IKUNGI DISTRICT INVESTMENT PLAN FOR BEEKEEPING

DRAFT

Prepared by:
Future Development Initiatives
(Fu-DI) - May 2015
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>TABLE OF CONTENTS</td>
<td>II</td>
</tr>
<tr>
<td>LIST OF ABBREVIATIONS</td>
<td>IV</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENT</td>
<td>V</td>
</tr>
<tr>
<td>1.0 INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>1.1 Background Information</td>
<td>1</td>
</tr>
<tr>
<td>1.2 Objective of the Study</td>
<td>3</td>
</tr>
<tr>
<td>1.3 Organization Profile</td>
<td>4</td>
</tr>
<tr>
<td>1.4 Terms of Reference (ToR)</td>
<td>4</td>
</tr>
<tr>
<td>1.5 Expected Outputs</td>
<td>5</td>
</tr>
<tr>
<td>1.6 Structure of the Study</td>
<td>6</td>
</tr>
<tr>
<td>2.0 METHODOLOGY</td>
<td>7</td>
</tr>
<tr>
<td>2.1 The Study Area and Context</td>
<td>7</td>
</tr>
<tr>
<td>2.2 Type and Sources of Data</td>
<td>7</td>
</tr>
<tr>
<td>2.3 Data Collection Methods</td>
<td>8</td>
</tr>
<tr>
<td>2.4 Sampling Methods</td>
<td>8</td>
</tr>
<tr>
<td>2.5 Data Processing and Analysis</td>
<td>8</td>
</tr>
<tr>
<td>3.0 LITERATURE REVIEW</td>
<td>10</td>
</tr>
<tr>
<td>3.1 Interdependence between Forestry and Beekeeping</td>
<td>10</td>
</tr>
<tr>
<td>3.2 Other benefits from honey bees include;</td>
<td>11</td>
</tr>
<tr>
<td>3.3 Products obtained from honey bees;</td>
<td>12</td>
</tr>
<tr>
<td>3.4 Benefits for other sectors;</td>
<td>14</td>
</tr>
<tr>
<td>3.5 The National Forestry Policy, 1998</td>
<td>16</td>
</tr>
<tr>
<td>3.6 National Beekeeping Policy (NBP), 1998</td>
<td>17</td>
</tr>
<tr>
<td>3.7 Sectoral Laws</td>
<td>17</td>
</tr>
<tr>
<td>3.8 Status of Forestry and Beekeeping in Kungi District</td>
<td>18</td>
</tr>
<tr>
<td>4.0 FINDINGS OF THE STUDY</td>
<td>22</td>
</tr>
<tr>
<td>4.1 Existing Investment Opportunities;</td>
<td>22</td>
</tr>
<tr>
<td>4.2 Investment Challenges and Constraints;</td>
<td>27</td>
</tr>
<tr>
<td>5.0 FINDINGS</td>
<td>37</td>
</tr>
<tr>
<td>5.1 Potential Investment Opportunities;</td>
<td>37</td>
</tr>
<tr>
<td>5.2 Strategies To Exploit The Identified Opportunities;</td>
<td>39</td>
</tr>
<tr>
<td>5.3 Stakeholders and Their Roles in Exploiting the Opportunities;</td>
<td>53</td>
</tr>
</tbody>
</table>
5.4 The Interventions or Actions Required in Exploiting the Opportunities and Their Geographical Fit .... 58
5.5 The Required Inputs for Interventions: ............................................................................. 65
5.6 Sources of Funds to Finance the Planned Activities: ..................................................... 66
5.7 Critical Risks and Accountability Involved in These Interventions: ....................... 66

6.0 Conclusions & Recommendations .................................................................................. 68

6.1 Conclusions: .................................................................................................................. 68
6.2 Recommendations: ........................................................................................................ 68
6.3 Investment Quick Wins: .................................................................................................. 70
List of Abbreviations
Acknowledgement
CHAPTER ONE

1.0 INTRODUCTION

1.1 Background Information
Ikungi District is one of the two newly established districts in Singida Region located at South East of Singida. The Ikungi District comprises of four divisions, namely; Munga, Ikungi, Ihanja and Sepuka. The National Population and Housing Census 2012 indicates that the District has a population of 272,959 people where 137,781 are female and 135,178 male. Most of Ikungi District inhabitants depend on subsistence farming of sorghum, finger millet, maize, sunflower, sweet potatoes, cassava, cotton, pigeon peas, groundnuts, onions, paddy, lentils and livestock keeping. The average annual income per capita in Ikungi District was Tshs 720,000 by 2011.

