Malawian Macadamias
2012-2020

Strategic Plan for the Malawian Macadamia Industry
Forward

This is the first Strategic Plan to be developed on behalf of Malawian Macadamia Industry with support from Irish Aid and the Business Innovation Facility. Several pieces of work have been done in order to develop this document which has included discussions and workshops with industry stakeholders, economic analysis of industry data, suitability mapping using estate metrological and production data. An industry wide event held at Thyolo Sports Club in November 2011 brought together estates, smallholders, processors governmental institutions and non governmental organisations the first time and has heavily influenced this document. The authors wish to thank all those who have contributed to this work.

The Malawian industry is well established having been set up and its growth driven by the estate sector. The industry has developed processing capacity and accessed high quality export markets. Large tracts of Malawi are suitable for the development of the crop; an opportunity which is beginning to be realised now with considerable plantings maturing in the smallholder sector. Malawi at present is facing a large trade deficit; likely to increase further with the decline in other exports. Strategic investments in the Malawian macadamia industry will increase the contribution this commodity can make to export industries and safe guard existing horticultural and processing jobs. Furthermore crop diversification in the smallholder sector is of national developmental importance opening up new revenue streams for Malawian smallholder producers.

There will be a structural shift required in the industry to incorporate smallholders and to further expand the industry. Estate management systems do not readily transfer into smallholder productions systems. As such work is needed to ensure productivity in the smallholder and non estate sector and provide the institutional framework to handle nut from non estate sources.

The industry has to overcome a number challenges to maintain and enhance its global position. Directing efforts at this juncture to make strategic interventions will put the industry on the right footing to achieve this. Activities identified and highlighted in this plan will work towards this goal they include: development of varieties adapted for Malawi, developing a new generation of professionals for the industry, a dedicated extension service to disseminate good practice and focusing establishments in viable production areas. Exploring the existing patterns of quality and interactions between climate management and crop productivity and quality.

Smallholders have been focused on establishment of the crop and establishing viable networks of farmers paving the way for commercialisation. A alternative approach to working with these organisations is required to nurture commercial entities drawing on estate expertise and experience. Malawi has experienced strong market pull from existing markets such ethically traded smallholder sourced nut and NIS for export to China. The production base by working together can ensure processing stays in Malawi, value chains are established which secure the future of the industry while incorporating new source of nut particularly from smallholders.

The Macadamia industry has historically been over shadowed by other larger or longer established industries such as tobacco, tea and coffee. However the contribution that the macadamia business has and continues to make in supporting the viability of these industries in hard times and contributing to a broad robust export sector cannot be overlooked.

In order to remain competitive and grow on a sustainable basis the Macadamia industry needs to adopt a long term approach. It is hoped that this work helps the industry identify its key needs to grow and succeed and provides an achievable and realistic framework to do so.
Both estate and smallholder macadamia growers have demonstrated that they can produce macadamia for the world market. Smallholders are currently a tiny but growing proportion of the existing industry and will become a significant part over the next 10 years with appropriate support.

The establishment of a productive and efficient industry is greatly aided by planting the right varieties in the right areas to start with. Orchards to be managed well will require the development of capacity at grower level over an industry encompassing smallholders and estates. and a industry wide inclusive approach.

Macadamia will benefit from inputs of research to develop locally adapted varieties and address other key production issues over time. This is an essential component of maintaining competitiveness as other origins have and continue developing new varieties and management techniques. The Malawian industry cannot afford to stagnate and loose ground to rivals.

Malawi is facing an uncertain climatic change impact which will affect the current production base and shape future establishments. There is a significant area suitable for the crop which is yet to be exploited meaning there is room for significant growth in the production from non estate and smallholder growers.

Malawi as a nation needs to diversify its economic base which is predominated by a few key agricultural commodities and develop inclusive value chains for export income and to extend economic benefits to smallholders. Macadamia can assume a leading role as part of a portfolio of viable diversification options.

In order to deliver these outcomes the production base will need to be better managed, growth in volumes will be largely through integrating smallholders into the mainstream industry.
The Strategic Plan

Vision
‘to take the Malawian macadamia industry to the next level of productivity and ensure viability in 20 years time with smallholders as an integral part of that success’

A Industry wide intervention has not been undertaken for since the 90’s. This brought in experts to work alongside the industry to address key challenges at the time of varietal selection, post harvest handling and pest issues. A second intervention designed to meet today’s challenges is needed to sustain and develop the industry into its next phase of development.

Plan
• Will layout key constraints and risks faced by the industry in 2012
• Propose strategies and actions to address key constraints
• Identify short medium and long term priorities
• Propose how to structure the industry to deal with these challenges.
• Outline the resources required to deliver the plan

Objectives
1. Build grower productivity, profitability & sustainability
2. Provide an enabling environment for smallholders to become a viable component of the industry
3. Secure the industries position as a world class macadamia exporter
4. Develop Industry Wide capacity to manage the growth of the Industry

Industry
The Malawian Industry is the 4th largest in the world. The country has large areas of land suitable for the crops cultivation. The expansion in the production base to smallholders can open new and sustainable income streams. Growth of the production base will increase the industries contribution to export earnings and a well trained horticultural workforce.
Overview of the Global Industry?

