

STRATEGY and ACTION PLAN
for
**PROMOTING INDIGENOUS
FRUITS
in NAMIBIA**

Prepared for
**Ministry of Agriculture, Water and Rural Development:
Directorate of Agricultural Research and Training**

and the
Indigenous Fruit Task Team

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January 2001

Abstract

This paper presents a *Strategy and Action Plan for Promoting Indigenous Fruit in Namibia*. A theoretical model of a promotion strategy is used to structure the recommendations of the Promotion of Indigenous Fruit (PIF) workshop into a logical sequence. Strategic considerations are discussed in view of current conditions in Namibia. Specific actions are proposed for a five-year PIF programme. A logical framework analysis of actions, an indicative budget and a timeschedule are included.

1 Background

The Ministry of Agriculture, Water and Rural Development (MAWRD), through its Directorate of Agricultural Research and Training (DART), and with assistance from the Namibian Agronomic Board (NAB) and CRIAAS DC, organised the Promotion of Indigenous Fruit Workshop on 17 and 18 April 2000. This workshop brought together a wide range of national stakeholders, who mandated the formation of the Indigenous Fruit Task Team (IFFTT) and charged it with overseeing the development of the *Strategy and Action Plan* – the current document – based on the recommendations of the three working groups at the workshop.

The **Institutional Arrangements working group** recommended that:

- A national strategy is needed as a matter of priority for the commercialisation of not only indigenous fruit, but also indigenous plants
 - the strategy should harmonise with existing policies – agricultural, forestry, food security, wildlife, science and technology etc.
- The strategy should address
 - information, communication and information -sharing
 - co-ordination
 - mobilisation of resources (government, donor, NGO, expertise...)
 - priorities and key areas

To formulate the Strategy, the recommendations of the Promotion of Indigenous Fruit (PIF) workshop have been related to a theoretical schematic outline of key steps in the generic process of promoting indigenous botanical resources, in the hope that the result will serve as a combined “roadmap” and “checklist”. Key strategic considerations are discussed in some detail, but in view of the complexity of some of the issues, the reader is also referred to the *Summary of Information on Indigenous Fruit in Namibia* prepared for, and the *Proceedings of*, the PIF workshop for a more thorough treatment of some of the topics.

The Action Plan was formulated by relating the workshop recommendations, as re-prioritised in their theoretical context, to prevailing Namibian realities around indigenous fruit, rural livelihoods systems and development intervention/implementation capacity, and to the little that is currently known about markets for indigenous fruit products. Discussions were initiated with key role players about their potential participation in the programme. Comments from the recent CIRAD mission to Namibia were also taken into account. On this basis specific actions and agents for their implementation were identified and structured into a five-year programme – the Action Plan – which was then plotted in a logical framework format, roughly budgeted and fitted to an indicative timeframe.

Because the situation around indigenous fruit is still inadequately studied and understood, and because of the inherent uncertainties in research/trial situations, it is impossible to predict accurately how the results of one action will influence the implementation of consequent actions. The Action Plan therefore includes a large element of plan monitor-replan. While this might not be the most convenient and mechanical solution, it is one that enhances the probability of long-term success.²

¹ There has been some debate about the extent to which the PIF programme should be limited to indigenous fruit, or alternatively include other non-timber forest and wild products (e.g. medicinal plants, essential oils). The consensus that has emerged in the IFFTT is that: a) fruits and fruit products should be the initial focal point, because they are relatively well-known, and their commercialisation, processing and marketing are therefore not as technically complicated as that of e.g. phyto-medicines; and b) focusing on fruit as a starting point should not preclude investigating other forest and wild products that can contribute to wider goals such as poverty alleviation, enhanced rural livelihoods, etc. For this reason *Acacia gum*, which occurs in most of Namibia, has been included in the initial list of resourcesto investigate.

² Current knowledge about the promotion of indigenous botanical resources is still largely at the level of “ingredients” rather than “recipes” – i.e. there are no prescriptions that can guarantee success. What has become abundantly clear, however, is that interventions succeed or fail on their ability to accommodate and adjust to the actual – and dynamic – set of conditions pertaining to specific resource circumstances.

2 Schematic outline of the theoretical strategy

An idealised, theoretical promotion strategy should include at least the following steps:

- a) Use a consultative and transparent process to establish an institutional framework that can co-ordinate a promotion programme based on long-term goals shared by stakeholders.
- b) Analyse traditional, existing and potential uses of indigenous fruits; identify useful, favoured and/or under-utilised species with agricultural and/or formal-market potential.
- c) Organise a trial commercialisation³ of fruit pre-selected for promotion and use these trial purchases to assess the extent of various resources, to monitor the socio-economic and ecological effects, and to determine the harvesting and procurement logistics.
- d) Use wild-harvested fruit obtained during commercialisation trials for essential chemical and nutritional analyses, and for laboratory studies of processing characteristics such as juice/oil content, texture, flavour etc.
- e) Conduct small-scale processing trials to identify potential processing technologies for, and products from, selected species. Procure/manufacture appropriate material technologies (machines and equipment), test productivity under actual conditions, identify and solve production and management bottlenecks.
- f) Introduce samples of promising products to appropriate markets to assess response, potential demand and possible prices (phytosanitary and health regulations should be adhered to, especially when targeting the export market). Expand markets for successful products.
- g) Build the capacity of harvesting communities to organise themselves, to manage and sustainably use their resources, and eventually to take full control of the processing and marketing of their production.
- h) Combine the financial and technical data on raw materials, processing and markets into bankable business plans backed up by a marketing plan, adequate training and institutional support.
- i) Select high-yielding or otherwise desirable genotypes of species with commercial and cultivation potential and study their propagation, domestication and management; use results of these trials to propagate desirable strains (and cross-breed improved varieties). Encourage farmers to grow selected improved varieties of indigenous fruits with commercial potential.
- j) Use intellectual property rights (IPRs) to maximise benefits to producers.
- k) Monitor for results, consequences and deviations and re-plan accordingly as necessary.

These activities are largely, but not necessarily, sequential – to deliver the best possible results as quickly as possible some of them can and must proceed in parallel. Nor are they all equally applicable to the promotion of all resources. At all stages there is a need to carefully evaluate the economic implications of the decisions taken.

³In this paper the term “commercialisation” refers to interventions aimed at creating formal markets for resources that are currently traded only informally, if at all.

3 PIF workshop recommendations in context

3.1 Institutional framework

Step a) Use a consultative and transparent process to establish an institutional framework that can coordinate a promotion programme based on long-term goals shared by stakeholders.

The PIF workshop, which was a consultative and transparent process, recommended the following in this regard:

Institutional arrangements working group

- A Task Team should be established
 - comprised of the main stakeholders
 - convened by MAWRD
- The main tasks of the Task Team should be
 - develop a national strategy through a consultative process
 - organise regular workshops for stakeholders to review progress
 - scrutinise and facilitate new strategic intervention for indigenous fruit promotion
 - establish a high priority "central information system" for indigenous fruit promotion.

The group identified the following as important institutional components of a promotion strategy:

- Community participation in the project
- IPR issues
- Information, training and support services to project actors
- Pilot/demonstration projects

The **Resources working group**, who were asked to consider community involvement, recommended the following:

- When commercialising indigenous resources, work directly with existing community structures, including traditional leaders. Register harvester (and set household quota if necessary) to control over-exploitation. Work with those community members who already have an interest in the use and management of a particular resource.

3.1.1 Strategic considerations

a) Long-term goals

The purpose of a strategy is to guide actions in a concerted manner towards long-term goals. Successful strategies are characterised by fixed goals and clear guidelines for their attainment, but also by sufficient flexibility to adapt and adopt tactics as and when circumstances might require. To keep a strategy on track despite changing circumstances and tactics it is necessary to have a shared vision of the long-term goals that the strategy is meant to achieve. The following is proposed as such a vision for PIF in Namibia:

Stable and sustainable production systems and long-term markets have been established for a range of indigenous fruits and/or indigenous fruit products, on terms advantageous to the livelihoods and food security of rural harvesters and producers in Namibia.

b) IFTT

To coordinate a strategy and oversee its flexible and responsive tactical implementation by a diverse group of stakeholders and service providers, an appropriate institutional framework is needed. The IFTT, which brings together a range of GRN, academic, NGO and private-sector stakeholders in a multi-disciplinary and multi-skilled body, constitutes such an institutional framework (see Appendix A for IFTT membership and Terms of Reference).

c) Grassroots representation, organisation and involvement

The central importance of rural producers in the promotion of indigenous botanical resources is obvious. In the IFTT these producers are indirectly represented through the NNFU. However, for the successful implementation of the PIF Strategy and Action Plan, and especially for its socio-economic and ecological sustainability, it is vitally important that the institutional arrangements at grassroots level are sound and effective.

3.2 Identifying resource with potential for promotion

Step b) *Analyse traditional, existing and potential uses of indigenous fruits; identify useful, favoured and/or under utilised species with agricultural and/or formal market potential.*

3.2.1 Generating, managing and disseminating information

To effectively target resources for commercialisation and promotion, information must be gathered about actual and potential uses. This involves managing large and expanding quantities of data. A suitable information management system is needed to organise the data and make it available to stakeholders in a usable format. This information management and exchange function was clearly identified as a priority for the IFTT (see above).

Workshop recommendations in this regard were:

Resources group:

- Establish a database of species potentially suitable for promotion and use the selection criteria outlined to choose a short list of resources to promote first (also bearing in mind SADC priorities and work already done in SADC)
- There is a need to formulate effective extension messages on indigenous fruit for use by existing extension services/structures

Technical and processing group:

- There is a lack of information about the available technology options; networking and directed information gathering can help to solve this.
- There is a lack of information about the processing properties of indigenous resources; this can be addressed through literature searches and basic research (trial processing).
- Market research on selected resources and products – national regional and international markets; identify rent-seeking in marketing chain; rank best prospect products; labelling and packaging – is a short-term priority for action.