Table I: Administrative Set-up and Population of Ikungi District

<table>
<thead>
<tr>
<th>S/No.</th>
<th>Name of Division</th>
<th>Number of Wards</th>
<th>Number of villages</th>
<th>Number of people per Division</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Male</td>
</tr>
<tr>
<td>1.</td>
<td>Ikungi</td>
<td>6</td>
<td>26</td>
<td>33,052</td>
</tr>
<tr>
<td>1.</td>
<td>Mungaa</td>
<td>7</td>
<td>24</td>
<td>29,516</td>
</tr>
<tr>
<td>2.</td>
<td>Ihanja</td>
<td>8</td>
<td>26</td>
<td>35,718</td>
</tr>
<tr>
<td>3.</td>
<td>Sepuka</td>
<td>7</td>
<td>25</td>
<td>37,892</td>
</tr>
</tbody>
</table>

Source: Ikungi District Council, 2015

1. According to the records found at Ikungi District Council Files-Planning Department
Ikungi District has semi-arid climatic conditions with some natural forests, shrubs, and bush thickets while some areas are draught stricken. Many areas of the District are endowed with forests and vegetation that favours beekeeping farming. Presence of trees like, Miombo, Mihingii, Minang’ana, Acacia, Mangoes, cashew nuts and crops such as sunflowers and maize provide the required interdependence system in which bees do play a great role in cross-pollination. The District has 270,300 hectares (2200km2) of forests and woodlands that are scattered throughout the district.²

Despite the presence of an ideal environment for producing high quality bee products due to availability of plant species that produce nectar and pollen for honey bees and plenty of honey bees, beekeeping is not practiced on the commercial scale in the District. Beekeeping was, in the past, being carried on a small scale, mostly, through conventional ways. However, beekeeping has been rapidly growing in recent years with high potential in raising income of the people of Ikungi District.

1.2 Objective of the Study
The Objective of the study is to undertake the analysis of the Forestry and Beekeeping sector in Ikungi District, and scan out; the existing investment opportunities, underlying challenges with a view to developing a District Investment Plan in beekeeping sector that will address, among other things; Poverty Reduction, Environmental Conservation, Gender Empowerment and Climate Change.
1.3 Organization Profile

FUTURE DEVELOPMENT INITIATIVES (Fu-DI) is Non Governmental Organization dully registered with the Ministry of Community Development, Gender and Children under the laws of Tanzania with a Certificate of registration number 00NGO/00005466 dated 17th April 2012. (Fu-DI) offices are currently located at a small Township of IKUNGI District, Market Street, Matongo Road, in Singida Region.

1.3.1 Vision Statement

To find environmental friendly solutions in fighting poverty prevailing within the local communities of Tanzania.

1.3.2 Mission Statement

To identify opportunities that empower people to fight poverty at all levels while sustain the environment at the same time.

1.3.3 Project Personnel Management

Fu-DI is best placed to implement any project on poverty alleviation as its strength is founded on its membership which is made up of mixed professionals ranging from Project Accountants, Business Administrators, Animal Husbandry Scientists, Agro mechanics, Lawyers to Teachers. Fu-DI is able to handle any multi-faceted project of whatever description in Agriculture, Animal husbandry, Beekeeping, Poultry-keeping etc.

1.4 Terms of Reference (ToR)

The ToR's for the Study are as follows:-

(i) To identify the existing forest reserves (natural & planted) within Ikungi District (Government, Community, Game and Private) and their extent of utilization for beekeeping;
(ii) To identity and analyse investment opportunities in forestry and beekeeping sector within Ikungi district;

(iii) To identify and analyse challenges that are currently facing forestry and beekeeping sector in Ikungi district;

(iv) To recommend strategies to exploit the identified opportunities to overcome the challenges, and defining the roles of each key stakeholder;

(v) To analyze and prioritize the interventions/actions required over 5 years;

(vi) To analyze the geographical fit of the interventions/actions by specific areas in the district; and

(vii) To analyze;
    • The financial requirements of such actions or interventions;
    • The human resources requirements;
    • The infrastructure needs; and
    • The environmental concerns including mitigation plans and their associated costs.

