needles artisanship is known to have originated on the Atlantic coast and the practice spread to other regions. Some towns where this style of artisanal work can be found are Cinco Pinos, San José de Cusmapa and Dipilto. This case study is of a woman from northern Nicaragua who uses pine needles and coloured thread to make crafts and has been able to maintain her family of six solely through this.

Born and raised in San José de Cusmapa, a town of Madriz department, María Elsa Díaz is a single mother of six, with children aged between 36 and 20 years. María Elsa's eldest daughter Zeydi Leticia, who is 34 now, completed second year of secondary schooling, got married and decided not to continue her education. Her 31 year old son, Elmer Jonathan, and 28 year old daughter Jessica Vanesa completed secondary schooling and studied for a technical degree in construction at a technical education institute in Granada, a city in Nicaragua. The other children are Dinard (29) who completed high school and works for the national army, Bielka (25) who completed primary school and is working in the capital city, Managua, in cleaning services for one of the main hospitals, Examir (20) who still hasn't completed high school but her mother hopes to encourage him to continue his studies. María Elsa supports her daughter Bielka in taking care of her two grandsons Eban and Dorian aged 8 and 3, respectively. She hopes these two children will get a better education. She stated "*I will support them as much as I can. I believe there are more and better opportunities now*".

María Elsa's father was a farmer who owned and worked a 10 manzanas (7 ha) of land, cultivating mainly red beans and maize. Her father left the family when María Elsa was just 10 years old and her mother, who was a housewife, raised the children by herself working as a domestic helper

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and sewing in her free time. Although life was difficult, María Elsa managed to complete secondary schooling. María Elsa not only takes care of her family through this craft, but she is also a leader in her community. Since 2015, she has been the president of a women's cooperative consisting of thirty-six members. They dedicated themselves to do artisan work with pine needles, making different pieces such as baskets, jewelry boxes and decorative items that are sold at local and international markets. The material used is desiccated fallen needles from the pine trees which are plentiful in the landscape of María Elsa's town (Fig. 1). These trees belong to the most southern native coniferous forests in the Americas.

For making baskets and decorative crafts, the pine needles are sewed with yarn of different colours (Fig. 2), which are combined to make beautiful handicrafts. Creativity, mentions María Elsa, is an essential element in this work. Some other artisans buy the pine needles but María Elsa prefers to collect the material herself to ensure good quality of the needles and also that she has enough quantity to work throughout the entire year. For her own annual production, she tries to collect around 600 bundles of good quality pine needles. If she falls short of materials, she buys the bundles from other women for approximately one-third of a US dollar per bundle. María Elsa explains that the pine needles collection has to be during the dry months from December to March each year. During these months she dedicates 3 days a week for 4–5 h each day to collection. In order to collect the needles, she walks four kilometres to find good, mature trees which have the best needles.

María Elsa started pine needle handcrafts in 2002, when she lost her job as a secretary at the local municipality. She was the secretary at the office of civil registration, which involved

**Fig. 1** The landscape of San José de Cusmapa with pine trees in the foreground

**Fig. 2** Materials for the handicrafts

preparing registration documents for marriages, births and property transactions. She worked for 14 years at the municipality but she lost her job due to a change in the local government, when they decided to hire some of their own people. Having five children to look after, she approached a group of women doing artisanal work with pine needles and joined them. It took her three months to learn the skills in order to make good pieces to sell. Making pine needle craft is very demanding as it can take from 3 to 8 h to finish one basket, depending on the design and the size. Four years later, in 2006, María Elsa and the rest of the group of artisans formed a cooperative and received training from a non-governmental organization called Fabretto Foundation which continues to assist them to sell their products on international market (Fig. 3). At the beginning sales were low, but things improved after formation of the cooperative, which, at one time had more than 50 members. The number of members declined with time and has now stabilized with 36 members. The reason for some members to drop-out was because some became too old, while others did not have the continued support of their husbands.

This artisanal work is enough to make a decent living according to María Elsa, and thanks to this craft, she was able to overcome a difficult period when she found herself unemployed. She relies almost entirely on her capacity to make and


**Fig. 3** Offices and showroom of the Cooperative Rafael María Fabretto, headed by María Elsa Díaz

**Fig. 4** María Elsa Díaz (extreme right) and members of the Cooperative Rafael María Fabretto showing some of their artisanal work

sell her handcrafted pieces through either the cooperative, through individual sales or through special orders. For each piece sold through the cooperative, 80% of the price goes to the artisan and 20% to the cooperative. "*If you work, you earn [money], and the more you do the more [money] you make*" she explains (Fig. 4).

Also one of her daughters, Jessica who lives near her mother and has learnt the pine needle handicraft, occasionally helps María Elsa to do

**Fig. 5** Depending on the size and the markets, each piece is sold for approximately 4–15 US dollars on average


**Fig. 6** The pine needle handicrafts are showcased among the tourist information displayed in the town of San José de Cusmapa

some crafts. The daughter is not a member of the cooperative and María Elsa economically rewards her daughter for her help in making the pine needle pieces.

María Elsa is proud of her own success and the success of the cooperative because of the creativity and care put into the crafts (Fig. 5). They have approximately thirty designs, but she says they are always looking for new designs and improvements to make. Recently they have included Christmas decorative pieces and are increasing the number of designs for jewellery and accessories. Explaining how the group recently improved their work, she says that previously, other women worked with a yarn of poor quality. As she used to travel to the capital city Managua where she looked for inspiration, María Elsa found a new type of yarn of better quality. Although in the beginning the members were resistant to change, complaining that the new yarn was harder to manipulate, eventually they began using it and now are very happy.

Thanks to the work of the cooperative, the town of San José de Cusmapa is becoming increasingly recognized as a center for pine handicrafts in Nicaragua (Fig. 6). María Elsa and her partners are usually invited to local fairs to promote and sell their products. Tourists interested in crafts are able to visit the houses where the women create their pine needle crafts and talk to them about this traditional and sustainable craft that helps many women and their families in San José de Cusmapa.

# Peruvian Brazil Nuts

Miguel Zamalloa Condori,
Renatto Francisco Cánepa Vega
and Kerry Maegan Hughes

> We consider that being born in the forest, especially in the midst of Brazil nut trees, made us love them, respect them, become identified and feel part of them.

Miguel Zamalloa is a Brazil nut collector from Madre de Dios in Peru. His regard for the Brazil nut tree is evident from his anecdote above. The Brazil nut (*Bertholletia excelsa H.B.K.*), an important Non-Timber Forest Product (NTFP), grows naturally in non-flood terraces of the lowland Amazon forest covering Venezuela, Guyana, Colombia, Brazil, Bolivia and is abundant in Peru. These nuts are in high demand in international markets, mainly North America and Europe, due to it's nutritional attributes. Madre de Dios is recognized as the "Capital of Biodiversity of Peru", and has the largest area of Brazil nut trees in the country covering 1.2 million ha. In this area alone, there are approximately 15,000–20,000 people who benefit directly and indirectly from the extraction and about 1200 nut gatherers. According to the Instituto de Investigaciones de la Amazonía Peruana (IIAP), each individual involved in this NTFP trade generates an average annual profitability of US $6410 which represents the 67% of their total household income.

Miguel's parents, Luis Zamalloa Bolívar and Marcelina Condori Nina, came from Cuzco and they met on Madre de Dios in a farm called Vinelli in San Juan de Aposento. It was at this farm that Luis Zamalloa worked, gathering Brazil nuts and, shiringa (*Hevea brasiliensis*) and harvesting rubber. Marcelina came to Madre de Dios with her grandfather to work in Brazil nut harvesting. Luis Zamalloa and Marcellina got married at Madre de Dios and Luis collected Brazil nuts and his mother helped by breaking its shells. They also had a small shop and frequently had cattle, depending on the timeline. Therefore, together they managed the household expenses.

When Miguel was seven years old, he was moved from San Juan de Aposento to Pueblo Viejo, a settlement in Madre de Dios' capital, to begin formal education at a school. He shared two cots with his sisters in a small house and their parents could visit them just three times a year bringing food and other groceries. Thus, Miguel started helping his sisters with household chores alongside his school work.

> When I was in school I had to take good care of my black sneakers which were used instead of black shoes which was compulsory as part of the school uniform. I had only one pant to wear. In university, I had a similar experience. I just wore 3 tee-shirts and 2 pants for the whole year. It looks a dream that I can buy anything I need currently.

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Luis Zamalloa and Marcelina started working in their own Brazil nut concession once the Peruvian farm reform came into force in 1969. The Forest Authorities started granting rights to people to use a certain forest resource and/or wildlife, both for production and non-consumption purposes (such as eco-tourism) and allowed them to benefit from the ecosystem services. The couple then obtained a Brazil nut concession for 40 years in San Juan de Aposento which is a community close to the border with Bolivia. There, Miguel's siblings were born and they went to Cuzco for their schooling. The Brazil nut business was supplemented with a small shop set up by his mother to sell groceries in the community. In those days, groceries were brought by a plane which came to San Juan de Aposento, but this stopped after 1980.

> Those times were really good for my parents and siblings, the latter could study in a school in Cusco and get a better education. Even people from Bolivia came to us to buy groceries from our small shop; this was a really good initiative and entrepreneurship which my mother set up thanks to her trade experience in Cusco.