Institutional arrangements working group:

- The information system should
 - collect information on what is done by whom in Namibia and the results achieved
 - disseminate information to stakeholders
 - identify gaps in knowledge
 - research and gather information internationally

Cognisant of these recommendations, and of the central importance of its information exchange role, the IFTT at its first meeting initiated the establishment of the Indigenous Fruit Database (IFDB), created by and based on the records of the NBRI. The on-going development of the IFDB is regarded as an important tool in the PIF process and features prominently in the Action Plan. For the purposes of this Strategy it is important that the information generated and lessons learned at each step along the promotion “road” be incorporated into the IFDB. A major challenge will be to combine the information currently contained in a number of separate databases and/or documents into one accessible and cross-referenced data management tool. It is important that the database at all times be regarded as a tool for the achievement of practical objectives, rather than an end in itself.

3.2.2 Prioritising resources for investigation

There are two basic, complementary approaches to selecting resources to target for promotion:

- **Supply-driven**, which tries to find suitable markets for a particular resource that is already available or can be produced in significant quantities
- **Market-led**, which identifies markets or market niches for products that can potentially be manufactured from indigenous fruits.

It is advisable to use both approaches – resources that have both adequate supplies and clear potential markets are obviously priority candidates.

Workshop recommendations in this regard included:

Resources working group :

- To prioritise resources, all or some of the following **selection criteria** should be used:
 1. Cost-benefit analyses of promoting and developing specific resources – do the potential benefits justify the development costs? This is related to the size and potential value of the resource.

2. Known or potential local markets (could bring quick benefits)
3. Known or potential international markets (could earn higher returns than local markets)
4. Does the resource play an important role in subsistence strategies? (If it does and it is plentiful it will be easy to promote; conversely, if it does and it is relatively scarce it could be dangerous to commercialise it.)
5. How widely does the resource occur? (Promoting widespread resources can benefit many people in different regions; promoting very localised resources could benefit specific communities.)
6. For action in the near future choose resources that have potential for immediate development and marketing.
7. The increased harvest and/or use must be sustainable.
8. The existing natural stock should be adequate to allow increased use.
9. The plant should have agricultural potential (at least for medium-term cultivation) but should not necessarily be suitable for large-scale plantations (to prevent large commercial farmers from appropriating promotion efforts at the expense of smaller producers).
10. Commercialisation of a particular resource should not have negative effects on communities that depend on it for a significant part of their livelihoods.
11. Preferences should be given to resources that can be processed with available or easily adapted technology.
12. Products that can be stored (to compensate for seasonal/irregular supply) should be preferred.
13. How unique are the products? (Will they have to compete with cheaper agricultural or industrial substitutes?)
14. Can plants from elsewhere in the SADC region be cultivated and used?
15. How many people will benefit? Who will benefit most?

3.2.3 Strategic considerations

Accurately selecting the potential “winners” among indigenous fruits as early as possible in the promotion process can save a lot of wasted effort, time and money. However, the facts needed to make such a selection are not clear at this stage, since much of the required data are unavailable (especially as it relates to processing, products and markets). It is therefore advisable to avoid an over-hasty choice, and to carefully investigate and systematically evaluate the widest possible range of resources for their ability to contribute to the long-term goals. In doing so, the following should be considered (more or less in this order of priority):

- a) Preferential attention should be paid to those resources that are currently available in surplus quantities. Provided they can be marketed successfully and profitably, such under-utilised “resource endowments” potentially offer the quickest return of substantial benefits to producers, at the least risk to existing livelihood strategies.
- b) Increased use and commercialisation must not pose a threat to the ecological sustainability of the resource; if possible it should serve as a stimulus for conserving biodiversity and planting more trees.
- c) The potential of a resource to become a crop should be considered; species and genotypes with such potential should be identified for early inclusion in selection, domestication and propagation initiatives.
- d) Resources should be prioritised on the potential profitability of the products that can be derived from them. Those that offer higher returns to labour and investment (not just higher prices) are more likely to benefit producers and processors immediately and, in the long run, to interest farmers in their cultivation.
- e) Resources that can be processed with existing technology and promoted through existing trade channels should be accorded higher priority than those with similar profit levels but requiring extraordinary technology and/or market development efforts.
- f) Resources that have potential for multiple uses and/or valuable by-products and/or diverse markets should be preferred over single-use or single-market resources; an important proviso to this criterion is that it is often necessary to enter into an exclusive marketing agreement with one fairly large customer to successfully introduce a novel product to formal markets, especially export markets.
- g) Preference should be given to resources that offer unique products and/or are unlikely to face serious competition from substitutes in the foreseeable future.
- h) The ability of a particular resource to contribute variety to possible product ranges, and/or stability to production systems, should be taken into account.
- i) Most products have a “life-cycle” in the market, characterised by an initial growth in demand, which then stabilises for a period before starting to decline. To ensure long-term sustainability, the resources chosen for promotion should offer opportunities for on-going, innovative product development.

3.3 Trial commercialisations

Step c) Organise a trial commercialisation of fruit previously selected for promotion and use these trial purchases to assess the extent of various resources, to monitor the socio-economic and ecological effects, and to determine the harvesting and procurement logistics.

The law of unintended consequences⁴ dictates that indigenous fruit should be commercialised on a trial basis before proceeding to full-scale commercialisation, to anticipate and prevent adverse socio-economic, ecological or environmental effects. Trial purchases also offer an opportunity to ascertain when, where, in what quantities, and at what price and effort various promising species of indigenous fruits can be procured – essential data for planning sustainable and viable commercialisation and processing.

Relevant **workshop recommendations** included:

Resources group on environmental considerations:

- The natural gene pools should be conserved at all times (even if breeding and selection make improved cultivars widely available)
- Studies are needed to determine:
 - that sufficient seed banks are left after harvesting
 - the impact of harvesting on ecosystems and on socio-economic systems
 - how regrowth and recruitment are affected by harvesting
 - sustainable harvesting rates and methods
 - how to encourage recruitment (both natural and cultivated)
- To facilitate monitoring the effects of harvesting, the ecological requirements of the plants must be understood (including how environmental variables such as rain fall affect productivity of the resource).

Resources group on socio-economic considerations (ensuring community involvement and benefits):

- In communal areas the questions of resource and land tenure (which as legal access to resources) are key factors in determining the level of community involvement and how benefits are divided between community members
- When commercialising indigenous resources, work directly with existing community structures, including traditional leaders. Register harvester (and set household quotas if necessary) to control over-exploitation. Work with those community members who already have an interest in the use and management of a particular resource.
- Look for solutions to logistics problems and their effects on feasibility (e.g. transport, access to marketing points)
- Pay special attention to the effects on marginalised groups and women

Technical and processing group:

- Promotion is difficult until the products to promote have been selected and are available [and general promotion is impossible until a number of products have been launched]
- Identify, as a short-term priority, potential test/pilot communities/projects with under-utilised resources

3.3.1 Strategic considerations

a) Precautionary principle

Indigenous fruits already play a very important role in rural livelihoods and survival strategies – and more so for marginalised groups and the very poor. It would be highly undesirable to disrupt this role without first putting something more viable in its place. Carefully monitored trial commercialisations at a modest scale can help implementers to identify potential problems before they become serious⁵, and to formulate a measure to address them before proceeding to a larger scale. The more uncertain the tenurial situation around a resource, the greater is the need for caution.

b) Resource availability and logistics

A very common constraint on the commercialisation of indigenous fruit is the question of harvesting and procurement logistics – a function of the fact that such fruits are typically dispersed in small quantities over wide

⁴This refers to the fact that socio-economic intervention typically has side-effects that were not foreseen or planned.

⁵The use of indigenous fruit in communal areas is so intertwined with wider issues of resource sharing, gift-exchange, mutual support and cooperative work, and is such governed by complex social custom and labour relations that are themselves key elements of traditional livelihood and survival strategies. Changing the “relations of production” around indigenous fruit can radically alter social relations, with unpredictable consequences. It is therefore highly desirable to involve social scientists (sociologists, anthropologists...) in monitoring the socio-economic effects of commercialisation, and to seek their active collaboration with the PIF programme.

areas and rapidly deteriorate in quality after harvesting. Unless and until it is shown that people can and will actually harvest a particular resource in commercially relevant quantities at a certain time of the year and make fruit of sufficient quality available at an acceptable price in an accessible place, there is no firm basis from which to plan further commercialisation. Data on seasons, localities, prices and available quantities are needed for financial planning of processing and marketing efforts.

c) Raw materials for research

Trial commercialisations provide the raw materials required for the next two steps.

3.4 Chemical and nutritional analyses

Step d) *Use wild-harvested fruit obtained during commercialisation trials for essential chemical and nutritional analyses, and for laboratory studies of processing characteristics such as juice/oil content, texture, flavour etc.*

Probably because the role of indigenous crops in food security has been taken as a point of departure, there has been a tendency to over-emphasise routine nutritional analyses. On the other hand, there has been a lack of research, and a lack of publications in cases where research has been done, on the special or unique, economically significant, properties of various indigenous resources. Note that different types of analyses and tests are needed at different stages of the commercialisation process.

Workshop recommendations included:

Resources group:

- How unique are the products? (Will they have to compete with cheaper agricultural or industrial substitutes?)
- These seeds of some species of *Strychnos* might contain strychnine – is this a problem or not?