1.5 Expected Outputs.

To come up with a comprehensive District Investment Plan in Forestry and Beekeeping Sector for Ikungi District showing the available investment opportunities, underlying challenges, the targeted investors’ and (their profiles), resources mobilization plans, marketing strategies and the governance structures to be put in place for the Plan to be successful. The Plan should create long-lasting linkages and alliances at individuals, community, private institutions and Government sector levels.
1.6 Structure of the Study

The study is structured in Six Chapters. Chapter One is on Introduction, while Chapter Two is on Methodology. Literature Review is covered under Chapter Three. Chapter Four presents the discussion of the key Findings, while Chapter Five makes Recommendations by way of Strategic Interventions required to exploit the available Investment Potentials and the associated costs thereof while at the same time addressing the underlying Challenges. Finally, some Conclusions and Recommendations on priority basis have been drawn in Chapter Six.
CHAPTER TWO

2.0 METHODOLOGY

2.1 The Study Area and Context:

This study was conducted in the four (4) Divisions of Ikungi District. These Divisions are Ikungi, Mungaa, Sepuka and Ihanja. The study covered the whole District because Ikungi District has been selected by the Government to champion the Private sector on Environment - Gender Issues and Climate Change (P.E.G) initiatives through forestry and beekeeping sub-sectors. Ikungi District is among the poorest districts in the country and is experiencing considerable environmental degradation and negative climate change impacts. On the other hand, the District is endowed with plenty of natural resources that provide potential investment opportunities, which, if properly managed and exploited can significantly contribute to poverty reduction in the District.

2.2 Type and Sources of Data:

The study employed both primary and secondary data. First, it started by a desk review of the available information on the status of the forestry and beekeeping and the corresponding investments in the sector in the Ikungi District.

Second, data were collected by way of field surveys in four Divisions and some selected villages.

Third, during the field visits, the study team administered interviews to a number of respondents including Division, Ward and Village leaders, beekeepers, NGO’s and CBOs, religious leaders as well as political leaders.3

Fourth, a number of interviews and consultations were also made at the level of the District administration, where the study team managed to interview the Ikungi District Commissioner, the District Executive Director, the Ikungi

3. A list of Division, Ward and Village leaders interviewed is annexed as Appendix “A”
District Council management and the Ikungi District Counselors. Fifth, the study team also consulted a few influential individuals who come from the Ikungi District but live outside the District, to just gauge their views and perception on investing back home.

2.3 Data Collection Methods:

Data collection was undertaken using three main field instruments, namely: literature review, interviews and consultative meetings. The literature review is intended to draw lessons from investment benefits found in forestry and beekeeping as well as exposing the existing investment opportunities and challenges in the forestry and beekeeping sub-sectors in Ikungi District. An interview guide was developed to assist Focus Group Discussion (FGD) interviews, while the stakeholders meeting was used to present preliminary findings for improving the report. A total of 26 individuals were interviewed and 11 Focus Groups Discussions (FGDs) (with a total of 225 individuals) were organized to discuss the proposed District Investment Plan with respect to the potentials, challenges, strategies to address the challenges, the requisite interventions and roles of stakeholders to be involved.

2.4 Sampling Methods:

Two types of sampling methods were used in this study to obtain the realistic representation of the total population. These are stratified and purposive samplings.

2.5 Data Processing and Analysis

After the completion of the field survey, all data collected were synthesized and analysed. The quantitative data were analysed through the requisite computer packages for comparative and trend analysis purposes. The qualitative data
obtained through interviews with different respondents was transcribed, reviewed, interpreted and consolidated to get the intended messages.
3.0 LITERATURE REVIEW

3.1 Interdependence between Forestry and Beekeeping.

There is a plethora of literature on the correlation between the natural ecosystem (forestry) and beekeeping. It is believed that out of 100 crops - species that produce 90% of the world’s food, honey bees pollinate 70% of them. Albert Einstein, the great, once said that; “if the honey bees disappeared, life on earth would cease to exist in just four years”. In other words, there is a great interdependence between natural environment and honey bees. Without honey bees human life would be in a very precarious situation, because we would lose plants, trees, and even animals. This would significantly damage the spectacular biodiversity of our planet. In this regard, honey bees are seen as true “lubricants” of our natural ecosystem, and human social ecosystem. To the environment, honey bees ensure pollination of plants and improve crop yields. Through honey bees, the environment provides food. Honey bees depend upon the nectar and pollen of flowering plants. Honey bees provide direct and indirect benefits to livelihoods.