- Represents 2% of the world nut market, smallest traded nut commodity at 26,000 MT kernel/yr
- Native to Australia it is one of the most recently developed horticultural crops being ‘discovered’ in 1828 and not commercialised until the 1940’s
- Australia the largest global exporter the origin has been challenged in recent years due to climatic impacts of storms and drought as well as having a high cost (land /labour/tax) production model.
- Australia and Hawaii account for 75-80% of global production, Hawaii has gone into decline and Australian industry will continue to grow although at a reduced rate over the next 10yrs
- Highest value of all nut commodities with FOB prices ranging from 7-10 USD per kg for in demand styles
- Macadamia are graded on a 9 point scale based on size from dust to extra large wholes
- Demand is high, popular in Europe and the US for health foods and snacks due to the high proportion of monounsaturated fats, Asia its use is more as a cooking ingredient and as oils
- Applications for the aromatic oil in the cosmetics industry

Why Macadamia in Malawi?

- Highly nutritious commodity providing health benefits for those who grow the crop. Further development of the smallholder sector will lead to more of the nut being made available to national markets.
- Smallholder income diversification as an orchard crop or in wide spacing's alongside staples. There are a number of compatible crops including maize coffee, ground nuts.
- Soil stabilisation offering year round ground cover, contour planting gives fields more structure and reduces erosion.
- Export diversification, in line with the Aswap and National Export Strategy.
- Potential pro poor economic activity as major growth in the industry is likely to come from smallholders organised into cooperatives.
- High value and relatively low volume exportable commodity ideally suited to landlocked Malawi with poor port access and high transportation costs.
- Existing industry and expertise in Malawi provides a solid foundation for further growth and development.
- A large land area is suitable for the crop in the country. Large tracts of land under smallholder management have high potential throughout the country.
- Provides opportunity for inclusive business models to be adopted as the existing industry looks to expand though smallholders transferring capacity and enabling access to export markets and processing facilities.
- Bi products of shell, reject nut kernel and husk have commercialisation potential into a number of different products for the Malawian and export markets to further add value.
- Value adding to reject nut through oil pressing
Delivering the Strategic Plan

An active industry community participating and taking ownership over activities outlined in this strategic plan is an essential component for initiating and managing activities to deliver successful outcomes. This plan will require considerable external support to implement the activities is required to make immediate impacts and start to address longer term challenges. Greater interactions with a wide range external organisations will be needed to deliver this plan. Internally it will require committees to be elected and individuals to assume specific roles. This will require the investment of time from industry managers. Committees roles and tasks must be well defined so tangible outcomes are realised, which bring benefits for the whole industry.

The Tree nut growers association (TNGA) has provided a forum for industry wide issues to be discussed, data collected and information disseminated. Its mandate has so far been focused and has not been involved with the breadth of activities being recommended in this plan.

The industry have identified the need to have a committee to lead the work outlined in this strategic plan. However this needs to be appropriate and develop its mandate over time. Its membership would need to include wider stakeholders involved in the delivery of this plan. The existing forum serves an important role in internal communications between industry stakeholders.

There is willingness for time to provided from the industry to get this off the ground and provide oversight to the implementation of the plan. The industry has managerial capacity as well as insight and technical knowledge essential for the successful implementation of the plan. These actors are best placed to interact and guide experts on what interventions the industry needs and how best to approach putting them into action. Like wise interacting with external experts will expose the Malawian industry to new ideas and practices.

In essence the industry requires a entity with which to manage more complex interactions required to deliver this plan. Likewise this plan cannot be implemented without a broad consensus and support form the industry. Participation will give the industry significant influence over this process and hone the activities into what the industry actually needs. The industry are the key stakeholders as they have the most to loose by decline and are able provide the strategic vision to enable longer term issues to be addressed.

The Malawian industry is not large enough to be able to sustain a large industry body as seen in Australia (AMS) or South Africa (SAMAC). As such the entity established needs to have low overheads, with limited time provide focus and leadership to the process. Flexibility to tailor its activities to current needs and priorities is important to build a proactive rather than a prescriptive project formula. Nurturing strategic linkages with other macadamia industry bodies and research programs will prevent duplication of effort and enable the adaptation of findings elsewhere to this context.

The following page outlines the areas of work which could benefit from greater industry collaboration coordinated by the industry steering committee.
Role and make up of an industry committee

Areas of interest a Macadamia Industry body would be involved

- Quality Bench marking
- Analysis
- Data Collection
- Industry Statistics
- Supply & Demand issues
- Industry Representation
- Investment
- Advocacy
- Strategic Plan implementation
- Capacity Development
- Best practice recommendations
- Post Harvest, handling practices,
- Access to new technologies
- R&D, varietal selection, suitability mapping, pest management
- Technical
- Grower Productivity
- Extension Services
- Quality feedback system to growers on quality
Snapshot of the industry in 2012

- 5 processing factories handling 8,000MT of NIS per year, owned and operated by the larger estates.
- 1,498 MT of kernel exported in 2011 (1,717MT 2010)
- At $8/kg kernel this represents between $9.1-13.7 million of trade per year
- 7000Ha of mature crop have been established in the estate sector over a million trees.
- Expanding smallholder industry establishing 72,000 new trees a year and established over 350,000 trees over the past decade
- 5th largest producer in the world
- Establish quality reputation and high standard of processing exporting to a range of markets particularly USA (35%) Japan (23%) and Europe (19%) account for over 75% of exports
- Use of shell to power drying processes and additional shell often is used in tea drying process which reduces the use of Eucalyptus and creates efficiencies between two important export industries
Establishment trends 1998-2012 in the macadamia industry