Technical and processing group:

- There is a lack of information about the processing properties of indigenous resources; this can be addressed through literature searches and basic research.
- Health and safety standards are needed to protect consumers; this can be done through training and awareness raising, possibly in co-operation with local governments.

3.4.1 Strategic considerations

a) Valuable properties, processing characteristics and product development

For strategic purposes it is recommended that laboratory analyses, instead of being done routinely to generate information of dubious practical value, rather be carefully targeted at those properties of a resource that could have a direct bearing on commercialisation (e.g. analysing the fatty acid contents of oils; vitamin contents of fruit juices) or on processing (e.g. sugar, tannin and pectin contents of fruits intended for fermentation and/or preservation; fibre contents of fruits considered for pureeing). Targeted analyses play a key role at three stages of the commercialisation process: product identification and selection; technology and product development; and marketing.

b) Standards, quality control, health and safety

When adapting traditional products or formulating new ones there is an obligation to check for possible anti-nutritional or poisonous substances to avoid ill effects on consumers. Products that have traditionally been used in substantial quantities as food are most likely safe for human consumption – if there is reason to suspect otherwise relevant tests should be done. The basic rules of safety and hygiene should be followed during processing to prevent food contamination. Specific quality control tests might also be needed to ensure that products meet formal market standards and specifications – such standards must be developed or adapted for various products. In commercial scale production for formal markets, quality control becomes an essential part of the production routine.

c) Capacity and outsourcing

Namibia's capacity to do laboratory analyses is limited, with a shortage of skilled technicians being the biggest constraint. The PIF programme should be used whenever possible as a way to build local capacity, but this consideration should not preclude outsourcing analyses under certain circumstances, especially when a resource is suspected to have commercially valuable properties that cannot be analysed adequately with the equipment or skills available locally. When more sophisticated analyses are needed for a definite commercial purpose, a reputable foreign service provider with the required facilities and skills must be contracted. In such cases confidentiality agreements must be concluded before samples are dispatched.

3.5 Processing trials and technology development

Step e) *Conduct processing trials to test processing technologies for, and products from, selected species. Identify and procure/manufacture appropriate material technologies (machines and equipment), test productivity under actual conditions, identify and solve production and management bottlenecks.*

Because material technology is so visible, there is a temptation to equate processing technology with machines and equipment, but technology is also, and as importantly, about socio-economic issues, management, processing techniques and equipment maintenance.⁶

Workshop recommendations on processing trials and technology development

Technical and marketing group

- Local processing into a low-volume high-value product (preservation techniques) is a potential solution to problems such as transport costs, insufficient economies of scale, lack of information about where to market and of infrastructure for marketing.
- There are two distinct aspects to processing: choosing processing technologies, and managing these technologies as part of a processing enterprise.

Regarding technology development, the working group identified the following constraints and possible solutions:

- Available technologies are not immediately suitable for local fruits or conditions; they must be tested and adapted, possibly by using a partnership approach between Government, producers and service providers.
- Local technology manufacturing/adaptation is constrained by low demand and a lack of basic technical skills; this can be addressed through appropriate training and/or co-operation with other countries.⁷
- There is a lack of information about the available technology options; networking and directed information gathering can help to solve this.
- There is a lack of information about the processing properties of indigenous resources; this can be addressed through literature searches and basic research (trial processing).
- There is a lack of national leadership on technology development; this can be addressed through the institutional framework [IFTT] to bring the role players together.

As far as technology/enterprise management is concerned, the technical and marketing working group reported the following constraints and potential solutions:

- There is a shortage of well-developed institutions such as co-ops, SMEs and producer groups; this can be tackled through business orientation training and support packages, and by making a longer-term commitment to develop producer groups.
- There is a lack of maintenance, management and negotiating skills; possible solutions include mentorship and incorporating skill training into business support packages.
- Communities, CBOs, NGOs and other service providers are not aware of the opportunities; a potential answer is to develop a promotional package on opportunities, examples of successful sustainable use and the economic benefits that are possible.
- Some areas lack infrastructure such as roads, electricity and sanitation; a solution is to locate processing where the infrastructure is available (e.g. business clusters).
- The seasonal glut of fruit is a problem for keeping a business working all the year round; possible solutions are product diversification and technologies that can process more than one product (e.g. a marula press that can process juice and oil).
- Lending institutions such as NDC and Agribank do not have ways to assess the viability of indigenous fruit processing business plans; this could be overcome through pilot projects using trial production to demonstrate viability – the results could be collated into a range of viable “package deals” that could be demonstrated to both SMEs and financiers.

⁶E.g. the largest community-based trial commercialisation of indigenous fruit in Southern Africa to date – the marula fruit processing operation of the Gwezotshaa Natural Resource Trust in Botswana – imported a state-of-the-art fruit pureeing machine from the US for about N\$400000 and had it trailer-mounted in South Africa at considerable additional expense, but then ran into serious problems because a bureaucratic bungle prevented the trailer from being licensed in time for use on a public road. Forced to use the machine as a stationary unit, the project had to contend with unforeseen transport difficulties because of an inadequate fuel supply system, as well as technical problems such as screens cracking under the impact of marula pits, with the upshot being that only 10% of the projected production of 200 ton was actually achieved.

⁷ Although this observation is true to an extent, Namibia also has quite a sophisticated and skilled light engineering formal sector, which can provide a wider range of specialised technical services that are of use in developing technology for fruit processing.

Resources group

- For action in the near future choose resources that have potential for immediate development and marketing.
- Preference should be given to resources that can be processed with available or easily adapted technology.
- Products that can be stored (to compensate for seasonal/irregular supply) should be preferred.
- Research the technology and logistics requirements of processing marula fruit (the kernels are already used for commercial-scale oil production – promote and increase, taking care that fruit processing does not disrupt the marula kernel supply chain)
- Develop formal market products (e.g. juice, wine, jelly, liqueur, natural flavouring, ice-cream, yoghurt etc.)
- Look for solutions to logistics problems and their effects on feasibility (e.g. transport, access to processing/marketing points)
- Pay special attention to the effects [of technology] on marginalised groups and women
- Help communities to build their organisational capacity and empower themselves [also technologically]

3.5.1 Strategic considerations

a) Logistics, prices, localities and seasons

As was pointed out under 3.3.1 above, even when a particular resource is known to be available in large quantities the logistics of buying an adequate supply cannot be taken for granted, but must be quantified through trial purchases, which will also reveal much useful information on prices, localities where surpluses are available, and the duration/timing of the fruiting seasons of various resources. All these factors are of obvious and direct relevance to planning a fruit processing business. Disregarding for the moment the eventual possibility of a processing industry based on the cultivation of indigenous fruit (which will require at least five, and more likely ten plus, years to develop) technology and product development will need to be based on wild-harvested and semi-cultivated fruit in the short to medium term – this underscores the importance of the raw material market and price information gathered during trial purchases, even for planning larger-scale processing trials.

b) Special or unique properties and processing characteristics

As pointed out in 3.4.1 above, the special or unique properties of indigenous fruits are important considerations in product development, and therefore also in processing technology R&D.⁸ In addition to relevant chemical analyses of properties and characteristics, the subjective sensory appeal of fruits and their products should be systematically evaluated; and the physical and mechanical processing characteristics of various fruit should be investigated through systematic trial processing. This suggests a need to conduct smaller-scale processing trials to generate information needed when choosing commercial-scale technology.

c) Product development

As observed in 3.2.1 above, the link between resource and market can be viewed from both directions: resource-technology-product-market, or market-product-technology-resource. If product development is approached from the resource angle, the question is: “What is available and what products can it be made into?” From the other side it is a matter of: “What does the market require and which products that can be made from a particular resource might interest it?” In either case processing technology provides an essential link between producers and buyers. Ideally, the products should be high-value, low-bulk, easy to make with simple equipment, non-perishable and profitably saleable in both local and export markets. The following non-exhaustive list of generic product ranges potentially meet these criteria:

- Fruit concentrates
- Fruit preserves (jams, jellies, conserves, pickles, atchars, chutneys etc.)
- Dried fruits (fruit leathers etc.) and other dried plant products
- Wines, spirits and fruit/herb-flavoured liqueurs
- Food, cosmetic and industrial seed and nut oils
- Essential oils and other natural flavours/fragrances
- Chemical extracts (for use as medicines, dyes, poison etc.)

The new products that are developed should preferably not push out traditional products already supplied to informal markets in production areas. Maximum use should be made of the competitive advantages of products that can be promoted under labels such as “natural”, “organic”, “traditional” etc.

d) Selecting and sourcing technology

In many cases traditional processing methods and equipment are perfectly adequate for certain parts of commercial processing, provided they can deliver the quality and quantity of product required by the target market – if they can

⁸ Processing technology should preserve or enhance these valuable properties – e.g. pasteurisation to prevent spoilage and enzymatic browning of purees works well, but can decrease the characteristic taste so that products lack unique sensory appeal.

there are many good reasons to make full use of them in the production chain. At this level there is scope for very simple and cheap technology, and especially technology management, innovations/interventions to improve the productivity of the traditional methods, or otherwise ease their integration into commercial production (e.g. reducing post-harvest losses; providing bags, scales and record books; minimising contamination).

Internationally, fruit processing technologies have been developed at all scales from household to heavy-duty industrial, for a variety of both fruits and processes. The topic has been extensively documented by international development agencies and NGOs and a targeted technical literature search, informed by the processing characteristics delineated during trial processing, will certainly turn up equipment (to buy or make) and methods to use that are potentially suitable for indigenous fruit processing. In other parts of SADC equipment for processing indigenous fruits has mostly been custom-built or adapted from imported machines.