Beekeeping contributes to sustainable environment development as well as human livelihoods. Beekeeping generates other much more benefits than honey products. The pollination of crops, flowering plants and maintenance of biodiversity are the most valuable services provided by honey bees.
3.2 Other benefits from honey bees include;

(a) Pollination:
Bees depend on food obtained from the nectar and pollen of flowering plants. In due course of collecting their food, they transfer pollen (male) from the anthers of one flower to the stigma (female) of another. This results in the production of the fertilized seeds necessary for future generation of plants, food and bees too. In this way, plants and honey bees are interdependent. This is a vital relationship that has developed over many millions of years.

Honey bees are recognized as the most generally efficient pollinators because of the following reasons:

(i) Bees have hairy bodies which easily pick up grains of pollen as they move about in flowers;

(ii) Each bee usually visits flowers of a single specie during each foraging trip;

(iii) Each foraging bee does not only go out to collect sufficient food for her own requirements, but must also forage continuously for nectar and pollen to supply the daily food of the colony.

(b) Pollination is necessary for all seed and fruits production.
The importance of pollination is not always fully appreciated, although in some parts of the world the need for pollination has long been understood by farmers;
(c) Crop Production:

Many crops require pollination. The presence of honey bees ensure optimal pollination, production of fruits and seeds that are of the best quality, shape and crops that ripen early and simultaneously. This vital benefit of honey bees is often poorly appreciated and taken for granted in Africa and in our local communities in particular. A recent study (2011) by Bees for Development indicated that in the USA, the increase in crop value and yield attributable to honey bee pollination is worth annually about US 14.6 billion.6

(d) Conservation:

Beekeeping offers a good way for people to create income from natural forests without damaging them. Thus, as a result of this benefit, people voluntarily take efforts to protect the environment. Beekeepers are friends of environment and willing to collaborate to conserve forests and vegetation where bees live and forage.

3.3 Products obtained from honey bees;

3.3.1 Honey:

Bees make honey from the nectar they collect from flowers. The color, aroma and consistency of honey viscosity depend upon which flowers the bees have been foraging. For example, bees foraging on sunflowers will produce a golden honey that granulates (crystallizes) quickly, while bees foraging on avocado trees produce a dark honey that remains liquid over long period. Honey is widely used as a source of income, food and medicine.

---

6. BEES for Development Trust is a UK Registered Charity that work to assist people in developing countries by providing information and advice about apiculture.
3.3.2 Beeswax:

Beeswax is produced by young honey bees. Beeswax is used in cosmetics, pharmaceuticals, polishes, soaps, candles and many other products. It is said that beeswax has more than 300 industrial uses.

3.3.3 Pollen:

Pollen grains are tiny, golden specks, produced by the thousand inside flowers. Insect - pollinated plants need bees to transfer these male pollen grains to the female stigmas of other flowers. This happens as bees move from flower to flower, collecting pollen for food. Bees carry pollen to their nests as pellets stored in hair “baskets” on their back legs. It is possible to harvest these pollen pellets as well by placing a wire mesh at the bee hive entrance. Pollen has a very high nutritional value as being one of the most complete foods in nature. It is said to have around 30% protein and all the essential amino acids, a full spectrum of vitamins and minerals, carbohydrates and fatty acids;

3.3.4 Propolis:

Honey bees collect resins and gums from buds of injured areas of plants, and this dark, glue-like substance is called propolis. Honey bees use propolis to keep their homes dry, draught proof, secure and hygienic. Propolis is used to seal up any cracks where microorganisms could flourish, and their volatile oils serve as a kind of antiseptic and air freshener. Propolis is more expensive than honey and beeswax at international markets;
3.3.5 Royal Jelly:

It is the food manufactured by worker bees and fed to freshly hatched bee larvae. A larva destined to become a queen bee develops in an especially large wax cell inside which worker bees place lavish amount of royal jelly. Royal jelly contains many insect growth hormones and is valued as a medicine, tonic, or aphrodisiac, by some people. Royal jelly can be harvested and marketed commercially. The main market for royal jelly is Europe, the Middle East and Asian countries;

3.3.6 Bee venom:

It is a poisonous liquid that honey bees produce when they bite or sting. It is a very expensive substance in international markets and mostly used by pharmaceutical companies in medicine making.