- In 2007-2008 the area of crop under estate management was over 7000 Ha. There are 1 million trees established in the estate sector.
- The crop has been steadily growing over the period to 2007 and doubled in size in 10 years.
- Reductions post 2007 are caused by estates turning over old trees.
- Establishments have reduced as the industry has a stock of young trees and limited land resources to expand.
- Smallholder establishments have increased in rate from 2000 and now total 300,000 trees.
Background of Macadamia in Malawi

Bvumbwe Agricultural Research Station (BARS) established trees for evaluation in 1941 and continued to provide research and development services to the industry.

First commercial establishments took place in 1950 on what is now Kumadzi estate in Thyolo District. Expansion of the area under the crop expanded on tea estates in areas unsuitable for tea, coffee and eucalyptus. As a result many of the early establishments were on marginal land, where better land was used the crop responded well, although production was economic on both.

Large strivves were made in the 90’s when work funded by the World Bank conducted bench marking the industry, looking at varietal performance and developing post harvest and pest management systems. The legacy of this program is still felt today with many of the current estate mangers having been trained at BARS during this time.

Establishments have taken place throughout the country although Thyolo is the centre of the industry with the majority of estate plantings and 3 factories in operation. These have taken place in a range of environments from 700m up to 1400m. The crop seems to perform best in areas which do not have long periods of high daily maximums with well distributed rainfall.

Smallholder work started in the 1990’s in 9 districts, supported by the Africa Development Bank under the MSDP project and later through ethical trading companies. Establishments have taken place throughout the country in suitable areas

Propagation is normally from 600/660/695 rootstocks approach grafted to one of 40 clones. Budding, whip grafting and field grafting have been trialled and are being used in the smallholder sector to try to remove some of the barriers to increasing size and rate of establishments

Main clones were originally Hawaiian but have been added to from Australian developed clones in the 1980’s and later the 1990’s. No specific selections have been made in country however work to develop dwarfing and identify key breeding traits has commenced. The increasing protectionism form Australia in the form of plant breeders rights as well as poor monitoring of varieties means Malawi is unlikely to gain access to the next generation of cones to sustain the long term viability of the industry. Furthermore the tree grows larger in the Malawian climate reducing planting density and pest management options, heat tolerance as in other origins is a major issue.

BARS has historically provided research services to the industry however over the last 15yrs as investment in agricultural research declined and donors focused on smallholders and other developmental issues. The decline in services for the whole industry from BARS has lead to any research being conducted in house and has lead to a divergence in practices in the industry

Macadamia is grown as a rain fed crop, apart from a small irrigated area on Kawalazi Estate.

From 2000 the number of processing factories has increased to 6 and the industry matured
Specific risks to the Malawian Industry

Climate change is having an effect on the number of consecutive hot days in the winter dry season, macadamia is sensitive to high temperatures during flowering and nut set which cause premature nut drop thus reducing yield potential. Increasingly rainfall is less evenly distributed and higher proportions fall in powerful storms.

Large variation in productivity and quality from both estates and smallholders. Underinvestment in the skill base to grow as well as research and development has lead to some producers under performing.

World Price fluctuations both excessively high and low damage demand, more consistent world market prices would stabilise demand and make macadamia a more affordable ingredient.

Seasonal foreign exchange shortages, fixed foreign exchange rates limit investment, disrupt procurement and negatively impact on competitiveness. This has become more acute in recent years with the decline in the tobacco sector and a widening trade gap.

Roads to ports Biera, Ncala and Durban are in poor condition and transport infrastructure particularly in Mozambique requires more investment such as the Tete bridge, to reduce costs of sending containers to port. These ports have major logistical challenges which also build up risks in the supply chains.

Container availability has become a major issue brought about by the shortage in foreign exchange reducing imports and therefore containers in the country. Furthermore the transport sector in the country is weak from fuel shortages, expensive due to high maintenance costs of vehicles. Sellable Kernel (SK) % decline due to absence of up to date integrated pest management system, erosion of management capacity to implement best practices and post harvest handling. Practices vary greatly across the industry and as a result some growers routinely get over 30% SK however others frequently achieve under 20%.

Pest populations are not limited by winter kill off and particularly on estates which harbour high residual pest populations, warmer areas are more affected. Smallholders have different pest challenges although lacking the high density plantings found on estates. However the wide variety of cropping systems leaves numerous host plants within orchards and on neighbouring plots.

Theft from estates by organised traders and communities surrounding farms is an increasing problem and the crop harvest coincides with the hunger season. Informal trade in markets account for some of this nut. Again this will be an issue for smallholders through both organised and passive collection of nut from mature fields.