After the planes stopped landing, they had to close the shop and had to rely on the Brazil nut harvesting and shelling. Therefore, they had to walk about 2 days, spending the night in Planchon or Alegria communities, to arrive at the capital, Puerto Maldonado, in order to meet the local forestry authority who issued the Brazil nut concession. Depending on Brazil nut sales was not adequate to support the family's needs, which, along with poor financial management in Miguel's family (in the 1990s) led to an economic crisis. This forced Miguel's siblings to leave Cusco to go back to Madre de Dios and carry on their studies. The tension in the family caused Luis Zamalloa and Marcelina to separate, but they continued together working as business partners on Brazil nut harvesting to support their children's expenses, particularly for their education.

The supply of Brazil nuts is seasonal and the short period of harvest from January to April is called "*zafra*" and this matches with the end of the school holidays. Therefore, from an early age, Miguel and his siblings supported their parents during the *zafra* period. Together they would collect Brazil nuts from the forest floor and put them into "liana" baskets. Liana is a vine found in forests, is flexible and used to weave baskets. After collecting the Brazil nuts, the shells were broken and careful selection of good nuts was done to sell the best quality to a trading company which came to San Juan de Aposento with trucks once or twice in a month between January and July until 1995. Often these companies gave low prices to the gatherers (2 USD per kilo of shelled Brazil nut). They had to walk about 2 hours from the Brazil nut concession to the collection center carrying a 70 kg basket of nuts. If they wanted to go to the capital to buy food or groceries to supply the household or to buy school equipment, they had to reach a truck called "bolillero" which arrived in Mavila only once or twice in a week.

When a much needed highway was finally built, Brazil nut companies began coming more often to Mavila offering relatively better prices (2.5 USD per kilo). Miguel's family walked 3 h to Mavila carrying 50 kg of shelled Brazil nuts to reach these companies called "rescatistas" which acted as intermediaries. They could increase their profit from 4000 to 5000 USD per 300 sold *barricas.*[1] During this period (2001), Brazil nut yield declined due to the effects of El Niño phenomenon which led to gatherers getting higher earnings (from 3 to 7 PEN/Kg or 0.92–2.15 USD/Kg).

Thanks to their Brazil nut business, Miguel's parents could buy 50 heads of cattle (for beef production) in the early 1990s and maintain them until 2007. In 2007, Marcelina left San Juan de Aposento and moved to Puerto Maldonado in order to live with her children and for medical treatment. She suffered from a heart ailment which over the years, got worse. She has had an active life working in Brazil nut harvesting and shelling, running her own small shop and livestock farming with the aim of giving her children a good education. The livestock business was managed by Miguel's father, but after Marcelina left the community, they sold the cattle and split

[1]One barrica represents 70 kg of collected Brazil nuts.

**Fig. 1** Miguel harvesting Brazil nuts in the forest

the earnings and since then completely relied on the Brazil nut business. With the earnings from selling livestock, Marcelina built a house and began to live together with some of her children, including Miguel, after a long time and continued working by shelling Brazil nuts in the company La Selva. By then, Miguel was studying ecotourism at the local university. But, every *zafra*, Miguel and his siblings went to San Juan de Aposento to harvest Brazil nuts (Fig. 1).

> We grew up in the forest where over the years we listened to stories from my parents, we ate Amazon fruits, swam in the relaxing cool river, and was always surrounded by nature and the animal sounds, among other things. That is why my siblings and I preserve these trees which for hundreds of years represent our culture and tradition. Moreover, Brazil nut practices are sustainable and have no negative impacts for the ecosystem and, it is particularly a rejoicing activity to be under the shadows of the trees (Fig. 2).

In 2004, Organic Brazil Nut Collector Group (RONAP, acronym in Spanish) was created legally with 43 members. RONAP's aim was to organize Brazil nut concessioners and consolidate long-term commercial links with Candela Peru, a company that buys the nuts. This was in order to increase profit in each member group and to reduce the risk of price fluctuations. In 2010, RONAP reached 62 members involving 30 communities covering 45,864 ha in the Brazil nut zone in Madre de Dios. Furthermore, Candela supported RONAP to get certified at the Fairtrade International certification, being the first Peruvian producer organization to get this. Therefore, Brazil nut prices varied as follows: Conventional (10.00 PEN), Organic (10.50 PEN or 3.2 USD) and Organic/Fairtrade (11.50 PEN or 3.5 USD).[2] The collection costs vary due to investment in infrastructure and the product management including specific practices regarding the standard requirement.

When Miguel´s father wanted to sell the Brazil nut concessions, Marcelina and her children refused this proposal vehemently. Thanks to this practice, the average annual profitability in Zamalloa family has increased over the years as Brazil nut prices increased. In addition, the family being a member of RONAP, benefitted from access to loans, transportation, tools and could participate in building their capacity in sustainable forest management (good harvest and post-harvest practices) and receive a Fairtrade premium for their products.

> On average, each member of RONAP holds 600 hectares of concessionary forest, supplying 180 sacks or barrels (barricas) of Brazil nuts priced at 250 PEN (USD 77). We calculate the collection cost under a scenario of 150 PEN per barrica which leads to a 100 PEN profit per barrica (18,000 PEN per 180 barricas). Each member has enough income to cover expenses of collection and logistics and survive almost the whole year. These figures can vary depending of the location of the concessions; the access by highway or river.

[2]Exchange rate in December 2014: 1 USD/3.281 PEN.

**Fig. 2** Miguel and his brothers in the forest

Thanks to these earnings, Miguel graduated from university and travelled to other regions in Peru. His siblings also could graduate from the teaching institute. He says they could eat at restaurants, rent their own room and even buy a motorcycle to facilitate access to their Brazil nut concession, all of which they previously could not afford. Furthermore, Marcelina could finally travel to Lima, the Peruvian capital, to receive better medical treatment.

> Doctors could not understand how my mother could be still alive with her heart trouble and live an active life in the forest; they said it was a miracle. That was the first time I took my mother to a doctor.

In 2011, RONAP lost the Fair-trade certification due to mismanagement of revenue, found during a financial audit. Therefore, many members were affected financially and decided to leave the organization. It was at this time that Miguel Zamalloa was elected as president of the organization.

> When I started leading RONAP, I found Brazil nut collectors to be highly demotivated. Some of them left the organization and some had debts with some buyers. I had to visit each member of the organization to know more about their lives, their needs and frustrations as well as hearing from them any ideas that could contribute to improvement of RONAP. It took about 2 years to restore confidence in us and to work together. Now we are stronger than before.

Miguel faced the challenges of RONAP, accelerated his learning and participated in technical roundtables and meetings with other stakeholders associated with the Brazil nut-based value chain in Madre de Dios. He also participated in an event organized by the Research and Promotion Centre of the Peasantry (CIPCA) in Bolivia in 2009 to define strategies against the negative impacts of climate change to Brazil nut trees. He

also linked with strategic partners such as Rain Forest Alliance, Cooperazione e Sviluppo (Cooperation and Development) (CESVI, an Italian Humanitarian Organization), Asociación para la Conservación de la Cuenca Amazónica (ACCA, a conservation association), International Conservation, Equal Exchange, Alter Eco, among others. These organizations have implemented projects on Brazil nut conservation and sustainable supply along with maintaining the organic produce certification which is mandatory to link with the international market.

Miguel has participated in national tradeshows (Peru Mucho Gusto – Tacna and Expo Amazonica – Iquitos in 2013) and business roundtable (Sur Exporta – Cuzco 2013) along with other Brazil nut organizations in order to create awareness about this product and link with new companies. Thus, RONAP has obtained a new commercial agreement with an international company, Candor AGS Latam, in order to implement agroforestry systems in Brazil nut concessions. Agroforestry done with incorporating cocoa trees and other products will help in recovering degraded soils and forests where Brazil nut trees are found.

> Since three years ago, we represented RONAP in meetings organized by the Forest and Brazil nut´s roundtables respectively, the Regional Council of Organic Products (COREPO), Technological Production Institute (ITP), and many other places where the Brazil nut-based value chain can be strengthened and collectors can receive a benefit.

Currently, Miguel is getting recognition in the Brazil nut-based value chain in Madre de Dios which is leading the Brazil nut group within the framework of the Centre of Productive Innovation and Technology Transference (CITE). RONAP is supporting decision making and proposal development, along with other stakeholders, with the aim of improving the value chain. Moreover, Miguel has ambitions for RONAP to set up a facility to produce Brazil nut powder and oil from different Brazil nut organizations, companies and academic institutions in Madre de Dios.

Furthermore, many young people joined the organization and they are mainly children and grandchildren of the concessionaries members of RONAP. They are educated in various fields including accounting, administration, forestry, engineering, and communication. This organization model called “generational replacement” which brings young people into this sector addresses the problem of abandonment of Peruvian agriculture farms by migration to the urban areas. Most of the remaining farmers are elderly, but this is slowly changing. Miguel wants young people to feel identified and be part of this group as a driver of change in which each one can contribute their gained knowledge and can participate in different platforms. Next year, Miguel and the team are planning to visit Brazil to learn about agroforestry system models in order to adapt them into the Madre de Dios scenario.

Miguel is optimistic about the future.

> I think we will fetch better prices in future and as the Brazil nut community, we will plant more Brazil nut trees in free spaces in farms in order to diversify our forest supply. I encourage all Brazil nut collectors to follow their dreams because the future will depend on sustainable practices which are friendly with the environment. Buyers in urban areas around the world would want to know about this and want to hear from us. If you fail at the first time, just persevere and think of another strategy.

# The Last Basket Weaver of São Mamede

Manuel A. N. Frutuoso and Helena Braganca

> All my life I've weaved baskets out of chestnut wood, just like my father and my grandfather. We worked hard and, though we were never rich, we never lacked anything. My son was able to study and my grandson is now studying in a university in Lisbon. It's saddening to witness the disappearance of this skill in this region.