The technology used for initial processing trials can be adapted from existing or traditional equipment, or custom-made, and can be scaled up for commercial trials at a later stage. Once more is known about the processing of a particular resource and some processing methods have been shown to produce products with potential markets, the need arises to disseminate multiple copies of "right-sized" appropriate technologies. When this happens it is highly desirable to manufacture equipment locally so as to stimulate local technical capacity. For imports it is worth looking to neighbouring countries first, not only for reasons of SADC solidarity, but also because spare parts and technical back-up are likely to be more accessible. More importantly, the current lack of appropriate equipment for processing indigenous fruit, and the growing interest in this form of resource use in other SADC countries, suggests an opportunity for Namibia to manufacture and export such technology.

In many cases, indigenous fruit resources have processing characteristics that necessitate adaptation or adjustment of commercially available processing equipment, which is designed for common agricultural crops. To avoid dissemination of inappropriate technologies, all equipment should be tested and, if necessary, adapted before being made widely available to producers, entrepreneurs etc.

e) Capital-intensive labour-intensive technology

Processing and technology development trials should contribute holistically and cost-effectively to the wider development goals of the PIF programme and should not become an end in themselves. This implies that technological solutions should be judged on their ability to improve the livelihoods and income of producers, rather than on their sheer technical ingenuity. It is desirable from the development perspective that as much as possible of the technology comprises household-level and/or labour-intensive processing, because this is the most direct and flexible way to distribute cash income to a large number of beneficiaries, and to actively involve women (who can do "flexi-time" processing at household level in between their other family-care, household and agricultural chores).

On the other hand, under certain circumstances centralised processing of a more capital-intensive nature might offer solutions to specific bottlenecks (e.g. unlocking markets that require a high degree of product uniformity and quality control) and "industrial-scale" processing should therefore not be ruled out as a legitimate option. It is especially important to take into account the seasonal availability of labour (many indigenous fruits are in season when crops also need a lot of attention) and to avoid the simplistic assumption that, because national unemployment levels are high, surplus labour is always and everywhere available at low prices in any quantity required.

f) Complexity, reliability and maintenance

Technical maintenance and repair services/skills are in short supply in many parts of rural Namibia,⁹ as are spare parts. It is therefore desirable that technologies intended for dissemination to remote localities are as simple and reliable as possible, and based on spares readily available in most hardware shops. Reliability is doubly important because fruit processing is seasonal and cannot afford "downtime" when the harvest is rolling in (it is not uncommon for large processing plants to work 24/7 during the season). The management of routine maintenance has proven to be a problem in many rural processing enterprises, suggesting that equipment with low and simple maintenance requirements would be more appropriate than complicated machines.

g) Productivity

The theoretical productivity of a technology is its capacity to produce under optimal conditions. Actual productivity is the effectiveness of productive effort, or production per unit of effort achieved under real conditions - it is largely a function of efficient management and is usually lower than theoretical productivity. The theoretical productivity of fruit processing technologies should strike a balance between resource availability, market demand, capital outlay

⁹This statement should be seen in context: while there are very few trained technicians in Namibia who are not formally employed, usually in urban areas, there is no denying the creative ingenuity of any number of "bush mechanics" who regularly perform automotive miracles with old wrecks - such skills can surely be put to good use in the maintenance and repair of processing equipment, provided it is simple enough to be fixed with basic tools.

and management capacity:

- the resource(s) to be processed should be available in large enough quantities to keep the technology working full time, at least during the season
- the output should not flood the market with products for which there is no demand
- the equipment should be able to repay its own capital costs (and still generate a profit) when operating at considerably less than full theoretical capacity
- technical and business skills training (and back-up management services) should be provided at the required scale of production.

These requirements suggest that a modular approach (many copies of smaller technologies), when it is feasible, is less risky than establishing one huge centralised facility. Additionally, modular production is more resilient (problems with one module do not halt the whole system) flexible (modules can be added as the market grows) and responsive (mobile modules can go to where the resources are available). By lowering the costs of entering the industry, it also potentially spreads the benefits to be derived from processing over a wider area and between more people.

h) Management

It has been remarked that management skills are generally the scarcest development resource. The more complicated an enterprise becomes, the truer this assertion. This problem should be tackled at two levels: keeping the system simple, and providing appropriate training (backed up by mentoring when required). In managing processing technology the key requirement for economic success and financial sustainability is to ensure that the actual productivity of a technology is as high as possible – as an absolute minimum it should reach the break-even point.

i) Peripherals

Fruit processing technology typically consists of “core” equipment (e.g. press, boiler, still...) surrounded by other, peripheral equipment (for fruit handling, washing, packaging...). The efficient design and management of peripheral sub-systems is a key factor in attaining all or most of the theoretical productivity of the central processing equipment. This underscores the need for a holistic “systems” approach to technology design. “Bottlenecks” restricting production flow should be identified and the cost-effectiveness of removing them assessed.

j) Financial data

One key motivation for trial processing is to generate indicative information on the financial expectations of a business based on the trial technology, which can later be used to develop business plans and key cost-benefit analyses for enterprises. Appropriate data-collection measures should therefore be designed into technology trial methodology and procedures.

3.6 Marketing

Step f) *Introduce samples of promising products to appropriate markets to assess response, potential demand and possible prices (phytosanitary and health regulations should be adhered to, especially when targeting the export market). Expand markets for successful products.*

Marketing is the least “sequential” activity in the theoretical promotion strategy and should be considered at every step along the way. It is placed here because it assumes even greater importance once trial processing has made products available for test marketing. It is impossible to over-emphasise the importance of market identification and liaison in the process of indigenous fruit promotion and commercialisation. Without profitable and relatively secure long-term markets, no amount of propagation, processing, product development or promotion is likely to achieve the desired results.

The following workshop recommendations are relevant to marketing:

Technical and marketing group

A major problem is the lack of market research (on consumer attitudes, domestic markets, regional and international markets, the scope and scale of potential markets) – this means a lack of information to feed into the promotion programme. Information about markets is constrained by a lack of funding, insufficient capacity to conduct market research and the fact that some (potentially major) markets are outside Namibia. Farmers and communities should be able to obtain reliable information about market opportunities and prospects so that they can make informed production decisions. Potential solutions are:

- Generally, to support market research
- Funding provided by Government and/or donors, or earned from trial production
- Specific research could be commissioned on markets outside Namibia for specific products and the information

- feedback into the institutional framework
- Regional co-operation and networking could also help

Another problem is the perishability of fruits and the distances to markets. This involves high transport costs, insufficient economies of scale, lack of information about where to market and of infrastructure for marketing. Possible solutions are:

- Local processing into a low-volume high-value product (preservation techniques)
- Improved availability of market information (e.g. marketing facilitation centre)
- Identify and address the bottlenecks in the marketing flow
- Provide simple services to facilitate national marketing (e.g. move indigenous fruit to urban markets at the right time)

As far as promotion is concerned, indigenous fruits could benefit from being clearly identified as indigenous Namibian (and/or African) products. There is potential for regional co-operation around the generic marketing ofveld products. However, promotion is difficult until the products to promote have been selected and are available.

There are currently limited industrial markets for indigenous fruits and/or their products, either because their unique qualities have not been identified, or because they must compete with cheaper substitutes and alternatives. If industrial markets develop, there is also a danger that the natural product could be pushed out later by cheaper alternatives (e.g. vanilla). The problem can be addressed through ethical trading (where primary producers are the main beneficiaries of the trade); however, this increases production costs and must be offset by concentrating on lucrative niche markets. These considerations underscore the need to study and understand the market.

- Market research on selected resources and products – national, regional and international markets; rent-seeking in marketing chain; best-prospect products; labelling and packaging – is a short-term priority for action
- Identifying private stakeholders for possible co-operation is also a short-term priority
- Establishing a marketing investigation unit – to do market matching, market information, market research – should be investigated in the medium-term
- Bottlenecks in infrastructure/logistics for marketing should be identified
- A generic promotion strategy should be developed
- Quality and standards requirements of markets should be established

Resources group

- The program should consider promoting the use of all indigenous plants with the economic potential that could be cash crops
- Known or potential local markets could bring quick benefits
- Known or potential international markets could earn higher returns than local markets
- For action in the near future choose resources that have potential for immediate development and marketing

3.6.1 Strategic considerations

a) Funding market development

Adequate funding must be provided for market development work, including liaison with potential buyers; since this work is dynamic, evolutionary and hard to plan in detail and in advance, flexible and responsive mechanisms are needed for apportioning funding and directing its spending.

b) Market sustainability

To be sustainable, markets must be able to absorb a substantial quantity of product(s) at prices high enough to guarantee full cost recovery and a fair profit for producers. This implies that public sector and donor funding intended for market development must not be used for price support – there are on-going costs of producing for and accessing particular markets must be built into prices right from the start. Similarly, the seasonal nature of fruit production (and of certain markets) can cause problems with cash flow – this should be addressed in planning marketing strategies.

c) Market requirements

The requirements of specific markets must be researched and taken into full account when developing products; the active collaboration in product development by the potential buyers/clients is highly desirable. Products “custom made” for suitable market niches are more likely to succeed; conversely, many products that in theory seem perfectly marketable fail because they were not developed with real markets in mind. Likewise, many safety and quality controls apply in certain (especially international) markets – these should be ascertained and met.