Fire often deliberately started for hunting mice and then are not controlled and storms damage mature and immature trees reducing overall productivity. This is prevalent in the estate sector but smallholders are particularly exposed to this risk due to boundary effect and diverse livelihood activities undertaken on and around smallholder plots, including clearing land, hunting and cooking.
Decline in Kernel Recovery

- Factory kernel recovery data from 5 factories analysed
- Split into 3 classes based on results
- Class 3 has experienced a slump in quality over the past 5 years from which it has not recovered.
- KR% critical to productivity, a 30% recovery means 1 MT of NIS is converted into 300kg of kernel, a 15% KR result in 1 MT of NIS generating 150kg kernel.
- The quality of NIS entering the factory which determines this, thus production systems and NIS handling account for the differences.
Smallholder Development

In the early 1990’s work by Landell Mills identifies and explores the potential for smallholder macadamia development in Malawi. MSDP a 10 yr project funded by the Africa Development Bank sets up a network of 9 large government operated nurseries and several hundred community nurseries. Cooperatives in 9 Extension Planning Areas in the Northern and Central Regions. Significant numbers of extension staff were trained in macadamia agronomy and management.

Despite this large investment momentum waned in the second phase of the project as nursery productivity dropped and the district level staff dissipated to other projects. Many of the districts participating in MSDP were very rural and suffered from contraction in staffing during this period.

To move the industry development forward an alternative approach was adopted of establishing permanent dedicated offices (2001 in Neno, 2008 in Ntchisi, 2010 in Ntchenachena Rumphi) offering macadamia specific services to the new cooperatives. These externally funded organisations could focus on macadamia, establishments and capacities to grow and manage the crop were enhanced.

Interest in the crop is still high nursery productivity has grown to 75,000 trees a year and cooperatives are serving a range of non estate actors with planting material and advice. Over 350,000 trees have been established the majority in the last 4 years thus still to bare their first harvest.

Work has been ongoing during this period to adapt production systems developed for estates into the smallholder sector. In particular issues such as pest and nutrition management are very challenging to smallholders due to inability to mechanise highly fragmented production base and cost barriers. Strives have been made in developing good post harvest practices and grading maintaining crop quality and minimising reject losses.

Considerable interest in from ethical trading companies to source smallholder macadamia from Malawi has enable market opportunities to be developed.

The next phase of development will need to re focus efforts on establishing cooperatives as viable entities. The highland macadamia cooperative union Limited (HIMACUL) was registered in 2011 and serves to represent the interests of all the smallholder growers and manages commercial interactions.
Tree establishment and NIS projections from the smallholder sector

Projected Total NIS production (MT) from the smallholder sector 2010-2020

Number of trees established in the smallholder macadamia industry 2000-2012 and projected to 2016
Growth in the proportion of crop under smallholder management

The size and speed of smallholder establishments has increased in recent years resulting in significant increase in mature trees from 2015.

Smallholder will move from managing less than 1% of mature trees to over 20% over a 10 year period.

Support will be needed to covert the crop potential from large smallholder establishments into NIS and Kernel.

Management of trees and sound crop handling practices will have a large impact on the ultimate contribution to industry kernel statistics, and returns into the smallholder sector.
Key challenges identified

• No industry body to coordinate industry wide activities, this undermines the industries ability to focus R&D or investments and lobby
• Incorporating smallholders into the present industry will require new practices and procedures to take account for smallholder nut without compromising quality
• Smallholders have so far relied upon projects; establishing a commercial focus is a prerequisite for this section of the industry to develop to its full potential
• Trees going into decline earlier and overall declining kernel recovery % impacts on the productivity of the industry.
• Weak understanding of climate crop interactions
• Significant variation in NIH yield and Kernel Recovery % across industry
• Gradual loss of capacity as the managers who have guided the development of the industry so far retire or leave the work force, this is true for all sections of the industry

Key points to be addressed

• Industry body which represents all growers
• Smallholder Development integration into the industry
• Longer term R&D and Climatic Impacts
• Capacity Building and Support Services
• Value Chains and economic Analysis
• Land Suitability Mapping and Recommendations
• Internal and External Support
Suitability of the crop

- Above 1000m in altitude, lower than this the crop is more likely to suffer heat stress and lower rainfall.
- 1000mm of rainfall, ideally well distributed. Which minimises tree stress.
- Avoid areas where are extended periods of high temperatures (e.g. plus 5 days at +32°C). High temperatures at critical periods of the season cause stress. During flowering and nut development stress results in premature nut drop.
- Avoid areas which have very intensive storms on a regular basis and exposed areas. Macadamia is a hard brittle wood thus is prone to wind damage. Some clones more susceptible than others. Hail and heavy rain knock nut off the tree resulting in premature nut drop and more immature to enter buying system.
- Areas with no pronounced cool spell suffer from reduced flowering. Furthermore the lack of cold period enables pest populations to be harboured all year making pest management more challenging.
- More work is needed to make the model more accurate.
- Large tracts of the central and northern regions are identified as suitable.
- The existing industry is constrained in Thyolo as the area suitable is relatively small.
Malawian Macadamia Industry Strategic Plan

Vision:
‘to take the Malawian macadamia industry to the next level of productivity and ensure viability in 20 years time with smallholders as an integral part of that success’

Objective 1:
Build grower productivity, profitability & sustainability

Objective 2:
Provide an enabling environment for smallholders to become a viable component of the industry

Objective 3:
Secure the industries position as a world class macadamia exporter

Objective 4:
Develop Industry Wide capacity to manage the growth of the Industry
1. Industry wide capacity development & technical support:

Will develop the next generation of managers and labour force to guide the industry to the next phase of its development. Resource an industry wide trouble shooting team to support individual estates and smallholder organisations work towards address key challenges and keeping up to date with best practices.