The São Mamede mountain range is the biggest in southern Portugal, and one of the few southern regions where the chestnut is still economically and socially relevant, and plays an important part in the local families' income. This area has a great tradition of cultivating chestnuts for their fruit, which is sold at a good price and consumed mainly locally. The chestnuts that grow in the forest are ungrafted (meaning their fruit are not as sweet so tasty and those coming from grafted trees, hence they have no commercial value) and their fruit is used as cattle feed, in mushroom gathering, and as wood strips for making baskets.

Basket weaving was a popular craft in many villages in the area. The baskets were in high demand due to their use to carry fruit, vegetables and fish by farmers. The demand was such that sometimes the basket makers ran out of local chestnut wood and had to go further north to get raw material. With the increasing use of plastic, baskets were slowly replaced with plastic containers and basket making became less profitable. As a result, many craftsmen had to venture into other occupations, move to Lisbon or other countries.

Manuel António Nogueira Frutuoso is the last chestnut basket weaver in the São Mamede area. He was born in June 1931, near Ribeira de Nisa Municipality, in the Portalegre district, in the heart of São Mamede. This area has since been declared a protected area and it is now a Natural Park (Parque Natural da Serra de São Mamede or PNSSM).

Manuel completed 4th grade, a privilege not available to all in Portugal during the fascist regime, which lasted 40 years. A military coup, backed by popular resistance and known as the "Carnation Revolution", overthrew the authoritarian regime on the 25th of April 1974. Back then, the majority were illiterate and poor, and children often started working to help out their families. Some craftsmen like Manuel's father, however, were able to send their children to school, to complete their basic 4 years of schooling. Only a few wealthy families were able to provide their children with education beyond 4 years.

This story is that of the last basket weaver of Sao Mamede.

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Like most people his age, Manuel left school when he was 10 and started learning the craft of basket weaving from his father. For a short period in his youth, he tried to learn carpentry in a nearby city, but gave it up and returned to basket weaving, his family's traditional occupation.

Manuel with a basket he crafted

The baskets made from chestnut bark

Basket making is a time consuming and strenuous process, resulting in many and long working hours. The chestnuts used to grow all over the mountain, near the villages. To get the proper material, the trees are pruned to induce the emergence of new shoots. The shoots are collected in December and January and should be 4 years old at the time of harvesting. The wooden sticks are then buried between layers of earth, to prevent loss of humidity, which is a key factor to keep the elasticity necessary for basket weaving. Whenever they need more material, the craftsman unearths the material and uses and open flame to burn the bark to get a clean piece of wood. The wood is then cut in half with the help of a specific instrument that allows the craftsman to cut the thin slices which are later used to make the baskets.

Just like Manuel, many other men in the area were able to provide for their families almost exclusively from basket making. The majority, although they worked hard on their craft, manage to dedicate a few hours to cultivate their land where, with the help of their wives, they would plant vegetables and raise animals for domestic consumption (chickens, lambs and pigs). In those days in rural Portugal, these families would raise at least one pig per year that would be slaughtered at home and the meat either prepared into smoked sausages, or salted for consumption throughout the year. This subsistence farming and basket weaving allowed the families to live comfortably, and many were able to give their children a better education and thus, better life conditions.

Most children of these craftsmen have learned their fathers' art but with their education, have pursued better paid professions. Manuel lives on a small farm he inherited from his father, where he built a comfortable house, close to where his grandfather lived. At his workshop nearby, he makes his baskets, which are sold between 10 and 30 € depending on size. In the past venders ordered baskets from him and he also sold them in trade markets, but nowadays he only sells some when invited to go to some events (such as farmer's markets). The workshop is located by the riverside, with plenty of trees like chestnut, walnut, hazel, ash and elm. His only son lives next to him in a grand house with a swimming pool and works in the city. Manuel has a grandson, who studies Electrical Engineering in Lisbon.

Manuel at his workshop, working on his craft using strips of chestnut bark

Nowadays, apart from Mr. Manuel, nobody lives exclusively from basket weaving in the area. The baskets are considered a handcrafted product with a more decorative than utilitarian purpose. Since he is, practically, the only craftsman in the area, Manuel is often invited to craft fairs, historical re-enactments, and has been interviewed by the media. Despite having a hard life, he does not regret the choices he made for his life.

# Three Generations of Healers

Paul Cornelius Dlamini and Deepa Pullanikkatil

> It is my gift…. to heal people…. a gift that has been passed on for three generations in my family. My grandparents were herbalists, my father learnt about herbal medicines from them and I inherited the business from my father. Two of my children have also become herbalists. We have all been living because of this. By selling herbal medicines, I built a five roomed house, educated nine children and have five shops. I want to improve how traditional medicine is practised in Africa.

For eons, traditional medicine was the dominant medical system for millions of people in Africa. It plays an important role in health care for the majority of rural folk in Africa, who often do not have access to modern medicine. The high cost of modern health care systems has prompted the integration of traditional African medicine into the continent's national health care systems. In Swaziland, a small kingdom located in Southern Africa, 85% of the people rely on traditional medicine for their primary health care.[1] For Swazis, traditional medicine is anchored in their cultural and religious beliefs. In traditional African medicine, it is believed that illness is caused through spiritual or social imbalance and diagnosis is reached through spiritual means. The "*Sangoma*", or spiritual herbalists are "called" to the profession whereby they rely on divine intervention of spirits in their readings. Treatment is prescribed in the form of an herbal remedy that is considered to have not only healing abilities but also symbolic and spiritual significance. Thus, traditional healers or herbalists endeavour to provide healing for mind, body and soul.

Swaziland is bordered by South Africa and Mozambique and is the smallest country in the southern hemisphere. An absolute monarchy with a population of 1.3 million,[2] it is known for its beautiful landscapes that drive eco-tourism. It is a country which has preserved its age-old traditions and culture which attracts many tourists. It is also a healing kingdom, as tourists can meet with an "*Inyanga*",[3] who inherited secrets and remedies of traditional medicine from their grandparents or the "*Sangoma*", who are herbalists and spiritual healers, in the hope that they will add value to their well-being. Families that have practised traditional healing for generations are considered exceptional. One such family is where Paul Cornelius Dlamini was born into in 1960. This case study gives an account of Dlamini's life as an herbalist.

[1] Amusan O.O.G. (2009). Herbal Medicine in Swaziland: An overview in African Natural Plant Products: New discoveries and Challenges in Chemistry and Quality, Chapter 3, pp. 31–49.

[2] WorldBank. (2015). Swaziland Population Data. Online publication available at http://data.worldbank.org/country/swaziland. Accessed on 25 October 2016.

[3] Traditional healer.

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Paul was the fourth child in a large family of 12 children. In his childhood Paul was influenced by his paternal grandfather. His grandfather used to say that Paul was a special gift to the family, as on his birth in 1960, the family was freed from the bad luck brought by an owl. Owls are considered ill omens in Swazi culture and represent the work of witches, signifying bad luck and death. An owl used to fly around the Dlamini homestead for many years bringing misfortune and on the day Paul was born, it dropped dead in front of the house for no apparent reason.

Being his grandfather's favourite grandchild, Paul spent a lot of time listening to stories from his grandfather. Paul's poor hunting skills were a worry to his grandfather. When Paul was 12 years of age, his grandfather gave him a challenge—to hunt down a small bird which is usually found in bushes in abandoned fields. Paul was determined to impress his grandfather and managed to hunt down a small green bird, which he dutifully took to his grandfather. His grandfather blessed the bird, then cleaned and cut the bird, seasoned it with salt, roasted and ate it. His grandfather then declared that he was satisfied that Paul was a good hunter, and this delighted Paul, who looked up to his grandfather as a figurehead.

Paul's paternal grandparents were herbalists, and so was his father. He therefore felt that he "was brought up with herbs". He would gather herbs from Makhwane forests (in Epheleni region) and Mafutseni forest (in Manzini region), which are indigenous forests in Swaziland.

> I started training to be an herbalist under my father when I was 19 years old. I was trained for five years, during which my father took me to the forests and showed me all the trees and herbs. He explained to me what herbs and bark were used for various illnesses, the signs and symptoms of illnesses and how to prepare the medicine. We used to go to the Steins' dorp forests which is at the border of Swaziland and South Africa, to the Makhwane forest in Epheleni area and Mafutseni forest near Manzini area in Swaziland. They are natural indigenous forests and not plantations.

After five years of training under his father, Paul joined the family business which was an herbalist shop in Oshoek in Swaziland, close to the South African border. He worked there from 1985 until 2006. His father passed away in 2010 and Paul took over the family profession.

One of the influential events in Paul's life was when he attended a training course on primary health care at Siteki[4] organized by Ministry of Health of Swaziland. The course was specifically targeted at traditional healers and at the end they received a certificate. Traditional healers are registered by the Ministry of Health and provided with a "red book" which indicates the illnesses they can cure and details of training received.

> Every year I attend the training by the Ministry of Health, and we have to pay for it ourselves. It is E220[5] for a one-week training now. I was not satisfied with the way things were, and 1 was looking at how to improve traditional medicine. Since 1991 it has been a dream for me to set up a 'Traditional Development Health Centre' (TDHC) for Africa with the aim of starting a hospital for traditional medicine, where patients will be admitted and receive treatment. But to build it, I first need a depot and a factory for traditional herbs. I have shared my dream with many herbalists that I have met at trainings and when they visit Swaziland. Herbalists from Uganda, Zimbabwe, Mozambique and South Africa have said they are interested and joined as members of TDHC. I also spoke to the Coordinating Assembly of NGOs (CANGO) about this, and the need for funds to start this centre.