d) Marketing fresh produce

Given climatic and infrastructural realities in Namibia, the marketing of fresh fruit and perishable products (with the possible exception of frozen products) is probably best targeted at very local markets; this should not, however, preclude the investigation of more lucrative markets, especially for more expensive fruits with better keeping qualities. If the price is high enough to justify refrigerated transport, urban marketing and export of fresh “novelty” fruits might be possible. This price equation might benefit from the surplus of refrigerated transport out of the NCAs, where most indigenous fruit is produced (many trucks currently run back empty due to high imports of fresh produce and low or no exports). It might also be possible for exports of indigenous fruits to “piggy-back” on the infrastructure and marketing contacts of Namibia’s existing (and growing) fresh fruit export industry.

e) Marketing value-added products

Whenever possible, markets for value-added products should be preferred. Marketing of raw materials should preferably be restricted to Namibian producers of such value-added products. The export of unprocessed raw materials to industrialised countries is a key contributor to the continuing economic underdevelopment of African countries and such exports should be avoided or used as an absolute last resort. The benefits to be derived from innovative branding, and from identifying products clearly with their primary producers, should be exploited.

f) Maximising producer benefits

Vertically integrated co-operatives can optimise benefits to primary producer by controlling products from raw material to market. Such producer-controlled enterprises have good access to “fair trade” markets. Every effort should be made to avoid exploitative marketing. The role of market intermediaries in meeting marketing challenges should be monitored to encourage entrepreneurship but prevent unfair profiteering.

g) Regional market co-operation

Most of the fruits indigenous to Namibia also occur in other SADC countries – full use should be made of opportunities and initiatives for regional co-operation on international marketing. Since these fruits are already known in the region, SADC countries (and the tourists who visit them) are potentially important markets for Namibian products (including processing technology).

h) Market expansion

When developing markets for new products that are available in limited quantities, care should be taken to strike a balance between supply and demand. It is especially important not to over-estimate the quantities that can be made available quickly at short notice, or there is a risk of raising and dashing expectations, with the result that markets lose interest.¹⁰ Conversely, if successful products have been developed from a resource and it is being cultivated in increasing quantities, additional markets should be investigated in good time to prevent a glut from depressing prices. In the short-term, measures to expand markets for traditional products should be investigated – doing so is potentially a simple and direct way to boost income while assessing the real extent of an apparent resource surplus.

i) Marketing strategies

For marketing purposes full use must be made of the competitive advantage that being “indigenous” confers on indigenous fruit and fruit products.¹¹ The image of the African indigenous not only has a unique appeal for tourists and people of African descent in other parts of the world, but is likely to benefit from the recent resurgence of pan-Africanism and political efforts to promote an “African Renaissance”. There are several ways in which the (differentiated) images and perceptions of Africa can be used in the marketing mix, for example:

- The “romantic” African abundant wildlife, unspoilt nature and spectacular sunsets, which appeals primarily to the touristic imagination and the nostalgia of emigrant Africans
- The “patriotic” Africa of ancient traditions and pre-colonial practices, which appeals to the emerging and increasingly affluent African middle class and to activist Africanists
- The “underdog” Africa of disadvantaged poor people struggling to develop themselves in a harsh world, which appeals to “green consumers” prepared to pay premium prices for fair trade products
- The “unspoilt” Africa of wilderness and natural agriculture, which appeals to health-conscious consumers worried about excessive agro-chemical use in their own countries.

¹⁰This applies particularly to industrial markets that use indigenous fruits or their semi-processed products as a raw material for further processing. Before incurring the risk and expense of product development, such manufacturers want to be absolutely sure that the source is large enough, and the raw material supply reliable enough, to justify their troubles. Unfortunately there is also an element of once-bitten-twice-shy in this, because of experience with projects that promised more than they could deliver.

¹¹The commercial success of Amarula liqueur (despite the fact that it is an exceptional product which does not taste like marula at all) can best be explained by the clever way in which the image of the African bush has been used in marketing.

3.7 Strengthening grassroots organisation

Step g) *Build the capacity of harvesting communities to organise themselves and to manage the sustainable use of their resources (the role and empowerment of women and marginalised groups must be considered at all stages).*

As pointed out in 3.1.1.c above, community-level institutions have a key role in the sustainable management and utilisation of indigenous fruit. When the new Forests Act is passed and Community Forests become a reality, this role will become even more important. Interventions to commercialise common-access resources can have severe repercussions on both livelihoods and resource sustainability unless the rights of traditional users are jealously safeguarded.

Relevant workshop recommendations included:

Resources group

Ensuring community involvement and benefits:

- In communal areas the questions of resource and land tenure (who has legal access to resources) are key factors in determining the level of community involvement and how benefits are divided between community members
- There is a need to formulate effective extension messages on indigenous fruit for use by existing extension services/structures
- When commercialising indigenous resources, work directly with existing community structures, including traditional leaders. Register harvesters (and set household quotas if necessary) to control over-exploitation. Work with those community members who already have an interest in the use and management of a particular resource.
- Make communities aware of their legal rights
- Introduce incentives to stimulate positive community involvement (bearing in mind such factors as entrepreneurial attitudes and cultural practices/taboos)
- Commercialisation of a particular resource should not have negative effects on groups that depend on it for a significant part of their livelihoods. Pay special attention to the effects on marginalised groups and women
- Help communities to build their organisational capacity and empower themselves
- Start investigating the genetic variability of promising resources and collecting germplasm for use in selection and improvement – actively involve farmers and communities in the selection of superior specimens (tie in with DoF project)

Technical and processing group

- There is a shortage of well-developed institutions such as co-ops, SMEs and producer groups; this can be tackled through business orientation training and support packages, and by making a longer-term commitment to develop producer groups.
- There is a lack of maintenance, management and negotiating skills; possible solutions include mentorship and incorporating skills training into business support packages.
- Communities, CBOs, NGOs and other service providers are not aware of the opportunities; a potential answer is to develop a promotional package on opportunities, examples of successful sustainable use and the economic benefits that are possible.
- There are no dedicated financial institutions or mechanisms to support indigenous fruit processing; the pending National Rural Finance policy [which accepts mutual guarantees as a form of collateral] could solve this, while a clear national program and an institutional framework for fruit processing could facilitate donor support.
- Many prospective entrepreneurs lack collateral for loans; this could be addressed by demonstrating the financial viability of fruit processing, or by mobilising savings [possibly through community-level credit associations].
- Identify potential test/pilot communities/projects with under-utilised resources.

Institutional arrangements group

- Weak grassroots community institutions are a constraint on the programme, but Government is committed to grassroots development
- SME and co-op support and development services exist

The working group identified the following strategic institutional components:

- Community participation in the project
- IPR issues [including traditional knowledge]
- Information, training and support services to project actors [including farmers/harvesters]
- Pilot/demonstration projects [which need grassroots partners]

3.7.1 Strategic consideration

a) Sustainable resource use

It is widely believed that effective community-level management is a key element of protecting, conserving and sustainably using natural resources, and that interventions to increase community perceptions of the economic value of natural resources will lead to enhanced conservation efforts. However, without strong grassroots institutions to regulate harvesting, there is a danger that the commercialisation of indigenous fruits – especially those harvested under an open-access tenure regime – will lead to over-exploitation, and possibly to conflict. Similarly, without an effective organisation through which to redistribute benefits to all members of a community, commercialisation, rather than promoting conservation and sustainable use, is more likely to stimulate short-term strategies and thus cause a “tragedy of the commons”.

b) Strengthening existing community institutions

Community activation and liaison, especially in remote rural areas, can be very expensive in terms of time and transport. While some costs are unavoidable, it is advisable to contain expenditure by working with, and thus strengthening, existing community-level organisational structures whenever possible. Moreover, given the consensus that exists on the need for an integrated and holistic approach to rural development, it would be counter-productive to create additional single-purpose organisations or institutions especially for the promotion of indigenous fruits. This consideration also applies to indigenous fruit extension services, which are best provided through targeted support to existing agriculture, forestry and NGO extension agents, especially the FSRE units being established in the NCAs.

c) Producer co-operatives

Facilitating grassroots control over commercialised resources can help to spread the economic benefits more equitably between more people. It is therefore strategic to pursue producer control over resources and processing technology by building the capacity of producer co-operatives or associations, using the available small business and co-operative development services in Namibia. Producer control also enables access to lucrative “green” or “fair trade” markets. Furthermore, co-operatives that control their products from field through factory to market secure a larger total share of profits for producers, thus compensating for the low remuneration of primary production, increasing the attractiveness of the undertaking to farmers and enhancing the probability of achieving the long-term development goals. There is however a need to guard against so-called “co-operatives” that are registered only to get the benefits available under co-operative development programmes, but with no real productive activities going on.

d) “Community” and inequality

The concept of “community” is problematic in that it tends to gloss over the very real and substantial inequalities that typically prevail among most groups of humans. Putting too much faith in a mythical “community” with supposed convergent interests can result in a failure to protect the interests of the poorest and least powerful. This is especially true of marginalised groups like the San, and of women-headed households in patriarchal societies – the exact groups that currently rely more than their neighbours on indigenous fruit. Likewise, there is a danger that powerful or rich people in the community will appropriate indigenous fruit resources for their own benefit, so that the resulting economic development not only fails to alleviate poverty, but actually deepens inequality. Proactive measures should be built into promotion interventions to prevent such undesirable effects.

e) Technology transfer

To promote the development of an indigenous fruit industry that eventually functions profitably and sustainably without public-sector support it is necessary that knowledge (e.g. about resource management and markets) and technology be transferred from the public to the private sector. As has been argued above, it is highly desirable from a rural development perspective to target this technology transfer primarily at producer co-operatives, so as to maximise the economic returns to primary resource users. The need to transfer technology should be a key consideration at all stages of the programme. However, it is risky to disseminate new technology too early, before a market is firmly established and production hitches have been ironed out – doing so can disrupt product supply, undo market development efforts and disillusion both producers and clients. Most importantly, technology should only be transferred completely once the recipients are organisationally strong enough to manage it effectively, i.e. able to maintain the required production, quality and profitability.