Extension services offered to the whole industry to identify root causes of decline and develop action plans to address decline and or plateau in out put

2. Smallholder Industry Development & building nut volumes:

This new section of the industry has unique needs and is a start up component of the industry, different skills will be required to develop the crop to it full potential. Investment in post harvest infrastructure and finance systems to buy crop will underpin the development of volumes.

Innovative establishment finance options to enable smallholders to establish orchards more quickly and develop more significant income streams.

3. Applied research to maintain industry competitiveness:

Including development of clones / varieties suited to malawi, improving quality and yield, new and novel pest management practices with a focus on stink bug. Better understanding of intercropping is required for smallholder to maximise returns from their multi functional land parcels. Understanding and quantifying the impacts of climate change production.
**Objective 1:**
Build grower productivity, profitability & sustainability through knowledge and R&D

- **Strategy 1:**
  Bench mark current farms and practices

- **Strategy 2:**
  Provide extension and trouble shooting services

- **Strategy 3:**
  Understand and quantify the impacts of climate and climate change on production

- **Strategy 4:**
  Develop clone/ varieties suited to Malawi climate, pest complex and make the crop easier to grow such as dwarfing

- **Strategy 5:**
  Improve quality & yield through sound management practices

- **Strategy 6:**
  Offer an advice service to new growers wanting to enter export supply chains

**Objective 2:**
Provide an enabling environment for smallholders to become a viable component of the industry

- **Strategy 1:**
  Support the development of viable smallholder cooperative enterprises

- **Strategy 2:**
  Invest in post harvest infrastructure to provide a focal point for coop activities and technical management

- **Strategy 3:**
  Develop financial solutions for crop buying and enable smallholders to afford larger establishments

- **Strategy 4:**
  Develop meaningful interactions with the established industry through the Highland Macadamia Cooperative Union

**Objective 3:**
Secure the industries position as a world class macadamia exporter

- **Strategy 1:**
  Build volumes, through smallholders, engaging with medium sized growers and strengthening management of the existing establishment

- **Strategy 2:**
  Develop new market opportunities such as Fair Trade, Organic and rainforest alliance certified supply chains

- **Strategy 3:**
  Review Processing Capacity

- **Strategy 4:**
  Macadamia by product commercialisation

**Objective 4:**
Develop Industry Wide capacity to manage the growth of the Industry

- **Strategy 1:**
  Establish a flexible low overhead industry body to explore ways of strengthening industry cooperation on common challenges

- **Strategy 2:**
  Identify resources to implement the strategic plan

- **Strategy 3:**
  Provide training services to the industry to develop the management skills required in a diversifying and growing industry

- **Strategy 4:**
  Invest in skills and developing linkages with regional & global organisations and experts
### Objective 1:
Build grower productivity, profitability & sustainability through knowledge and R&D

<table>
<thead>
<tr>
<th>Strategy 1</th>
<th>Strategy 2</th>
<th>Strategy 3</th>
<th>Strategy 4</th>
<th>Strategy 5</th>
<th>Strategy 6</th>
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<tbody>
<tr>
<td><strong>Review existing data sets from estates factories and smallholders</strong></td>
<td><strong>Identify common production issues</strong></td>
<td><strong>Review long term meteorological data from existing records</strong></td>
<td><strong>Establish nursery facilities capable of propagating new material</strong></td>
<td><strong>Identify best harvest practices</strong></td>
<td><strong>Establish an information portal for the crop</strong></td>
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<td><strong>Develop survey materials</strong></td>
<td><strong>Develop fact sheets on all key themes</strong></td>
<td><strong>Set up and maintain a meteorological data base for the industry</strong></td>
<td><strong>Identify monitoring sites for longer term trials in a range of environments</strong></td>
<td><strong>Feedback detailed quality assessments to production base</strong></td>
<td><strong>Provide advice and basic training on the crop</strong></td>
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<td><strong>Conduct survey of representative sample of production base</strong></td>
<td><strong>Identify suitable people from within the industry to provide on site and remote support</strong></td>
<td><strong>Further define land classification system to inform new establishments, replanting and extension</strong></td>
<td><strong>Continue crossing of well performing clones with dwarf material</strong></td>
<td><strong>Establish on farm and off farm training services</strong></td>
<td><strong>Connect new growers into extension services and farmers in their area</strong></td>
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<td><strong>Produce individual farm reports</strong></td>
<td><strong>Establish a online resource for relevent publications and media</strong></td>
<td><strong>Explore the linkages between the climate record and patterns in quality and yield</strong></td>
<td><strong>Identify high potential material and establish trials with focus on size, drought resistance and kernel recovery of 40%</strong></td>
<td><strong>Bench marking growers on a regular basis to identify strong and weak practices</strong></td>
<td><strong>Linkage into nursery network and varietal recommendations</strong></td>
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<td><strong>Analyse spread of yields and management practices across industry</strong></td>
<td><strong>Assess impacts of increasing climatic variation</strong></td>
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<td><strong>Comprehensive Bench Marking report, providing detail on current practices throughout the industry</strong></td>
<td>Farms with lower kernel recoveries improve, high kernel recoveries on other farms are sustained throughout the post harvest chain</td>
<td>Suitability maps, insight into the impacts climate has had and could have in the future</td>
<td>Varieties developed that are suited to Malawi and that address issues such as excessive tree size and offer KR of upto 40%</td>
<td>Management practices more directly linked to quality results, reducing losses to pest, poor nutrition, handling and storage</td>
<td>New growers get off on the right foot, making well informed decisions on how to set up their farm</td>
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**Results**