The TDHC was envisaged by Paul as a centre where farming of herbs, training of herbalists, preparation and packaging of medicines, and treatment is provided to patients at a hospital equipped with doctors and nurses. In addition to the treatment provided, growing of herbs and preparation of medicines would also form part of the activities of this center. He proposed setting up several herb nurseries in all the regions of Swaziland. Paul's vision is grand and it is clearly reflected in the logo of TDHC that he designed (Fig. 1).

Paul designed the logo of TDHC after much consideration and thought. The circle represents the earth and the crown on the top represents the

[4]A town in eastern Swaziland.

[5]Emalangeni is the local currency of Swaziland which is pegged to the South African Rand. In 2016, E220 was approximately US$16.


**Fig. 1** The logo for traditional development health center designed by Paul Dlamini

crown of His Majesty the King of Swaziland, also meant as a symbol of a "leader". The earth is the source of life and inside the circle (earth) roots, trunk and branches of a tree are shown. As everyone goes to the tree for their livelihood, the tree represents all institutions. Furthermore, in Swazi culture, most meetings in the village happen under a tree. The saying, "I am going to the tree", would mean that one is going to attend a meeting. "*The tree is needed by all people including the King*", says Paul.

The heart in the logo represents the hearts of herbalists. Paul says that it is a heavy heart, as often herbalists are mistaken for doing witchcraft. The bird in the branches of the tree is called "Ingculungculu" in Siswati and represents all animal life on earth. The chapter Genesis 1:29 from the Bible states that one can eat all the creations of God including plants and animals. The term "Siphilisa Makhambi" in Siswati can be translated as "Will use nature" and "Nge Mvelo" means "tradition".

Paul hopes that TDHC will grow into be a large institution and provide treatment to many people. Several herbalists who have met with Paul have pledged their support for TDHC, including herbalists from Uganda, Zimbabwe, South Africa and Mozambique. However, herbalists face many challenges, says Paul, as he recalls a time when he used to issue sick notes to his patients and was chided by the Ministry of Health for that. The ministry officials said that sick notes can only be provided by medical practitioners and not by herbalists, as herbalists are constrained by the Witchcraft Act of Swaziland.

According to Dlamini, the greatest hindrance for traditional medicine is the Witchcraft Act of 1889 which originates from colonial times. It states, "Any person who practises as a diviner, or witchdoctor or witchfinder shall be guilty of an offense and liable on conviction to a fine of four hundred rand or imprisonment not exceeding one year (Amended A 18 1952)[6]". The act defines witchdoctor, or witchfinder as persons described in Siswati (the local language of Swaziland) as *umngoma* or *isangoma* or *inyanga yokupengula.*[7] Although these are not terms that are used for herbalists such as himself, they restrict the authority of traditional medicine in Swaziland. Traditional healers in South Africa are allowed to write sick notes for patients and Dlamini hopes this will also be the case for Swaziland in due course.

In Swaziland, the "Traditional Healers Association" was established several decades ago by a group of traditional healers, supported by officials from Government and academia. Between 1988 and 1996, Paul was a member. However, he did not feel the association was adding much value to traditional medicine. Paul expressed his discomfort of the association clubbing herbal medicine practitioners with spiritual healers. According to Paul, there are three types of healers, the prophets who use the holy books and faith to heal people, the witch doctors who use ancestral spirits or spirits from the dead to heal people and the herbalists (*Lungendla* in Siswati) who use natural herbs to treat illnesses. Paul believes in God and using knowledge, experience and herbs for healing. Paul believes that herbal medicine is in line with biblical teachings and should not be associated with witchcraft. Some of Dlamini's patients are religious people whose faith condemns traditional healing methods as demonic. They approach him during the night for treatments, in order not to be seen publicly. To them, Paul explains verses from the Bible that support use of herbs and slowly they have come to understand.

> Joseph in the Bible had doctors. Those were not modern doctors they were traditional healers. Deuteronomy Chapter 18 verses 10-12 states that God has put a standard to use medicine, what to use and what not to use. In Genesis 1 verse 29, God talks about every tree and that we must use or eat every creation of God. Even in Colossians Chapter 4, verse 14, Luke is described to be a doctor and at that time there were no chemicals, Luke must have used herbs. So I told the religious people who come secretly to my shop that I know what I'm doing. Now some of them come during the day openly.

Another influential event in Paul's life was when he attended a meeting in South Africa where many modern medical practitioners were present. The meeting was organized by the Cancer Association of South Africa in 1994 and Paul got an opportunity to visit a factory in Gauteng Province where he learnt how herbs were being used to create modern medicines. This was an eye opener because until then, he thought herbs were used only for traditional medicine. This motivated Paul to package herbal medicines with codes and labels in a systematic manner, just like modern medicines.

Paul codes his medicines in numbers, where each number represents the name of medicine. The label contains information on the disease that the medicine treats, and directions on preparing the medicine, as well as method of intake. Paul is able to expand his business by training herbalists whom he employs. Having a good business plan and using the right business language is important for training others,

[6]Government of Swaziland. 1952. Witchcraft Act Amended A 18.

[7]Witchdoctor (loosely translated in Siswati as one who throws bones).

he says. The system of work explains how the medicine can be used, whether it is for drinking, applying on skin or for eating. The codes indicate the diseases the medicine would cure and the directions indicate how the herbs need to prepared and taken by the patient. Having these systems in place makes it easy to train others and Paul is proud that he has over 100 types of herbal medicines which have been coded and labelled. Labelling medicines have been useful for Paul, as he expanded his herbalist shops in both Swaziland and South Africa. He is now able to receive calls from patients and direct them to his shop with instructions to his assistants to choose the right medicine based on their code numbers.

Paul's vision of TDHC includes having a decentralised system where anyone who wants to associate with the center are welcome. He wants to set up local offices in all regions of Swaziland, coordinated by a central office. In anticipation of setting up this center, Paul has trained ten nurses in Swaziland and 80 nurses in South Africa. The training was for a period of one month in classroom and three months of practical training and was done between 1992 and 1997. The training made the nurses proficient in using the coding system and providing encouragement and care for patients. For the practical session, the nurses visited homesteads, identified patients, treated some patients and referred others to hospitals. The nurses also encouraged communities to use herbal medicines in the correct manner. It has been a long wait for the nurses since the training, and they are working in various places while they wait for TDHC to take off. The commitment of Paul is undeniable, as he keeps in touch with these nurses year after year. Besides nurses, ten traditional healers in both Swaziland and South Africa have also been trained by Paul. They have opened herbal shops and Paul plays the role of coordinating their business (Figs. 2 and 3).


**Fig. 2** Building for traditional healers at the Mbabane market in Swaziland


**Fig. 3** Dlamini's shop manned by his assistant at Mbabane market in Swaziland

The flourishing business of herbal medicine helped Dlamini to invest further and set up five shops, purchase a car and hire herbalists and assistants (Fig. 4). He says with pride in his eyes that he opened the new shops using only his savings and no loans were taken. He also owns a five roomed house in Oshoek, which was built on land he purchased. In addition, he has a 1000 $m^2$ plot which he keeps as an investment. Two of his daughters run two shops in South Africa, while some of his children are studying in South Africa and one of them owns a beauty salon. Dlamini and his wife have studied up to primary school and he is proud that all his children are all more educated than them, having completed primary schooling and three of them went on to complete secondary schooling too.

Having loyal customers is what makes Paul's work successful. He recalls a time when he was admitted in hospital and some of his customers visited him. He claims that their loyalty is due to his good work and recollects a time when he cured cervical cancer in a girl who was referred to a highly specialised hospital in South Africa and could not afford the costs. Paul healed the girl and when she went for a check-up at the hospital later on, she was found to be free of cancer. Similarly, a patient who had breast cancer was healed by him in eight hours.

Herbs are found in the natural environment and therefore protecting the environment is essential to making traditional medicine sustainable. In this regard, working with organizations that protect the environment is critical according to Dlamini. Dlamini has approached the Swaziland Environment Authority (SEA) which is mandated to provide for and promote the protection, conservation and enhancement of the


**Fig. 4** Dlamini and his assistant at a newly opened the shop in Mbabane Central Business District, Swaziland

environment. Their collaboration was successful and SEA now incorporates traditional healers into a committee which oversees implementation of the Nagoya Protocol in Swaziland. Swaziland is signatory to the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization. Part of the Convention on Biological Diversity, the protocol is an international agreement which aims at sharing the benefits arising from the utilization of genetic resources in a fair and equitable way.

> With the Nagoya Protocol, everybody benefits. Now if we want to cut bark from a tree in somebody's homestead, we have to ask permission from him. The herbalist benefits and the owner of the tree also benefits.

Over the years Dlamini has noticed the decline in availability of some herbs. According to him, this is due to the high demand for herbal medicines which leads to over-exploitation of natural resources, including the use of unsustainable methods, such as digging up the roots of plants. Dlamini understands that he needs to sustainably use the plants as he will need them in the future. His future plans include lobbying to repeal the Witchcraft Act, setting up the TDHC, incorporating traditional medicine into medical aid systems and promoting sustainable use of natural resources for healing.

Paul leads a contented life now, but his youth was not without challenges. Recalling a time in his youth, Paul reflects about the time when he worked at an asbestos mine in South Africa. He was 18 years old at the time and worked at the mine for six months. It was hard work and he developed chest pain and sores on his shoulders. He left the job and returned to his village in

Swaziland where his father treated him with herbs. Once healed, Paul took a pick axe and went to the forest. He was so grateful that the herbs healed him that he collected a large number of herbs for his father that day. He returned home from the forest to a rejoicing family, who blessed him as an herbalist. That was how Paul started work as an herbalist with his father and he has never looked back.