3.8 Business plans

Step h) *Combine the financial and technical data on raw materials, processing and markets into bankable enterprise business plans backed up by a marketing plan, adequate training and institutional support.*

Public-sector support for trial commercialisation and pilot projects will only lead to sustainable economic growth if and when it results in the creation of viable businesses. A key consideration is that financial institutions need reliable data as a basis for granting credit to such businesses.

Relevant workshop recommendations were:

Technical and processing group

- Communities, CBOs, NGOs and other service providers are not aware of the opportunities; a potential answer is to develop a promotional package on opportunities, examples of successful sustainable use and the economic benefits that are possible.
- There are no dedicated financial institutions or mechanisms to support indigenous fruit processing; the pending National Rural Finance policy could solve this, while a clear national program and an institutional framework for fruit processing could facilitate donor support.
- Many prospective entrepreneurs lack collateral for loans; this could be addressed by demonstrating the financial viability of fruit processing, or by mobilising savings.
- Lending institutions such as NDC and Agribank do not have ways to assess the viability of indigenous fruit processing business plans; this could be overcome through pilot projects using trial production to demonstrate viability – the results could be collated into a range of viable “package deals” that could be demonstrated to both SMEs and financiers.

3.8.1 Strategic considerations

The specific strategic considerations pertaining to raw materials, processing and markets have been dealt with above. For the purposes of this step in the strategy the main considerations are to consult with providers of finance about their business plan requirements, collect the relevant information in a structured way and include it in the IFDB for later analysis and compilation. While there is a good argument for subsidising business support to producer co-operatives, technology dissemination to private enterprises should be on a full cost-recovery basis.

3.9 Domestication, propagation and genetic improvement

Step i) *Select high-yielding or otherwise desirable genotypes of species with commercial and cultivation potential and study their propagation, domestication and management; use results of these trials to propagate desirable strains (and cross-breed improved varieties). Encourage farmers to grow selected improved varieties of indigenous fruits with commercial potential.*

In the longer term, the sustainability and growth of an indigenous fruit industry will depend on the extent to which preferred species can be domesticated and cultivated as agricultural crops. There has already been a substantial body of work on the selection and propagation of indigenous fruit trees, both in SADC and elsewhere (notably Israel). Namibian genetic material has been included in most of these efforts. This component of the strategy has already started and, because it is long-term, a concerted effort should be made to increase its scope as rapidly as possible.

Applicable workshop recommendations included:

Resources group

- The plant [selected for promotion] should have agricultural potential (at least for medium-term cultivation) but should not necessarily be suitable for large-scale plantations (to prevent large commercial farmers from appropriating promotion efforts at the expense of smaller producers).
- Can plants [or genotypes] from elsewhere in the SADC region be cultivated and used?
- The natural gene pool should be conserved at all times (even if breeding and selection make improved cultivars widely available)
- Studies are needed to determine:
 - that sufficient seed banks are left after harvesting
 - the impact of harvesting on ecosystems and on socio-economic systems
 - how growth and recruitment are affected by harvesting
 - sustainable harvesting rates and methods

- how to encourage recruitment (both natural and cultivated)
- Appropriate species mixes for diversification/polycultures should be investigated.
- Select marula trees with the most desirable traits (including oil producing characteristics of the seeds/kernels)
- Fresh *Strychnos* fruits are very popular and the resource base is not very large – can production be increased through cultivation? What do other SADC countries know about cultivating *Strychnos*?
- Start investigating the genetic variability of promising resources and collecting germplasm for use in selection and improvement – actively involve farmers and communities in the selection of superior specimens (tie in with DoF project)
- There is a need to formulate effective extension messages on indigenous fruit for use by existing extension services/structures

Technical and processing group

The seasonal glut of fruit is a problem for keeping a business working all the year round; possible solutions are product diversification and technologies that can process more than one product (e.g. the marula press that can process juice and oil). *[Another potential solution is extending the season by making early and late varieties available to farmers.]*

Institutional arrangements group

The promotion of indigenous plants should be included in the mandates of FSR units and agricultural extension service (holistic approach) and closer co-operation with other extension services (e.g. forestry) should be promoted.

3.9.1 Strategic considerations

a) Recruitment

The National Forest Inventory and other sources report insufficient recruitment of most indigenous fruit tree species in most parts of most communal areas. Promoting indigenous fruit on the basis of an ageing natural resource endowment likely to die off in a few decades is not sustainable. If the PIF programme succeeds, the demand for indigenous fruits will increase – it is just as well to anticipate this to prevent setbacks caused by under-supply. Natural recruitment and active plantings should be encouraged (as it has been by a variety of factors), even if the very best genetic material is not yet available.

b) Co-ordination of existing and planned initiatives

The proposed DoF project *Improvement and Promotion of Selected Indigenous Fruit Trees in Namibia* is being considered for funding by the FAO. The project is based on a “market-driven, farmer-led” approach to domestication and genetic improvement, which involves target communities directly in the ranking and collection of preferred phenotypes and makes extensive use of on-farm trials and direct dissemination of results to the target audience. Since DoF is the obvious institution in terms of technical and infrastructural capacity to undertake such work, it is recommended that the IFTT strongly support this project. The proposal also includes advanced technical and market research development components. If the project is funded, it would be strategic for DoF to adjust these components so that they complement, rather than duplicate, similar work done by other institutions under the auspices of the IFTT.

The SADC Tree Seed Centre Network (in which DoF is the Namibian partner) has formulated a regional project on domestication of indigenous trees for semi-arid areas of Southern Africa. The TSCN has already done much to exchange germplasm between SADC countries and can facilitate Namibia's access to a wider pool of partially selected genetic material (including provenances originally obtained from Namibia). It is strategic for the PIF programme, through the DoF, to work closely with this project.

c) Selection criteria

The selection methodology favoured by the SADC TSCN and the DoF projects emphasises farmer surveys to determine the most desirable traits to breed into improved indigenous fruit trees. While this approach has much to commend it – not least the active involvement of farmers – it needs to be supplemented by input on the requirements of various markets and the potential economic value of selecting for specific traits.

d) Propagation and management

Vegetative propagation (e.g. grafting) is the key to multiplying elite genotypes quickly. Grafting also induces earlier fruiting in some species. If at all possible, the propagation and management methods developed should be simple enough to be used, with a minimum of training, by farmers anywhere in rural Namibia. Extension efforts in this regard should be accelerated and should be integrated with the delivery of other services where possible, e.g. through Water Committees.

e) Polycultures and diversification

An important reason for promoting indigenous plants is that they are agro-ecologically better adapted and therefore more reliable producers, so that their increased inclusion in farming systems will add diversity and resilience to total agricultural production. The more diversified agro-forestry production systems are, the more stable and resistant to extreme climatic conditions¹² and pests or diseases they are. It is therefore desirable to promote diversification by finding creative ways to combine the cultivation of exotic and indigenous crops in complex polycultures. Monocultural cultivation of indigenous trees has been shown to negate many of their inherent pest-resistance advantages; such plantings should be pursued with caution, if at all.

3.10 IPRs and producer benefits

Step j) Use intellectual property rights (IPRs) to maximise benefit to producers.

IPRs can potentially increase the benefits producers derive from indigenous resources. At the moment IPRs based on traditional knowledge are receiving a lot of attention internationally, and while the principle of benefit-sharing is widely accepted in theory, there are as yet few guidelines on practical mechanisms for sharing benefits with the owners of traditional knowledge. This suggests a need to stay pro-active in this regard and to contribute actively to the international legal process that is currently hammering out such guidelines.

Of the trade-related intellectual property rights, trademarks and brand names are the easiest to register and protect, while the situation around appellations of origin is fluid. Plant breeder's rights are straightforward though time-consuming to get, but harder to protect and of limited value (except on important crop plants). Patents on novel applications of products are potentially the most lucrative IPRs, but also hardest and most expensive to get, and potentially expensive to defend. Furthermore, there is a strong and growing body of world opinion against "patents on life", which is entangled with the rumpus around genetically modified organisms.

The idea that groups can have collective ownership over, and derive collective financial benefits from, traditional knowledge is novel and largely untested – a complication made worse by the fact that few indigenous fruits are endemic to Namibia, most also being indigenous to other countries and included in other traditional knowledge systems. Nevertheless, a broad consensus is emerging that at the very least no restrictive rights should be registered over resources identified by reference to traditional knowledge without sharing benefits with the community.

Nationally, nascent legislation to control access to indigenous genetic resources is directly relevant to the strategic need to inform communities of their rights and of national regulations, so that they do not unwittingly cooperate with bio-pirates, and to anticipate and prevent attempts to appropriate traditional knowledge for private gain. However, establishing and defending IPRs is costly and should not be tackled without due consideration of the on-going expense. Legislation enables partnerships (on the basis of prior, informed consent and benefit-sharing) between communities and private enterprise – the options this offers should be evaluated. All the constraints notwithstanding, full use should be made of IPRs where possible, including patents that can overcome the obstacles.

¹² Planting indigenous fruits is therefore one way to adapt farming systems to the potential effects of global climate change – a fact that could make additional financial resources available for such work.

– a fact that could

4 Strategy into Action: objective considerations

The aim of this section is to elucidate, within the context of the Strategy outlined above, certain realities, options, opportunities and constraints pertaining to the promotion of indigenous fruit in Namibia over the next five years.