**Comprehensive Bench Marking report, providing detail on current practices throughout the industry**

**Farms with lower kernel recoveries improve, high kernel recoveries on other farms are sustained throughout the post harvest chain**

**Suitability maps, insight into the impacts climate has had and could have in the future**

**Varieties developed that are suited to Malawi and that address issues such as excessive tree size and offer KR of upto 40%**

**Management practices more directly linked to quality results, reducing losses to pest, poor nutrition, handling and storage**

**New growers get off on the right foot, making well informed decisions on how to set up their farm**
### Objective 2:
Provide an enabling environment for smallholders to become a viable component of the industry

#### Strategy 1:
Support the development of viable smallholder cooperative enterprises
- Implementation of business plans for Highland Macadamia Cooperative Union Limited (HIMACUL)
- Build Capacity of Cooperative & Union Staff, through training courses, remote and onsite support
- Develop a comprehensive and well-managed extension service

#### Strategy 2:
Invest in post harvest infrastructure to provide a focal point for coop activities and technical management
- Build and equip 2 further post harvest centres
- Build sustainable systems for buying of nuts
- Survey whole smallholder production base and new planting to build an accurate picture of the current status of the reduction base and enable more accurate projections of smallholder crop to be made

#### Strategy 3:
Develop financial solutions for crop buying and enable smallholders to afford larger establishments
- Explore national markets and means of commercialising grade B NIS and other by-products
- Explore options in financing growing NIS volumes.
- Remove financial barriers which limit the size of smallholder establishments

#### Strategy 4:
Develop meaningful interactions with the established industry through HIMACUL
- HIMACUL represented in industry committees
- Present annual production assessment to factories and provide annual statistics to the industry body
- Exchange visits between estates and smallholders to promote better understanding of the different production systems and bring in estate expertise to the smallholder production system

#### Actions

<table>
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<th>Strategy 2: Invest in post harvest infrastructure to provide a focal point for coop activities and technical management</th>
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<td>Acts</td>
<td>Implementation of business plans for Highland Macadamia Cooperative Union Limited (HIMACUL)</td>
<td>Develop a quality based buying system which rewards good practice and manages crop buying risk for cooperatives</td>
<td>Explore options in financing growing NIS volumes.</td>
<td>Smallholders present projections to the industry body and enter the industry statistics formally</td>
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<td>Build Capacity of Cooperative &amp; Union Staff, through training courses, remote and onsite support</td>
<td>Build and equip 2 further post harvest centres</td>
<td>Identify means which cooperatives can maintain cashflow over the year, diversify into a number of value chains and exploit crop value, generating rural jobs</td>
<td>HIMACUL represented in industry committees</td>
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<td>Develop a comprehensive and well-managed extension service</td>
<td>Build sustainable systems for buying of nuts</td>
<td>Remove financial barriers which limit the size of smallholder establishments</td>
<td>Present annual production assessment to factories and provide annual statistics to the industry body</td>
</tr>
<tr>
<td></td>
<td>Survey whole smallholder production base and new planting to build an accurate picture of the current status of the reduction base and enable more accurate projections of smallholder crop to be made</td>
<td>Explore national markets and means of commercialising grade B NIS and other by-products</td>
<td></td>
<td>Exchange visits between estates and smallholders to promote better understanding of the different production systems and bring in estate expertise to the smallholder production system</td>
</tr>
<tr>
<td></td>
<td>Establish medium to large grower support program</td>
<td></td>
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</tr>
</tbody>
</table>

#### Results

<table>
<thead>
<tr>
<th>Results</th>
<th>Strategy 1: Support the development of viable smallholder cooperative enterprises</th>
<th>Strategy 2: Invest in post harvest infrastructure to provide a focal point for coop activities and technical management</th>
<th>Strategy 3: Develop financial solutions for crop buying and enable smallholders to afford larger establishments</th>
<th>Strategy 4: Develop meaningful interactions with the established industry through HIMACUL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A enterprise road map which sets out milestones for the development of the cooperative. Provide the information resources required to plan and manage establishments and buying operations in place</td>
<td>Smallholder organisations better equipped to manage growing volumes of NIS, manage risk, maintain quality of NIS and cease opportunities with by-products</td>
<td>HIMACUL capable of buying NIS as volumes increase on a sustainable basis. Smallholders establish the crop on a farm plan basis over 1/2 seasons.</td>
<td>Smallholders recognised as an official part of the industry, factories better able to service the smallholder industry processing needs</td>
</tr>
</tbody>
</table>
### Objective 3:
Secure the industries position as a world class macadamia exporter