# Ugandan Bark Cloth: From Coffins to Handbags

Sarah Nakisanze and Deepa Pullanikkatil

Bark cloth manufactured from the bark of the fig tree (Mutuba; *Ficus natalensis*) in Uganda is traditionally associated with death, because it was the fabric used for wrapping the dead before modern-day wooden coffins came about. Sarah Nakisanze's story of building a successful enterprise in Uganda making crafts from bark cloth, is that of courage and determination to overcome mindsets and taboos, including the fear of death from touching bark cloth.

Sarah was born in central Uganda and was one of seven children born to a lower-middle class family, her father being a businessman and mother, a teacher. Her parents found it difficult to educate all their children on their incomes and so Sarah's mother took it upon herself to generate additional income through dressmaking. She was the inspiration for Sarah Nakisanze, who learnt the skills of sewing at a young age and used those skills for her enterprise.

> I grew up with sewing machines in the house. This was the foundation for my strong passion in fashion and design. My mother and I would not waste any fabric and we used the off-cuts to make cushions and little things for décor. My mother had many catalogues at home which had designs that inspired me.

Sarah did a Bachelor of Arts Degree from Makerere University in 1999 and spent her holidays working at art galleries for additional earnings. This generated a love of fine arts, which she nurtured and uses in her work today. At one of the galleries, she saw art and ethnic products from all over Africa, but found few crafts from Uganda. Sarah says she had an inherent appreciation of and affiliation for bark cloth as it is a Ugandan traditional fabric. This prompted her to use her childhood talents to start "Easy Afric Design", an enterprise developing products from bark cloth and providing employment and income to many rural women in Uganda.

> Bark cloth as a fabric is ugly, fragile and doesn't age very well. This challenged me, as I wanted to make products that were durable. My first spur of creativity was from the Congo carpet, which is a small square 15 inches by 15 inches and looks like piles of towels on jute, due to the raffia piles used. It was beautiful and I wanted to use bark cloth to make something similar.

Having learnt business management skills from a textile agency and being exposed to textile decoration at a workshop at the local university, Sarah made her first fabric using bark cloth designed in a similar fashion to the Congo carpet. What commenced as a sole proprietorship later transformed into a small-scale women's industry and in 2004 became a limited company "Easy

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Afric Design". Having ambitions to expand to the whole of Africa, Sarah looks for variety in designs to suit many tastes. But her journey was not smooth. Her main challenge was overcoming cultural taboos affiliated with bark cloth.

> The phobia against bark cloth was very much real in the villages where we started the women's craft industry. Bark cloth was used in burials and the women believed that touching it would cause death. They also said it was associated with witchcraft. I wrapped bark cloth around me and told them that I am not dying. I gave them pieces of bark cloth and challenged them to keep it inside their homes. The courageous ones took up the challenge and nobody died. So, it became the fabric of cheer and connected to improving livelihoods, as the women could make crafts from bark cloth in their free time and earn additional income. The women would wake up early and go to the gardens to farm and come back home when the sun was too hot. They then did their household chores such as cooking food. In the afternoon, in their free time, they began sewing and craft-making until dark, as most of them do not have electricity.

Sarah realized that for a business to be successful she needed a good team to work with her. She began teaching craft to young girls, but soon experienced that many were not serious about business. She then reached out to her relatives in the villages and semi-urban areas. Training of trainers sessions were offered and the team grew to include older women who were interested to increase their income because they had families to support, were hard working and committed. In 2005, Sarah taught traditional methods of hand stitching and decoration, which was a dying art. She had very limited resources and so used church halls, community centers and school fields as the training venues. Finally a large open courtyard at her aunt's house in the village became the primary training center. Additionally, she built a workshop at the semi-urban location and employed people to use machines for craft making (Fig. 1). The products made include

**Fig. 1** Sarah Nakisanze (on left) at work with her colleagues

bags, belts, wall art, furnishings, mats, cushion covers, folders and Christmas décor.

Traditionally bark cloth processing is only done by men and it is considered taboo for women to process bark. The men harvest bark of the fig tree in south-west Uganda where this tree grows wild. The fig tree is considered as a "bringer of rain" and a shade tree and therefore is also planted by people along field boundaries. They state that a tree survives 20 years of harvesting if it is done in a sustainable manner. The men who process bark know how to carefully remove the bark and simultaneously nurture the tree. They use simple handmade tools and no chemicals are used. The bark comes off as a greenish material and is steamed or boiled and then dried in the sun during which it assumes a terracotta brown colour. Sarah buys bark cloth from the men who harvest the bark and sell. She buys bark worth USD 190 every month.

Traditionally, the bark cloth is also a fabric that is offered by the groom to his father-in-law at weddings. The bark ages well and gains a deeper brown colour, but can also be dyed into different colours. Natural raffia from the raffia palm leaf and rayon fibres are used for both fabric aesthetics and longevity functions. Additionally, Sarah has plans to introduce bark as trimmings into cotton scarves and dying it using traditional "tie and dye" method.

**Fig. 2** Women doing hand stitching on bark cloth

**Fig. 3** Some of the products by Easy Afric Designs

> I started off in a very small way with a lot of hardship and struggles. But I changed the challenges into opportunities. Bark cloth for me is mesmerizing! People ask me- Is it leather? Does harvesting bark kill the tree? I want to educate more people about this wonderful fabric, which is also a UNESCO International Cultural Heritage fabric. I hope to expand into the international market one day.

Easy Afric Design started small but grew over the years which helped to provide a livelihood to many women in Uganda. These women did not have any other sources of income and have been able to use their income to send their children to secondary school and purchase assets. "*It is a welfare business*", says Sarah. Currently, Easy Afric Design is a socially motivated Fair Trade organization that sells its products in shops in Kampala, but in future, online marketing and custom-made products are envisaged. She believes in treating people with respect and building a strong team. It has been 12 years since Sarah began her journey as an entrepreneur and now Easy Afric Designs employs four full time staff and about 50 women in rural and peri-urban areas work as weavers (Fig. 2). The woman work about two to three hours a day for three to four days a week and earns 1–2 USD per hour. In addition, they learn other skills such as book-keeping, communications and management of finances. This is an additional income and skills development for the women to supplement their farming.

Sarah Nakisanze was honoured in 2016, with a prestigious award for African women entrepreneurs given by Lionesses of Africa Public Benefit Corporation that also publishes a popular women's entrepreneurship magazine. It is a well-deserved award for someone who has sustainably revitalized a Ugandan eco-cultural heritage fabric (Fig. 3) to sustain livelihoods. Sarah's message to entrepreneurs is to follow their passion and believe in their dreams. Sarah says, "*Compassion, Humility, Patience and Steadiness*" were the traits that helped her achieve this success.

# Weaving Together Livelihood and Culture in Maine, USA

Gabriel Frey, Marla R. Emery and Suzanne Greenlaw

For Gabriel Frey, making baskets from brown ash trees (*Fraxinus nigra* Marshall; also known as black ash) is a source of interwoven values of family, culture, identity, and income. Among these values, basket making plays a pivotal role in his young family's livelihood. Poverty levels are high in Penobscot County, Maine, USA, where he, his wife, and two small children live. In such rural corners of North America, people have long worked multiple jobs, often without quite meeting their basic needs. Gabriel works as a massage therapist to have a consistent paycheck that puts food on the table. But it is income from selling his baskets that has made it possible for his family to move beyond making ends meet, to thriving and moving ahead financially. With money from baskets, they were able to make a down payment on a home and begin saving to buy a truck. That truck will be another tool for his basket making, serving as an extension of his workshop and allowing Gabriel to transport brown ash logs from the forest and finished baskets to market.

As a member of the Passamaquoddy Tribe,[1] brown ash baskets are an integral part of Gabriel's culture and identity. The ash tree is central to the creation story of the four eastern Wabanaki tribes,[2] which include the Passamaquoddy. Gabriel relates the story and the fundamental spiritual connection it establishes between the ash tree, the people, and basketmaking:

> As a Passamaquoddy, our entire existence is related to the ash tree. In the creation story, there's the mythological character of Glooskap, who is like the teacher, the bringer of knowledge. Before Man existed, Glooskap shot an arrow into an ash tree and when it split open, in the heart of the tree was Man. So that gets to how closely tied to culture basketmaking is.

Gabriel comes from a family of brown ash basketmakers. "In my family, specifically, it's roughly 13 generations," he says. He was surrounded by basketmaking as a child, but it wasn't until he was a young man that he learned to make baskets from his grandfather, Fred Moore. Mr. Moore did many jobs to feed his family of 13 children, including basketmaking, and he impressed its survival value on Gabriel:

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[1]The traditional territory of the Passamaquoddy spans the St. Croix River in the Canadian province of New Brunswick and the U.S. state of Maine.

[2]The eastern Wabanaki, or People of the Dawn, are comprised of four tribes, whose homelands are in Maine, New Brunswick, and Nova Scotia; Maliseet, Micmac, Passamaquoddy, and Penobscot.



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> Growing up, before I made baskets, my grandfather used to tell me that as long as I knew how to make baskets, I would never go hungry.

Indeed, making and selling brown ash baskets has been an important means of survival for families in the Passamaquoddy and other Wabanaki tribes from perhaps as early as the 1700s (Neptune 2008). With European contact, a consumer market for Wabanaki baskets developed. Reduced to a reservation land base and with few other economic opportunities, Wabanaki basketmakers adapted ash baskets to sell across a wide range of markets including farming, fishing, hunting, and tourism. From the 1950s to the 1980s, the brown ash basket market began to collapse as imported baskets and mechanization of the farming and fishing industries led to less demand. Along with an important cultural practice, a critical source of income was being lost. In response, when Gabriel was in his early teens, an organization called the Maine Indian Basketmakers Alliance began to raise awareness of this dying art, working to reinvigorate the basket market in Maine and assure the future of Wabanaki basketmaking by pairing master basketmakers with apprentices.