4.1 Monitor and re-plan

While the initial actions to take in a Namibian PIF programme are fairly clear, the knock-on effects of such interventions over a five-year period render the later stages of the Action Plan much more conditional and uncertain. Monitoring and re-planning are therefore very important ongoing parts of the Action Plan. It is recommended that:

- IFTT releases funding for the PIF programme in stages after reviewing progress made and lessons learned, and after evaluating proposed activities for their continued relevance to strategic objectives
- IFTT organises at least two expanded meetings, or mini-workshops, a year, to review work in progress/share information, and to set spending priorities for the next funding cycle
- An independent evaluation of the programme is contracted after two-and-a-half years

4.2 Resource endowments

Very little that is commercially relevant is currently known about most indigenous resources, including most fruiting species - this fact was presented in the Strategy as a reason to investigate resources systematically. Since variety is a valuable commodity in itself, it is proposed that trial purchases include (in small quantities) all indigenous fruits that can be bought. In some cases it might even be necessary to collect from the wild interesting fruits that are not traditionally harvested (fruits that are traditionally not used because they are unpalatable may nevertheless, with the addition of enough alcohol, sugar and cream, make good ingredients for liqueurs, or be sources of other interesting products like oils).

However, certain resources are abundant enough (and well enough known) to present prima facie cases for commercialisation trials, and should not have to wait until other resources have been assessed. The fruiting species already known to occur in commercially viable quantities in some areas are (at least) marula, manketti, melons, makalani palm and Inara. The Action Plan therefore pays particular attention to promoting these resources right from the start and treats them in a different way, at a much bigger scale.

Several other fruits, including *Adansonia*, *Berchemia*, *Diospyros*, *Grewia* and *Ximenia*, are also potentially available in larger quantities, as is *Acacia* gum, but the extent of this availability must be ascertained more exactly (e.g. it is known that *Berchemia* fruits sporadically, which could cause severe cash flow difficulties for businesses based on processing it). In addition to small purchases of all fruit available in informal markets, and purchasing larger quantities of priority species, it is therefore recommended that the trial purchases be accompanied by a socio-economic survey of resource availability. Since there are added benefits to be derived from commercialising resources that are not traditional favourites, community identification of available resources must be cross-checked with the Forest Inventory of species occurring in the area, and with data on possible uses.

4.2.1 Ecological and environmental effects

Commercialising indigenous fruit might harm the environment in several ways, including:

- Over-harvesting of open-access resources (with negative effects on in-soil seed banks, recruitment etc.)
- Removal of food sources vital to the survival of wildlife
- Clearing of natural mixed woodlands to make space for single-species plantations (loss of habitat for wildlife)

For these reasons the potential ecological effects should be assessed during trial purchases - if there is any doubt about sustainability, the further commercialisation of sensitive or problematic resources should be delayed pending increased cultivation and/or the introduction of more effective control measures.

4.3 Product/technology/market development

These three inter-related areas are the crux (if not the alpha and omega) of promoting the commercialisation of indigenous fruits.

4.3.1 Opportunities suggested by available resources

Current knowledge (and lack of knowledge) about the availability and characteristics of various indigenous fruits suggests that the five activity areas outlined below be included in the initial phases of the PIF programme.

a) Range of indigenous fruit-flavoured alcoholic drinks

In view of the fact that several interesting indigenous fruits are currently and for the foreseeable future only available seasonally and in limited quantities, and since it is desirable from a bio-diversity perspective to commercialise many species simultaneously, it is suggested that the PIF programme as a top priority develops a product range that can accommodate a variable number of resources in limited quantities and with a great deal of storability, marketability and price flexibility. It will be of additional benefit if the products are also recession-proof and highly taxable. The proposed solution is to focus the initial processing and technology development trials on the development of a range of indigenous fruit-flavoured liqueurs, schnapps, wines and other alcoholic drinks (which could be brought to market relatively quickly at profitable prices) while also systematically assessing a range of other processing characteristics (which can at best lead to priorities for further R&D). Note that in the trials the focus is on using the fruit to flavour the drinks (and not primarily as a source of sugar or alcohol).

It is conceivable that one or two of the products developed might eventually go on to compete with Amarula, but the initial marketing focus should be on the niche offered by German tourists who, even if they do not drink schnapps themselves, probably know someone who does who would appreciate an interesting gift from Africa. Ample opportunities for market expansion exist in SADC tourist outlets if the packaging is carefully designed to play up (Southern) Africa rather than Namibia exclusively.

b) Alcoholic spirits distilled from abundant indigenous fruits

Closely related to the liqueur and schnapps trials is an investigation into the technical and economic feasibility of commercial (and modular) distillation of kashipembe from manketti fruit, and of ombike from makalani fruits. Manketti is one of the resources known to be available in large quantities and kashipembe distillation offers the additional benefit of a chance to further investigate improved processing of the nuts that would be a by-product. Depending on the outcome of trials, kashipembe and/or ombike can be marketed "neat" as indigenous spirits (at prices too high to be competition for their traditional counterparts in local markets) and/or used as a raw material for other liqueurs. A similar approach is proposed for other resources that might turn out to be available in large enough quantities to serve as sources of sugar for fermentation/distillation (not just as flavours, as proposed above).

c) Marula

Marula is seasonally available in very large quantities and should obviously be included in the trials proposed above. However, there is also a large local market for traditional marula wine in the production areas, which not only provides cash income but plays an important social role, e.g. relations with neighbours. Moreover, the marula oil project has just proceeded to commercialisation and it would be unwise at this sensitive stage to risk disrupting the kernel supply by concentrating large quantities of marula nuts in one area. It is therefore proposed that marula be approached differently in the initial phases of the PIF programme.

During the marula fruiting season (which is agriculturally labour-intensive) there is a shortage of labour for the very time-consuming manual processing traditionally used to make marula wine. The result is that the local demand for marula wine is not yet fully supplied. Therefore the first intervention suggested around marula is to disseminate a number of small hand-operated juice presses to known producers of marula such as the members of the Eudafano Women Co-operative and to let them get on with production and marketing through traditional channels, using this improved technology. This will allow three important considerations to be assessed:

- The extent and location of production surpluses after local demand has been more fully supplied
- The feasibility of buying juicer rather than whole fruit for further processing and marketing (to limit transport cost and increase local value-added)
- The practicalities of managing a small fruit processing enterprise under rural conditions

To supplement this quick and basic intervention and provide baseline information, managed trials of the same technology should be conducted under controlled conditions. Different ways of preserving fresh marula (fruit, juice, puree, concentrate) should be evaluated, to enable out-of-season sales and facilitate collation of large quantities for industrial-scale processing.

Considering that Namibia's total marula production could theoretically be hundreds of thousands, or even millions, of tons a year,¹³ it is believed that local markets cannot absorb the whole crop, especially if technology were to substantially increase product availability. The Action Plan therefore includes longer-term components to develop technology for producing marula juice or puree at an appropriate scale, and to develop reliable urban and industrial markets for substantial quantities of marula, including a study tour to Botswana and South Africa to learn from experiences there. For this reason it is also proposed that marula be subjected to intensive scientific evaluation of its processing characteristics (at CIRAD in France) and that the fruit receives special attention during product development trials.

d) Indigenous melons

Of all indigenous resources, wild melons are furthest along the road to becoming agricultural crops. In fact, some indigenous varieties of melon are traditional crops and can no longer be regarded as "wild". Being annuals, melons also offer much quicker agricultural development benefits – they are potentially one of every few crops that can be grown on drylands in Omaheke and some parts of Otjozondjupa. The expansion of melon cultivation is however dependent on the development of suitable markets. At present the most profitable product of this fruit is its seed oil, although the bitter fruits might also be suitable for liqueurs. A number of enterprises at various scales in Namibia are already processing melon seed into oil. Preliminary trials have shown that low average oil yields are a constraint, pushing up prices and hampering the development of markets. On the other hand, there is a considerable variation in oil yield between strains, which should be investigated. There is also scope for technological improvements to increase oil extraction rates. Additional market development work is required.

e) Nara

Nara is one of the few indigenous fruits endemic to Namibia. An estimated eight tons of seeds are annually exported to South Africa, which is the only known market, and there are no formal markets for the fruit pulp. An intervention to formulate new and interesting products for local, tourist and export niche markets could substantially increase the value of the resource to the community. Including Nara will also help to make the PIF programme more national in character.