<table>
<thead>
<tr>
<th>Actions</th>
<th>Strategy 1: Build volumes, through smallholders, engaging with medium sized growers and strengthening management of existing trees</th>
<th>Strategy 2: Develop new market opportunities such as Fair Trade, Organic and rainforest alliance certified supply chains</th>
<th>Strategy 3: Review Processing Capacity</th>
<th>Strategy 4: Macadamia bi product commercialisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Register all 3rd party growers not represented via TNGA or smallholder organisations supplying NIS into factories</td>
<td>Research the potential for each of these standards and make a series of recommendations as to the opportunity to the industry or sub sections of the industry</td>
<td>Review current processing capacity and crop projections for the next 5-10 years</td>
<td>Research to potential uses of macadamia bi-products such as husk, shell and reject nut with focus on maximising value of these commodities</td>
<td></td>
</tr>
<tr>
<td>Develop management systems capable of handling NIS to industry respected standards</td>
<td>Identify industry players interested in obtaining certification of their supply chain</td>
<td>Identify when and where processing capacity will be needed to meet processing needs</td>
<td>Develop specific business plans for factories and post harvest facilities which generate these bi products at different scales</td>
<td></td>
</tr>
<tr>
<td>Create linkages between industry and new growers to support their commercial development with skills and experience from the existing industry</td>
<td>Support industry players realise their standard ambitions</td>
<td>Support the development of proposals, feasibility studies and bankable business plans</td>
<td>Support industry players to identify resources to increase commercial significance of supply chain bi-products</td>
<td></td>
</tr>
<tr>
<td>Identify industry wide standards which can support the strengthening of the origin and maintenance/ improvement in quality.</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

### Results

- Complete registry of macadamia growers in the country, which can provide a mailing list for events, training materials and information. Spread of best practices so that non estate growers produce NIS which can be processed and enter export supply chains.
- Access to new niche markets through adopting commercial standards, securing existing markets though strengthening corporate social responsibility, environmental protection and safety.
- Processing capacity grows with the industry, non estate growers providing they supply NIS to required standard have access to processing and therefore the export market.
- Better understanding within the industry of potential of bi-products. By-products commercialisation act to strengthen the overall business model.
<table>
<thead>
<tr>
<th>Actions</th>
<th>Objective 4: Develop Industry Wide capacity to manage the growth of the Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Agree mandate and makeup of committee</strong></td>
<td><strong>Strategy 1</strong>: Establish a flexible low overhead industry body to explore ways of strengthening industry cooperation on common challenges</td>
</tr>
<tr>
<td><strong>Identify interested donors</strong></td>
<td><strong>Strategy 2</strong>: Identify resources to implement the strategic plan</td>
</tr>
<tr>
<td><strong>Identify HR structure of the industry (smallholders, estates, 3rd party growers and processing factories</strong></td>
<td><strong>Strategy 3</strong>: Provide training services to the industry to develop the management skills required in a diversifying and growing industry</td>
</tr>
<tr>
<td><strong>Identify suitable candidates for advanced training from within the industry and Malawian institutions</strong></td>
<td><strong>Strategy 4</strong>: Invest in skills and developing linkages with regional &amp; global experts</td>
</tr>
<tr>
<td><strong>Convene regular meetings on a quarterly basis</strong></td>
<td><strong>The committee is set up regularly meets and decisions are made and disseminated.</strong></td>
</tr>
<tr>
<td><strong>Register pledges from the industry to co-finance work</strong></td>
<td><strong>The strategic plan is ordered and broken down into fundable work plans. Industry contributions to implementation will ensure the work program is relevant and well implemented.</strong></td>
</tr>
<tr>
<td><strong>Identify gaps in skills and course syllabus to provide industry human resources with the knowledge they require to perform well</strong></td>
<td><strong>Key industry personal are enrolled in a holistic training program which delivers broad knowledge and understanding of the crop and industry as well as specific skills required for their specialism.</strong></td>
</tr>
<tr>
<td><strong>Identify centres of excellence in macadamia and start communication to develop relationships</strong></td>
<td><strong>Expertise developed and identified in key areas where existing capacity is weak. The development of a research and development program financed from a range of sources.</strong></td>
</tr>
<tr>
<td><strong>Hold focus group meetings to explore key issues in detail and propose specific actions to address</strong></td>
<td><strong>Develop more detailed specific proposals which can be taken to donors for funding.</strong></td>
</tr>
<tr>
<td><strong>Develop long term finding plan</strong></td>
<td><strong>Identify candidates, Run courses and exchange visits.</strong></td>
</tr>
<tr>
<td><strong>Identify trainers from industry and external sources</strong></td>
<td><strong>Results</strong></td>
</tr>
<tr>
<td><strong>Dissiminate findings to wider community</strong></td>
<td><strong>The committee is set up regularly meets and decisions are made and disseminated.</strong></td>
</tr>
<tr>
<td><strong>Develop training materials</strong></td>
<td><strong>The strategic plan is ordered and broken down into fundable work plans. Industry contributions to implementation will ensure the work program is relevant and well implemented.</strong></td>
</tr>
<tr>
<td><strong>Key industry personal are enrolled in a holistic training program which delivers broad knowledge and understanding of the crop and industry as well as specific skills required for their specialism.</strong></td>
<td><strong>Expertise developed and identified in key areas where existing capacity is weak. The development of a research and development program financed from a range of sources.</strong></td>
</tr>
</tbody>
</table>
## Activities so far and Next Steps