Of his own transition from being a child in a basketmaking family to being a basketmaker himself, Gabriel says:

> I guess it was around when I was 18, he [my grandfather] was diagnosed with emphysema. There was suddenly sort of a check on the calendar. He's not going to be around forever…I have to learn, because it's finite suddenly. So, I went to live with him and spent that time really focusing on learning.

His grandfather taught in a way Gabriel continues to learn from:

> He said, "The ash is downstairs. Go make something." So I'd have to go down, do it, and then it was more like you have somebody to bring your work to. They say, "Yeah. What you did here is correct, but this doesn't work," or "Maybe instead of doing it with that side of the grain, do this side." In every way he was teaching, he always said this is what he's done, this is how he makes baskets. "Now you need to figure out how you do it…" So, I obviously understood this years later. Even now, he's been gone for years and he's still teaching me. It's finding your own voice within the larger tradition.

Gabriel remembers the experience of his initial attempts at basketmaking:

> The first time that I picked up the materials and started making something…my hands just knew what to do. And I can only attribute that to the fact that it's generations and generations of doing the same thing.

Today, making baskets remains a powerfully emotional act of creativity for Gabriel, allowing him to keep his family's tradition alive while moving it forward. He uses time-honored techniques to turn brown ash trees into works of art that satisfy contemporary functional needs and meet the demands of present-day markets. He explains that this, too, is a time-honored practice. Even while there are traditional forms, Wabanaki basketmaking has always evolved. The state of Maine, USA, has a strong tourism industry. Thus, ornamental baskets are the focus of many Wabanaki basketmakers, whose market is made up primarily of vacationers seeking a keepsake of the place they have visited. In contrast, like his grandfather before him, Gabriel makes what are termed utility baskets; containers with a job to do:

> My whole philosophy in doing what my grandfather did is that the point of the basket in our culture is it's a container. It has a use and this material is so durable and so strong and has such a life to it, that if I make something I want it to be used…But you know, a large fishing basket is not really something that you're going to use on a subway. So I started taking the traditional form and trying to match it to modern life.

Pack baskets, which his grandfather made, are a case in point. Gabriel notes that pre-European contact, the original 'roads' were rivers and canoes were the original 'vehicles.' The pack basket is an expression of that place and time. As he says:

> Take the pack basket form. Its form is unmistakable to the Northeastern woodlands, that flat back with the belly. This is something you wear on your back when you're trapping or you're hunting, so it has the flat shape. But then, you put it in your 'vehicle.' You want to be able to stow it away.

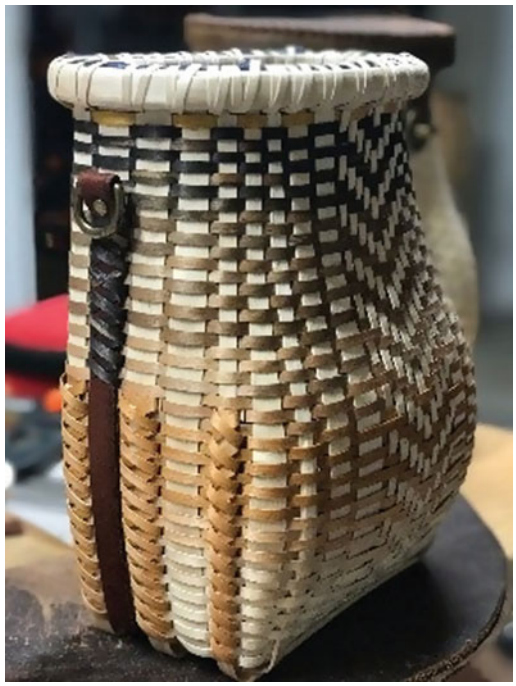

**Fig. 1** Brown ash and leather purse made by Gabriel Frey (photo by Suzanne Greenlaw)

> [So] the belly was designed to fit in the hull of a canoe. Today, that shape is ubiquitous. When somebody sees it, it's this connection to Nature… That's because it has such a time-honored tradition. So, its connection to place is its form.

While keeping the pack basket form, Gabriel has adapted it to contemporary purposes like a purse. He creates such baskets to be used. It is his hope that when someone buys one of his baskets, they will use it and, in doing so, will feel, and experience Wabanaki culture every day. In return, the income from that basket sale contributes to his family livelihood as it has for generations of basketmakers before him. This act of carrying family tradition and form forward is a profound source of satisfaction for him (Fig. 1).

> Keeping that tradition, that's a very powerful thing. But when you can keep that tradition and move it forward, as well, I love that.

Each step of Gabriel's basketmaking process is done by hand. It begins when he goes into the forest in search of a suitable brown ash tree. Generally, he is looking in remote areas away from roads. Once he identifies a tree with the characteristics he is seeking, he cuts it down and carries it out on his shoulders. Splints for weaving baskets are made by pounding the log to facture the growth rings so the wood can be peeled away and split into strips for weaving. This process, as well as the finished products, is central to the value for both Gabriel and those who buy his baskets. As Gabriel sees it, when he makes a basket he is creating a refined container that remains inherently the tree, its material reorganized but still strong, still imbued with the spirit of brown ash (Figs. 2, 3 and 4).

> Making something that's this refined container from a tree that's standing right there…You're taking it apart from the way it came together, re-organizing the materials and creating something so it's just as strong and beautiful as its other form…That's the inherent beauty of black ash baskets, that's what makes these so special.

Gabriel's basket making and the income he derives from it depend on access to land and brown ash trees. He finds landowners usually are friendly when approached. Farmers can be especially generous, allowing access to brown ash on their land in exchange for one of Gabriel's baskets. However, accelerating loss of farms and closure of access to other lands is making it increasingly difficult to gain access to brown ash. Another threat to Gabriel's craft and the

**Fig. 2** Gabriel Frey carries a brown ash log out of the forest (photo by Suzanne Greenlaw)

**Fig. 3** Gabriel Frey pounding brown ash to create splints for basket making (photo by Suzanne Greenlaw)

**Fig. 4** When pounded, brown ash wood splits at the grown rings (photo by Suzanne Greenlaw)

livelihood it provides is looming on the horizon. The introduced insect, emerald ash borer (EAB; *Agrilus planipennis*) has been decimating brown ash in north central North America since 2002, causing social, cultural, and financial hardships for basket makers in the U.S. Upper Midwest. EAB is moving eastward through brown ash's range. If it reaches Maine and Gabriel is unable to get brown ash by traveling longer distances or purchasing it, he will stop making baskets, with all of the losses that will entail for him and his family. For now, Gabriel is hopeful the many smart people doing good work around EAB will find a solution.

Gabriel hopes to continue making brown ash baskets far into the future. Reflecting on his grandfather's teaching, Gabriel now sees that basketmaking satisfies many types of hunger. While acknowledging its important financial contributions to his own life and that of other Wabanaki basketmakers, for Gabriel brown ash basketmaking ultimately is and should be inseparable from spiritual, emotional, and physical wellbeing:

> Beyond the ability to help uplift our people monetarily, there's something in carrying the work of your ancestors forward that is healing…There's something deeply connected from the phrase, "If you can make a basket, you'll never go hungry." I think that's true on every level, including you'll never go spiritually hungry.

# Part III
# Conclusions

# Listening to the Stories

Deepa Pullanikkatil and Charlie M. Shackleton

This book has sought to contribute to the policy and academic debates regarding the opportunities and usefulness of the NTFP sector in reducing poverty. We have argued in the opening chapters that it is unlikely that NTFP use and trade will provide a pathway out of poverty for the millions of poor in the Global South. However, it is unlikely that any other one sector or intervention will. Consequently, the value of the NTFP sector and its role in poverty reduction for some needs to be added to the suite of strategies that governments, development agencies and NGOs consider when seeking to address poverty in the areas in which they operate.

We have substantiated this argument by looking behind the aggregate numbers and statistics, and the means and standard deviations to listen to some ordinary people who have moved out of poverty and achieved a sustainable livelihood through trade in NTFPs in local and regional markets. We have presented only 22 cases. Given sufficient space and time, we could have presented any of 220, or 2200, or 22,000 cases. Yet within the space and time constraints we had, these 22 stories present a powerful and resonant voice that NTFPs can be a viable opportunity for poverty alleviation for some. The stories also tell about what it means to be poor, and what a secure livelihood brings beyond just a regular income. Thus, many strands emerge when listening to the stories that we have presented, the more pertinent ones we summarise below.

## NTFPs Can Be a Pathway for Poverty Reduction

This book has presented 22 case stories from 18 countries in six continents in varying detail. Each is constructed from the words, experiences and lives of seemingly ordinary people and their families who have experienced poverty, and for some desperation, but have overcome the odds through their own determination, belief in themselves, inventiveness and sheer hard work. Whilst there are several recurring themes emerging across many of the stories, the unifying commonality is that all are involved in earning an income from non-timber forest products (NTFPs) to substantially alleviate or eliminate their poverty. For these people and their families, NTFPs have turned around their fortunes and their lives, from ones characterised by deep poverty and all what that means; low and uncertain incomes, lack of voice, lack of dignity, lack of options, insecure and vulnerable livelihoods, frequent hunger, and little prospect of seeing one's

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children having any better chances in life. Whilst we did not explicitly seek to explore what poverty meant or how it was experienced by the traders in this book, some lived experiences do provide glimpses of what it meant to be poor. Giraben was married as a young girl into a landless family where they barely scraped a living, with constant hunger and little prospect of a better life; Morris Fiot had no tools to craft his first piece of art so he had to melt cheap nails and fashion crude tools; and the felt hopelessness of Maria Diaz when she was retrenched from her job and had five children to raise but with little education she had little hope of finding another job; Miradas dropped out of school when her father died and she had to earn a paltry income as a domestic worker in peoples' houses or as a casual labourer to help support her mother, she lacked proper clothes and rarely had an opportunity to go out with friends and Miguel from Peru had only two pieces of clothing and one pair of shoes to wear during his schooling. The stories also provide lived experiences of what the pathways out of poverty were and this is discussed next.