4.3.2 Product/technology R&D

This section deals with technology-related activities that are required immediately or in the first two years of the programme. Other technology R&D work might be suggested later by the results of the processing trials. The technologies used for initial trial processing will almost invariably need to be adapted and scaled up before being suitable for wider dissemination.

a) Juice and oil presses

A small imported screw-press designed for pressing grapes has been tested with marula and demonstrated in northern Namibia by CRIAA SA-DC on behalf of MAWRD. The Katutura Artisans' Project (KAP) can manufacture adapted, portable versions of such a press for dissemination in marula producing areas and, if the intervention is successful, train suitable people to manufacture more. For processing trials in which higher pressures are required, the Kapmond cage-and-plate oil press can be used with its optional nickel-plated fruit cage. This press is also ideal for trial processing of seeds and nuts into oil, and KAP also has a small worm screw oil press for alternative or comparative trials. Given KAP's previous experience with processing various oil seeds (marula, manketti, melon seed, jatropha, castor bean) it is the obvious institution to do oil processing, and possibly also some fruit pressing for other trials.

b) Fermentation trials

Unam's Department of Food Science and Technology at Naudamm has much of the equipment (including a sterile, temperature-controlled environment) and experience required for fermentation trials. MAWRD is prepared to direct some of the funds still available in DRD'sveld products project towards these trials. Initial trials are envisaged at a laboratory scale of 50 litre batches. Scaled-up production of successful products can use technology from the dairy, wine-making or brewing industries.

c) Distillation trials

One of the great advantages of alcoholic spirits is that they can be stored at room temperature for long periods without losing quality. This makes them ideal products for rural areas with limited transport and refrigeration technology – a fact long recognised by the many rural people who produce kashipemborombike as a source of

¹³ This figure, which should not be regarded as authoritative, is based on guesses that there are between a million and 1.5 million marula trees in northern Namibia, of which at least half are female. Considering that 14-year-old marula trees planted in Israel bear 0.5 tons a year and mature trees in Botswana 2 to 6 tons, the Namibian harvest could range between 250 000 tons and 4.5 million tons a year. The effect of rainfall on the productivity of marula is not known.

cash income. However, traditional spirits have been known to cause methanol poisoning, and are of very uneven quality for formal markets. It is suggested that the potential of SME-level distillation to add value to indigenous fruits be investigated in two ways: by conducting controlled fermentation and distillation trials at a very small scale to test the quality of the alcohol produced from fermenting and distilling various fruits in various ways, and by setting up a larger still to process “raw” traditional spirits purchased from rural “moonshiners” into a uniform product suitable for more formal markets.¹⁴ If this arrangement proves to be workable, there might later be need to design better, safer and more fuel-efficient stills for use by “first line” distillers in rural areas. Initial distillation trials can be conducted at KAP and/or Neudamm.

d) Liqueurs

Initial trial formulation of liqueurs can be done on a small scale at KAP, Neudamm and/or other participating institutions. The product development work requires only some food grade containers and recycled bottles, but if and when successful products have been identified, the mixing containers will have to be scaled up and higher capacity bottling equipment will be required.

e) Essential oils and natural flavours

Essential oils and other natural flavours are potentially some of the most valuable products that can be made from indigenous fruits. To identify promising candidates it is suggested that a steam distillation process be used, since it yields a much higher quality product than solvent extraction (which should nevertheless be considered as a cheaper and more cost-efficient alternative where appropriate). A small steam still will be required for initial trials; if successful products are identified, larger stills will have to be purchased or made. Since the distillation of essential oils usually requires a large quantity of raw material, it would be appropriate to use a portable still to conduct the initial trials *in situ*.

f) Concentrated, conserved and dried fruit products

Initial discussion with beverage manufacturers have revealed their keen interest in possibly developing products from indigenous fruits, provided the raw material can be made available reliably and without problems – the most practical way to do this is to process fruit locally into a puree or concentrate that can be transported cost-effectively for further processing at a central facility. There are known and potential markets for unusual preserves, jams, jellies and dried fruit products, which can also be made from puree/concentrate. In this regard it is suggested that general processing trials first be conducted at a very small scale, using kitchen equipment, so as to investigate potential solutions to the key problem of effectively preserving fruit concentrates during storage and transport to the market, and also to make available sample products for market testing. Appropriate equipment can be sourced when more is known about the availability and processing characteristics of fruits for which potential markets have been identified.

On the assumption that the marula resource is probably large enough to support a substantial production of concentrate, it is further suggested that appropriate macerators for making marula puree are investigated early in the programme, so that suitable technology can be sourced in time for much larger production trials during the 2002 marula season. KAP would be a suitable service provider for this work.

Additionally, it is suggested that an appropriate low-cost (probably solar) drier be developed as soon as possible – even if eventually does not become an important fruit-processing technology for commercial markets, it can make a contribution to food security (by enabling household to store more indigenous fruits for own use). Such a drier will also complement initiatives around the improved utilisation of indigenous “spinach” (part of the Unam project). The drier can be designed and built at KAP.

g) Chemical extracts

A systematic evaluation of all the possible chemical extracts to be derived from Namibian fruits and plants is probably beyond the country’s technical capacity at present. However, this should not preclude investigation (with foreign technical assistance if required) of every promising product, or of potentially valuable extracts that can be made with simple methods (e.g. dyes that can be extracted by boiling). Since the identification of such resources falls directly in the ambit of NBRI’s Useful Plants project, it is suggested that NBRI leads a targeted literature search to complement its existing information on the subject – this can be a very useful part of the growth and development of the Indigenous Fruit Database.

One chemical extract that does not require sophisticated equipment is *Acacia* gum, which occurs in most of Namibia, can be harvested sustainably, is easy to transport and store and has a known market as, among others, a food additive. Investigating the market and assessing the potential supply are therefore included in the action plan.

¹⁴ South Africa’s famous KWV wine-making cooperative operated in this manner, buying brandy from small on-farm distillers, before motorised transport became widely available.

4.3.3 Market identification, research and liaison: Funding of

Promoting indigenous fruits beyond the household and local informal market levels implies that someone has to spend time on, firstly identifying products that might interest particular markets, secondly investigating the potential clients in those markets and ways of accessing them, thirdly introducing the products to selected clients (meanwhile attending to the shipping and analysis of samples, confidentiality agreements, pricing etc.) and fourthly liaising closely with the clients until such time as the marketing function can be taken over by the producers or some other private sector actor.

In an ideal world the money to be made would serve as an incentive for entrepreneurs to perform these functions, but it is high-risk work that has not been stimulated adequately by market mechanisms. Nor has it been adequately funded by donors.¹⁵ For these reasons, and because successful and profitable marketing is of such strategic importance to the whole PIF programme, the establishment of a mechanism to deliver flexible and responsive market development work is strongly recommended – as a way to unblock probably the single most restrictive bottleneck in the promotion process, it is an ideal opportunity and vehicle for public-sector and donor intervention in the development of indigenous resources.

It is suggested that, especially from the second year on (when samples of a number of promising products will be available), a significant part of the programme budget besides for marketing work, to be allocated by the IFTT on the basis of results delivered and further work required. This will allow the IFTT to respond flexibly to the dynamic realities of on-going negotiations with clients, while maintaining control of how effectively marketing funds are spent.

4.4 Stakeholders and partners: capacities and roles

This section lists stakeholders/role players who are already active around the promotion of indigenous fruits, or want to get involved in the PIF programme, or have a reason to get involved; it also indicates the possible (non-exhaustive) roles and activities of such stakeholders.

4.4.1 Stakeholders already active/committed

IFTT - stakeholder information exchange, project guidance and coordination (especially inter-ministerial), allocation of discretionary spending, ...

MAWRD - funding (and possibly transport), project planning and supervision, co-operated development support, extension services, officespace, ...

MAWRD (NBRI) - information and database management, expert botanical input (e.g. positive species identification), collection and storage of germplasm, premises and facilities, ...

MHETEC - science and technology policy support, support for value-adding research, possibly use of premises (COSDECs), ...

MET - natural resource harvesting control and guidance, bio-diversity and indigenous knowledge support, ...

MET (DoF/National Forestry Research Centre) - selection, domestication and propagation of IFTs, collection/storage/exchange of germplasm, policy and financial support for commercialisation trials, Community Forests, Forest Inventory (resource identification), ...

MTI - support to marula oil project, SME and trade aspects, facilitation of legal and licensing requirements for alcohol production (including liaison with MoF about excise taxes etc.), product and export promotion, ...

MWACW - support for Eudafano marula oil project (possible support to other women producer groups), ...

NAB - budget administration and consultancy supervision, ...

UnamDFST (Neudamm) - premises, facilities, equipment and expertise for fermentation and other processing trials, ...

Polytechnic – NRM in-service training, engineering, enterprise development, manketti propagation, agricultural

¹⁵This might change if and when the proposed Southern African wild products marketing project (SANProTA) becomes a reality.

economics, ...

CRIAASA -DC - consultancy services, project implementation management services, community liaison services, technical literature searches, market identification and liaison, product development, market development, liaison with SADC producers and stakeholders, ...

KAP - cost-effective technology R&D, manufacturing and training; trial processing of oil seeds, technology maintenance and management support, other processing trials (juice, liqueur, preserves etc.), ...

NNFU - liaison with farmers nationwide, ...

DRFN - liaison with Topnaar community trust, database design support, possible resource assessments during Summer Desertification Programme, ...

Eudafano Women Co-operative and its member associations - major marula stakeholders, community-level partners in harvesting of (other) fruits, commercial marula oil production, trial marula juice production, ...

Ohangwena Forest Trust - community partner (X-OTIC *Ximania* oil project funded by NNF/SIDA Local Environment Fund; trial purchases of other fruits), ...

Topnaar Community Foundation - liaison with traditional owners of !naara resource

CIRAD - project evaluation and advice, technical assistance, investigation of processing characteristics, ...

4.4.2 Stakeholders who have expressed interest

NDC - enterprise development

Ohangwena Regional Council - might provide premises, transport and community liaison services as part of its poverty alleviation project

Omaheke resettlement communities/Oxfams in Namibia/Omaheke Rural Livelihoods Project/Omaheke San Trust - resource users, harvesters, project partners, possibly funding for specific aspects of the work, melon cultivation, oil processing, ...

WAD - marula juice and jelly project at Mahenene, ...

SANProTA - regional (SADC) natural products trade association

4.4.3 Potential stakeholders (not confirmed)

CBNRM groups/projects - communal resource user groups and conservancies (Naye -Naye Conservancy etc.)

Unam (Chemistry, Biology, Agriculture, MRC...) - specialised service providers

Agribank - production and equipment loans

Traditional distillers - partners in spirits component of project

Breweries and beverage companies - possible product development partners, distribution and marketing services, potential clients, ...

Namibia Pharmaceutical Association - medicinal product development and marketing

Yetu Cosmetics - melon seed processor

5 Action Plan

The Action Plan is presented in three parts – a Logical framework of Outputs/Actions proposed under each of the Strategic Steps, a time frame and an indicative budget.