3.4 Benefits for other Sectors:

3.4.1 Apparent Income Generating Activities

Where there are meaningful beekeeping activities, other people in the community generate income as well through manufacturing of; beehives, honey harvesting gears, honey processing gears and honey packaging materials. Provision of storage facilities, transportation services and marketing of bee products also provide employment and income to people as well.

3.4.2 Land Use:

Beekeeping is a non-extractive and sustainable business. Bees visit flowers found anywhere; so wild, cultivated and even in protected areas. Beekeeping does not exclusively use up land that could be used for crops. It is not necessary for beekeepers to own land or to be settled permanently in order to keep bees.
3.4.3 Low cost:

Beekeeping can be done at a very low cost. Beehives and other equipment or gears can be cheaply made locally and of more interest is that, bees themselves are freely available. Furthermore, bees do not depend upon the beekeepers for food.

Take note that, the costs of establishing a bee farm of a small scale size is not that expensive provided one has the seed money. For instance the full establishment of one hive costs around Tshs. 65,000/= for a Top Bar Hive and 75,000 for a Langstroth type of a Hive. Projected revenue from a single hive per year ranges from Tshs. 80,000/= to 90,000/=.

In a country where the average per capital income is 500 USD, beekeeping represents a viable microeconomic enterprise, which pays for itself in the first year, provides health benefits, and is a practical insurance against crop failure and rampant unemployment.

A Top Bar Beehive                  Langstroth type of Beehives
3.4.4 Expected Results and Benefits

3.4.4.1 The project will be a sustainable source of income.
3.4.4.2 Creation of employment to community, traders, porters, transporters, refinery plants, carpenters etc.
3.4.4.3 Economic Benefits of Honey and other Bee products.

Expected Harvest;

Top Bar Beehives are harvested twice a year

(a) High Seasons Top Bar Beehives produces 20 liters/30 Kg
(b) Low Seasons Top Bar Beehives produces 15 liters/20 Kg
(c) The local Prices of 1 liter/1.5 Kilogram ranges between 8,000-12,000.- in each season.

3.4.5 Gender and Age inclusive:

Bees can be kept by women and men of all ages. Bees do not need devoted daily care as they can be attended while other works or activities go on simultaneously.

3.5 The National Forestry Policy, 1998

This Policy provides opportunities for beekeepers to practice beekeeping in natural forest reserves. The policy is aimed at enabling sustainable management of natural forests and public lands by developing clear ownership of all forests and allocation of management responsibilities to villages, private individuals as well as Government authorities.

Although this Policy appears to favour beekeeping in natural forests, in practice it is in conflict with other national policies advocating for environmental and biodiversity conservation as they limit free access of entering natural forest reserves and tree-cutting. Beekeepers are also barred from entering natural Forests and Game Reserves by Wildlife Policies.
3.6 National Beekeeping Policy (NBP), 1998

This Policy aims at enhancing sustainable contribution of the Beekeeping sector to socio-economic development and environmental conservation. Under this Policy there is the National Beekeeping Programme (NBKP-2001) which is an instrument designed to put into practice the NBP with emphasis on stakeholders’ participation in planning, management, ownership and sustainable utilization of bee resources for poverty reduction, improved biodiversity development and environmental conservation. The Programme has two sub-programmes, namely; Beekeeping Development Programme and Institutional and Human Resources Developments programmes.

3.7 Sectoral Laws:

There are several laws, which have either direct or indirect impact on the Forestry and Beekeeping sector;

3.7.1 The Village Land Act 1999 (Cap. 114 R.E. 2002).

This law allows beekeepers to be allocated land for beekeeping in rural areas.

3.7.2 The Beekeeping Act, 2002 [Cap. 224 R.E. 2002].

This is the main legislation that makes provisions which cater for, among other things, the orderly conduct of beekeeping business including improvements of the products of beekeeping in Tanzania.

3.7.3 The Wildlife Conservation Act. [Cap 283, R.E. 2002]

This Act makes provisions for conservation, management, protection and sustainable utilization of wildlife and wildlife products. It limits human activities in Game Reserves.


It provides for the manner in which natural forests are to be managed and harvested.
3.7.5 Local Government (District Authorities) Act, (Cap. 287, R.E. 2002). Provides powers to local Authorities to make by-laws to regulate many sectors including forestry and beekeeping sector.