## Poverty as a Lived Experience

This book contains firsthand experiences of those who lived through poverty and rose from the margins of society to achieve sustainable livelihoods through NTFP use. Collectively, their "lived experiences" are touching and inspiring and can inform decision-making and poverty reduction strategies. Poverty reduction strategies traditionally miss the voices of people who have experienced poverty, often tending to focus on data derived from research on these people by external experts. "Lived experiences", we believe, are not inferior to or insignificant to "expertise" gained from formal education and/or research. People with lived experiences can give deeper insights on what solutions worked and why. The stories in this book highlight what individuals did to reduce poverty, how they did it and why they did it. They provide valuable perspectives on NTFP use through the voices of people from around the world and illustrate the several pathways out of poverty that the individuals took.

## Structural Poverty Traps

Low levels of education, large household size, low asset endowment and poor access to employment are some structural poverty traps (May and Woolard 2007). These conditions are reflected in most of the NTFP user's lives, but despite this, the people in the pages of this book rose out of poverty. Some did this through determination and without much support from others, while some achieved the same through the support of the larger community or external agencies who provided training and maybe equipment. The case studies provide understanding of structural poverty change where an individual or household was able to move to a higher standard of living, as opposed to merely surviving short-term shocks through NTFPs. In several case studies we found that training was the "breakthrough" needed for NTFP users (e.g. Giraben, Miradas and Chinnatai in India, María Díaz in Nicaragua and members of the allo enterprise in Nepal). Greater access and better negotiating power by NTFP users in markets was possible through individuals coming together and forming associations and cooperatives. So too, social networking and cooperation were other factors in breaking structural poverty traps. Planning for future generations, in order that they do not remain trapped in poverty, emerged as another factor. In the case of Brazil nuts trade in Peru, the users decided collectively to use their funds for building a school for the next generation, knowing that education was a ticket out of poverty. The personal stories in this book provide inspiration of how individuals broke poverty traps and ensured that their children would not live in poverty. The pathways out of poverty that each individual took varies and is discussed next.

## Pathways Out of Poverty

Across the 22 stories, it is clear that no two share the same pathway to becoming a trader of NTFPs. For some it was practically preordained as they continued a family skill, tradition or business; their parents or close relatives taught them, who in turn had learnt from their parents. Thus, the required skills and knowledge were acquired at a young age, and the resource supply, contacts and markets were familiar. For example, Paul Dlamini felt that "he was brought up with herbs" because his grandfather and his parents were herbalists and he was involved in various small chores from an early age. A similar story emerges for Manuel Frutuoso in Portugal, who learnt basket making from his father, and although he tried other crafts and carpentry, he came back to being a basket maker. The longest within our selection of stories was Gabriel Frey, who comes from a line of thirteen generations of basket makers. He feels connected to his ancestors through basketry.

Another pathway into NTFP trading was through training and support from NGOs. Several of our storytellers outline how an NGO came to their village or community and offered one or more of: skills training, marketing support, sustainable resource production systems, certification and the like. For many, the offering and support from NGOs steered their life onto a new trajectory and out of poverty. This is not to imply that all NGO interventions have such a positive, life-changing impact. In India, Miradas's life changed when an NGO facilitated a women's self-help group to make and sell incense sticks. She also learnt business and management skills and the self-help group is now discussing other ideas for income generating projects. In Brazil, the guidance and support of two NGOs allowed the Bailique communities to obtain certification for their açai berry harvest and thereby more than double the price per unit. The case of Lantana furniture in India illustrates how training of tribal communities helped them get better incomes, when previously their source of income was poorly paid manual labour and gathering from forests.

The third pathway is typified by those who made their own way either from their own innovation and determination or after observing others. Morris Foit became a sculptor because he had the talent and vision. This was fostered by an external mentor, but that was only possible because Morris had the aptitude and ability. Ntoh Joseph became a palm wine tapper after struggling to support his family on the meagre salary he received as a security guard. He had seen others earning an income from tapping and his capacity for hard work allowed him to keep his security guard job and develop a thriving and lucrative trade in palm wine. In the case of Arnold Kasumbu, the honey producer in Malawi, it was his sheer determination to get out of poverty coupled with the bright idea he got from another member in his village who used a traditional clay pot beehive. But just having the idea is not sufficient, Arnold acted on it and bought one clay pot beehive and with the proceeds of selling honey a few months later, he purchased more pots and slowly expanded his beekeeping venture. Sarah Nakisanze from Uganda innovated by using the traditional Ugandan material of bark cloth made from fig tree bark to create beautiful works of crafts. She had to get her team of rural women to overcome the stigma of using bark cloth which was historically used for burying the dead and this took courage and determination from Sarah.

The fourth is when individuals take up the trade of NTFPs due to a shock or sudden change in financial circumstances at home. Maria Diaz, a single mother, turned to making baskets and craft items from pine needles after being retrenched from her job. Claudia became a truffle hunter because after retirement she found that the pension she had been saving all her life was insufficient to make ends meet.

## Diminishing Intergenerational Poverty Through Education

A common element across the narratives is the pride of the storytellers in revealing that they have been able to invest the income from the NTFP trade in the education of their own children. Most of them revealed that their children

had attained far higher levels of formal schooling than they themselves had enjoyed. Several of the stories reveal how the teller had to leave school at a young age because of family poverty or misfortune. Morris Foit had to stop school because his parents could not pay the school fees; Miradas had to leave school when her father died and she had to support her mother as a domestic worker and casual labourer. Paul Dlamini had to stop schooling after primary school but with his income from herbal medicine, he managed to educate all his children beyond primary and some of them beyond secondary school. Nearly all the stories reflect how the narrators were determined that such would not be repeated with their own children. Some had even managed to support their children in post-schooling education (including university) and training courses, which had allowed their children to secure a steady job or start their own small business. Thus, engagement in NTFP trading not only alleviated poverty of the narrators, but also broke the cycle of poverty that otherwise might have been visited upon their children. This extends beyond just the family, with the Bailique community in Brazil seeking to use the improved profits after product certification to build a 'family school' through a 5% levy on every sale. This school is also seen as a means to allow the children to be educated in the community as currently they have to access schools far away in the city which means they have to live apart from their families.

## Training Others

Not only are most of these successful traders investing in the education of their children, many also described how they support others. This may be through informal apprenticeships or through more formal training opportunities, perhaps in conjunction with an NGO. This reflects a level of selflessness in that they have not forgotten what it was like to be poor. For example, Fonyuy Tati shares his knowledge and skills of beekeeping with anyone who asks, and actively encourages the youth to get involved as a means of making a livelihood. Isidro Hernández Becerra was one of the founders of the camedor palm producers group in the Rancho Nuevo community (Mexico) which now offers training to other farmers and communities regarding the growing and selling of camedor palm leaves. Arnold Kasumbu hosts visits from university teaching groups learning about agriculture and beekeeping. At a larger scale, Paul Dlamini has been planning the establishment of a 'Traditional Development Health Centre' in Swaziland for many years, as a place where new herbalists can be trained and where patients can receive quality health care. In the case of Giraben, she was part of the group of women who received training on furniture making and she became a trainer herself, forming a women's group and collectively applying for loans which helped improve their business and thus, earnings. In Nicaragua, María Diaz is the president of a women's cooperative and inspires the women to become more innovative with use of new yarns. In China, Zhou provides many jobs in her community in her enterprise. In Uganda, the women who manufacture products from bark cloth are in rural and semi-rural areas and have no other source of income. This work provides them flexibility to look after their families and create products in their spare time. Singh from Nepal has trained over 150 members of his community, showing leadership qualities, which made his allo enterprise successful through support from his community.

## Social Belonging

An important factor that influences poverty and inequality is social stratification. This system of ranking and evaluating people leads to classism, exclusion and monopoly of power, wealth and prestige in certain groups. In India, social inequality exists and certain groups are treated unequally based on their caste or religion. Two case studies from India (Giraben and Miradas) highlight how the caste system relegates some groups to lower income generating occupations. The caste system promoted discrimination as it forced people to continue their traditional

occupation and hinders horizontal and vertical social mobility. It divides society hierarchically and promotes a sense of superiority and inferiority concomitant with this ranking. The Kotwalia tribe has historically been basket weavers and their skills are passed on across generations. But basket weaving does not fetch a high income and the breakthrough for Giraben came when she was given tools and trained on bamboo furniture making. NTFP trade provided these communities with a sense of dignity through better incomes and with that came greater acceptance in the larger communities. Giraben went on to win an election in her Local Government and is called upon for decision making in her community. Much of the stigma and shame was overcome through NTFP livelihoods, for example Miradas says that her mother who was a widow was forced into domestic work due to poverty and widows are not treated well in their society. She could look after her mother through her income from incense making and feels empowered enough to decide that she will not marry, but stay to look after her mother. This "choice" would not have been available to her if she did not have economic freedom through NTFP trade.