<table>
<thead>
<tr>
<th>Timeframe</th>
<th>Activity</th>
<th>Support</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>November 2011</td>
<td>First Workshop</td>
<td>IrishAID and BIF</td>
<td>Draft and discussion with Stakeholders, draft program developed for Donors with support from the Industry</td>
</tr>
<tr>
<td>April 2012</td>
<td>Finalised Draft</td>
<td>Irish Aid and BIF</td>
<td>Draft Strategy finalised, follow-up with Donors</td>
</tr>
<tr>
<td>Early 2012</td>
<td>Consultation with Donors and Industry</td>
<td>BIF</td>
<td>Industry to accept draft and next steps and start the process</td>
</tr>
<tr>
<td>Mid 2012</td>
<td>Draft program developed into program for implementation with Donor support</td>
<td>Multiple donors</td>
<td>A formal program based on the strategic plan developed and funded by multiple donors and internal/external commitments; this will have several components of different duration that would suit different donors</td>
</tr>
<tr>
<td>2012</td>
<td>Program commences</td>
<td>Multiple donors</td>
<td>Program commences with a long range perspective and actions (initially 5 years)</td>
</tr>
<tr>
<td>2012 - onward</td>
<td>Industry body</td>
<td></td>
<td>Industry body established and functioning</td>
</tr>
<tr>
<td>2012 - 2022</td>
<td>Smallholder development</td>
<td></td>
<td>A sustainable smallholder sector within the macadamia industry that is commercially based financially viable with goals established for the next 10 years to commercial viability</td>
</tr>
<tr>
<td>2012 - 2027</td>
<td>R&amp;D</td>
<td></td>
<td>Trust fund for R&amp;D established for the next 10 to 15 years: 5 new locally adapted varieties selected and distributed; dwarfing rootstock/interstock quantified; improved pest methods defined and extended; post harvest methods improved and extended; intercropping impacts defined and extended; climate impacts defined and included in R&amp;D and extension support</td>
</tr>
<tr>
<td>2012 – 2017</td>
<td>Capacity Building and support services</td>
<td></td>
<td>Industry training conducted across sectors and materials developed and disseminated, support services established and operating</td>
</tr>
<tr>
<td>2012 - 2013</td>
<td>Value chains and economics</td>
<td></td>
<td>Smallholder value chains quantified and funded; sustainable basis for economic sustainability in place</td>
</tr>
<tr>
<td>2012 -</td>
<td>Land suitability mapping</td>
<td></td>
<td>Land suitability mapping completed and recommendations made, linked to smallholder development output.</td>
</tr>
</tbody>
</table>
## Outline 5yr budget

<table>
<thead>
<tr>
<th>Objective 1: Build grower productivity, profitability &amp; sustainability through knowledge and R&amp;D</th>
<th>Y1</th>
<th>Y2</th>
<th>Y3</th>
<th>Y4</th>
<th>Y5</th>
<th>TOTAL</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$ 200,000</td>
<td>$ 250,000</td>
<td>$ 250,000</td>
<td>$ 150,000</td>
<td>$ 100,000</td>
<td>$ 950,000</td>
<td>17%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 2: Provide an enabling environment for smallholders to become a viable component of the industry</th>
<th>Y1</th>
<th>Y2</th>
<th>Y3</th>
<th>Y4</th>
<th>Y5</th>
<th>TOTAL</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$ 200,000</td>
<td>$ 600,000</td>
<td>$ 300,000</td>
<td>$ 250,000</td>
<td>$ 250,000</td>
<td>$ 1,600,000</td>
<td>28%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 3: Secure the industries position as a world class macadamia exporter</th>
<th>Y1</th>
<th>Y2</th>
<th>Y3</th>
<th>Y4</th>
<th>Y5</th>
<th>TOTAL</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$ 100,000</td>
<td>$ 100,000</td>
<td>$ 200,000</td>
<td>$ 150,000</td>
<td>$ 100,000</td>
<td>$ 650,000</td>
<td>11%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 4: Develop Industry Wide capacity to manage the growth of the Industry</th>
<th>Y1</th>
<th>Y2</th>
<th>Y3</th>
<th>Y4</th>
<th>Y5</th>
<th>TOTAL</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$200,000</td>
<td>$ 250,000</td>
<td>$ 250,000</td>
<td>$ 150,000</td>
<td>$ 100,000</td>
<td>$ 950,000</td>
<td>17%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Program Management &amp; Scientific/Technical support</th>
<th>Y1</th>
<th>Y2</th>
<th>Y3</th>
<th>Y4</th>
<th>Y5</th>
<th>TOTAL</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$ 350,000</td>
<td>$450,000</td>
<td>$300,000</td>
<td>$300,000</td>
<td>$200,000</td>
<td>$1,600,000</td>
<td>28%</td>
</tr>
</tbody>
</table>

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</thead>
<tbody>
<tr>
<td></td>
<td>$1,050,000</td>
<td>$1,650,000</td>
<td>$1,300,000</td>
<td>$1,000,000</td>
<td>$750,000</td>
<td>$5,750,000</td>
<td></td>
</tr>
</tbody>
</table>

The initial phase of the implementation of the plan is anticipated to take 5 years, planning further at this stage is not possible as the nature of activities will need to be reviewed. Furthermore this work stops short of providing detailed activities or budget. The outline budget has been developed alongside the actions developed to implement each strategy. Some activities recommended have a long implementation time whilst others can be set up and competed in this phase. The objective given the most greatest allocation of resources is the second to enable smallholders to become a viable part of the industry which will require capital outlay and sustain cooperative offices while the crop volumes develop from existing establishments.