## Culture/Heritage

Culture, or the historical organisation of human practise rarely has a place in standard economic discourse, where poverty reduction is discussed. However, when discussing NTFPs, their cultural importance cannot be overlooked (Cocks 2006; Cocks et al. 2011) and, NTFPs cannot merely be valued in monetary terms. Cultural dimensions of NTFPs contribute to human wellbeing (Sills et al. 2011) in terms of happiness, social institutions, sense of belonging and pride. Trade in NTFPs offers both a means to earn cash income and continue cultural traditions (Sills et al. 2011). For Frey in USA, American Indian basketry helped him carry on the tradition of his family and he says it "spiritually fulfills" him. Through basketry, he "feels" the presence of his grandfather who taught him to make baskets and he senses connection to his ancestors. Dlamini continued the tradition of his family and became a herbalist learning skills passed on to him from his grandfather and father. He has a sense of pride in identifying himself as a member of the third generation of healers in his family. The last basket maker of Portugal is considered as "human heritage" but sadly his skills may not be carried on as his affluent children will not embark on this craft. Culture is certainly at the heart of society as it contains the values and beliefs that people share and it is beyond "measure" and cannot be valued in monetary terms. In this book we have highlighted through the personal stories how culture/tradition and NTFP trade is coupled.

## Connection to Land

For some, land is a resource to produce consumptive goods. But for others, it is a living ecosystem that supports livelihoods and is at the heart of their cultural identity. The deep connection to one's land goes beyond just provisioning services, but touches on sense of place, invokes emotions of belonging and is intertwined with identity. Miguel from Peru grew up in the forest listening to stories from his parents, eating Amazon fruits, swimming in rivers, and surrounded by the sounds of the forest. He and his siblings preserve the trees. Their strong connection to the land motivates them to carry out sustainable practices and conserve ecosystems. In Brazil, Geová Alves the leader of the Bailique community, notes that they value the time spent with the elderly because that is how they learn to manage their land. The Bailique community started a Family School which allows children to stay close to their homes, learning skills which are important for life in the forest as well as preserving their culture and traditions. This helps continue the attachment the community has to their land through generations. For Chinnatai's tribe in Siruvani Hills of south India, NTFPs are the main source of income further strengthening their connection to the forests, waterfalls and hills in addition to folklore and beliefs that connect the Irula tribe to this land. In the Australian case study, this connection is explicitly evident,

as Bruno says he learnt from his elders and through his culture that the land is for everyone to share. Connection to the land goes deeper than measurable indicators such as yields or types of products extracted. It makes communities take decisions that can benefit across generations. This is best summed up in Bruno's words, "*the elders were land carers and professors of the land and they would remind us that one day it would be our responsibility*".

## Social Networks

Social networks have created many opportunities for NTFP traders and helped people mitigate and move on from poverty. These social networks could be informal ones or were created by NGOs or Government agencies and can create safety nets of practical and financial support. In some instances, social networks and collective action help NTFP users/traders bargain for better prices for their produce. For example, in Mexico, camedor palm harvesters came together voluntarily and got better prices from middle men who export the palm leaves to US and Europe. Similarly, in Peru, the Bailique communities collectively worked towards getting Forest Stewardship Certification for their açai berries. In the case of María Díaz from Nicaragua, the social network of artisanal women that she joined was a boon for her and helped her earn a living to look after her five children. In India, Giraben and Miradas both benefitted from social networks of female NTFP users through collective action, sharing knowledge and skills and accessing markets. This is in agreement with Vaughan et al. (2013), who found that social networking improves NTFP markets and management. In this book we find that social networks are drivers of poverty reduction and help NTFP users get fairer prices.

## Reducing Gender Inequality

The case stories were not selected specifically with a gender balance or a lens on gender issues in mind. Yet, the empowerment of several of the women narrators resulting from earning an income from NTFPs is obvious. This empowerment was a result of several aspects of being involved in the NTFP trade. One is the cash income earned, which provides the female actors with their own financial resources to spend or invest as they see fit to benefit the household. The second is the range of other skills that accompany being a successful NTFP trader. It is not solely knowing how and where to harvest an NTFP in the local environment and make a useful product. It involves a range of business skills, communication skills, networking, time management and multi-tasking with household chores. In many of the stories these skills were acquired through trial and error and experience, but in several instances skills training was provided by NGOs. The third is the confidence that resulted from the transition from being a homemaker and worker in a poorly paying occupation, to being a regular contributor to the household income which has allowed the household to have a considerably better life. This provides a sense of achievement which was reinforced by family and perhaps public recognition of this. These are all evident in the stories revealing how some of the women are now office-bearers in self-help groups or in local community institutions; some are seeking new markets or developing new products; some have stood as candidates in local elections which was unthinkable beforehand when they were poor and struggling. This reduction in gender inequality is perhaps most prominent in Giraben's story where her husband gave up his occupation to join her, as well as her being elected as a member of the Local Government Authority.

## Ecological Sustainability

NTFP management and ecological sustainability go hand in hand (Peck and Muir 2007) and while there is fear that NTFP commercialisation can be detrimental to long term species survival, there are many examples of sustainable harvesting of NTFPs around the world (Stanley et al. 2012; Shackleton et al. 2015). Zhou is concerned about

sustainable use of bamboo and encourages the villagers to plant bamboo. Similarly, Arnold from Malawi also encourages planting of trees as it will promote honey production. The case of Brazil nut harvesting in Peru indicates that NTFP users are conscious of sustainability aspects and began practising agroforestry to help recover degraded soils and forests where Brazil nut trees are found. In the Guatemalan case study on Ramón nuts, 20% of the nuts are left on the tree to allow for propagation of this NTFP. In Mexico, planting camedor palms helped in "*greening the mountains*", said Isidro. NTFP users live off the land and depend on natural resources for poverty reduction, and case studies in this book demonstrate their commitment to sustainability.

## Other Aspects of Reducing Poverty

Reducing poverty is not only about increasing wealth and being able to afford things that previously were unattainable. Increasing belonging, dignity, hope and happiness were common effects of reducing poverty. In the case of Miguel from Peru, with the earnings from Brazil nuts, he and his siblings graduated from university and travelled to other regions in Peru. Being able to afford to eat at restaurants, rent their own room and buy a motorcycle to facilitate access to their Brazil nut concession, added to their happiness. But more importantly, their earnings could afford Marcelina, their mother, to finally travel to Lima, the Peruvian capital, to receive better medical treatment.

Giraben could afford to buy the "Mangalsutra" which is a gold necklace that married women wear, buy gifts for her family during special occasions and has high hopes for her children to become professionals. Arnold Kasumbu not only built his own house on the earnings from use NTFP trade, he built a house for his mother and for his brother. His sense of pride when he explained that all three houses have electricity was readily apparent. Lantana craft provided dignity to Chinnatai's daughter who was handicapped and could not do any other work.

## Looking to the Future

Often it is the complexity of poverty that makes it appear too big to grapple with. But through dissecting the complexity by listening to the poor it is perhaps something that can be better managed and addressed. In this regard, lived experiences of poverty are important as they throw light on the many dimensions of poverty, how they cope and how they found pathways to lift themselves out of poverty. Paying attention to these pathways can better help external observers, development planners and institutions devise policies and strategies that support reduction of poverty. Asset accumulation played a significant role for some individuals to escape poverty and is a buffer against periods of shock. Social networks helped others to get better leverage to bargain for improved prices for their products, while others used it to collectively to secure loans for investing in production. All had the intellectual capacity and ideas to innovate and become successful. NGOs and governments providing training and support were the catalyst that some needed. Literacy and education levels of many NTFP users were low, but they could use their improved incomes to educate the children and reduce the prospects of inter-generational poverty.

Looking across the multiple stories presented in this book allows us to identify some core messages and recommendations for decision-makers and analysts who are interested in poverty reduction in the sorts of contexts presented in this book.

1. Listening to the stories of those who have "lived experiences" can provide deeper insights into poverty and into poverty reduction options. Aggregate statistics from quantitative studies paint powerful pictures and easy to grasp assessments of the 'size' of the problem, but often miss much of the variability and what it means to be different to the values reflected in the mean numbers. Understanding the complexity requires inclusion of the outliers and those encapsulated in the 'standard deviation' rather than the mean.

2. Governments, development agencies and NGOs need to include NTFP trade as one of the options they promote amongst the rural and urban poor, along with appropriate capacity building to overcome context-specific, local barriers such as knowledge, skills, markets, ecological sustainability or restrictive local regulations. Even short-term training can have a significant effect for some.
3. Promoting local trade in NTFPs is probably as, if not more, important, than national or international markets. Local traders have an investment or interest in maintaining local resource stocks, know what local customers want, often know their customers personally and understand local pricing. However, local trade can be constrained by restrictive by-laws, limited market spaces, competing uses on lands that supply NTFPs, limited product innovation and low buying power of many consumers. Some of these barriers can be addressed by appropriate government interventions.
4. Individual or group loans to NTFP traders can improve equipment, storage facilities, production volumes and quality leading to higher incomes over the long-term. This requires innovative loan strategies based on an understanding of local realities.
5. Local level investments in resource supply and sustainability will not only support and perhaps grow the trade, but will also serve to limit any conflict between collection for trade and collection for domestic, consumptive uses, and thereby ensure sufficient resources for daily needs, safety-nets in times of shock, as well as for trade.

In conclusion, the stories in this book provide evidence that these "minor" non-timber forest products can have "major" impacts for poverty reduction and must not be forgotten when poverty reduction strategies are developed. Furthermore, one needs to "listen" to the stories of NTFP users to gain deeper insight about poverty reduction, thereby helping design strategies in a more informed manner.

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