3.8 Status of Forestry and Beekeeping in Ikungi District

3.8.1 Forestry

The official records show that the Ikungi District covers the land area of 8,377 square kilometers. Table 2.0 shows the pattern of land use in the District:

Table II

<table>
<thead>
<tr>
<th>Sn</th>
<th>Land Use</th>
<th>Km²</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Available land</td>
<td>8,377</td>
<td>53.45</td>
</tr>
<tr>
<td>2</td>
<td>Land Suitable for Agriculture</td>
<td>2,580</td>
<td>16.46</td>
</tr>
<tr>
<td>3</td>
<td>Water bodies</td>
<td>13</td>
<td>0.08</td>
</tr>
<tr>
<td>4</td>
<td>Land for Pasture &amp; Grazing</td>
<td>2,887</td>
<td>18.42</td>
</tr>
<tr>
<td>5</td>
<td>Shrubs (eneo la vichaka)</td>
<td>1,815</td>
<td>11.58</td>
</tr>
<tr>
<td>6</td>
<td>Total</td>
<td>15762</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Source: Ikungi District Council, 2015

The available statistics at the Ikungi District Council offices do not provide for the precise size of land that is covered by natural forests and that is not covered by natural forests (bare land). However, the officials reported that 30% of the District is covered by natural forests. There are several natural reserves of forests owned by communities/villages, institutions and private individuals.
The planned existing community natural forest reserves are Minyughe and Mlili. Minyughe natural forest reserve which is found within Ihanja Division has about 264,600 hectares and is surrounded by 19 villages namely; Mwaru, Mpugizi, Mlandala, Msosa, Ighombwe, Mungiria, lyumbu, Masweya, Misake, Kinyampembee, Mnyange, Issuna“B", Mkiwa, Minyughe, Mhintiri, Iglanson, Nkhoiree, Nduru and Ufana. The Mlili natural forest reserve which is found in Mungaa division has an average of 5700 hectares surrounded by 5 villages, namely: Mampando, Msule, Ntuntu, Sakaa and Misughaa.

There are also a few scattered natural forest reserves covering about 318.4 hectares owned by villages, institutions and private individuals found in the following wards: Iglanson, Muhintiri, Ihanja, Mtunduru, Misughaa, Mang’onyi, Ikungi, Issuna and Dung’unyi.

The common species of trees found in these natural forests include miombo (Julbernalia globiflora), Minang’ana (combretum padoides), migunga (acacia circummarginata), Itigi thickets and flora vegetation.

The Itigi thickets, which are known for their best organic honey are only found in Ikungi and Manyoni districts in Tanzania. In the world, they are only found in Tanzania and Zambia. It is said that the reserves are in Tanzania.

The increasing population in the District has created pressure on the use of land as a result, deforestation has been on an increase. Deforestation has badly affected some areas of the District, to the extent of causing disappearance of the natural forests and the once famous ancient wetlands. As a result of deforestation, some areas have been left without trees and have become prone to rain run - offs thus causing serious soil erosion. Most affected villages in Mungaa Division are; Kimbwi, Minyinga, Sie, Kinku, Mungaa, Makiungu, Unyaghumpi, Nali, Siuyu,
Unyankhanya and Urimi no longer have natural trees anymore because they have been extensively deforested. The situation is the same almost in all villages of Puma Ward, namely; Puma, Utaho, Wibia, Nkuninkana and Kideka. Dung'uniyi ward is also experiencing the same problem in the following villages; Dung'uniyi, Kipumbuiko, Samaka, Munkinya and Damankia.

On average, the deforested land in Ikungi District is about 270300 hectares (2703 km$^2$), unless some deliberate measures are taken, the size of deforested land will keep on increasing in an unabated manner.

There is also about 200 hectares (1.626 km$^2$) of planted forests comprised of trees like eucalyptus, pines, acacia, and grevillia which have been planted by individuals, villages or religious institutions in the following villages of Mahambe, Dung'uniyi, Ikungi, Makiungu, Puma, Siuyu, Samaka, Dung'uniyi, Sepuka, Ighuka and Kipumbuiko.

### 3.8.2 Beekeeping:

Despite the presence of the semi-arid climatic conditions, complemented by the vegetation that is conducive for beekeeping and abundance of honey bees, beekeeping has not yet been practiced at the commercial level in the district.

#### Table III: Honey Production in Ikungi District as of December 2011.

<table>
<thead>
<tr>
<th>S/No.</th>
<th>Name of Ward</th>
<th>Number of Beekeepers/Groups</th>
<th>Number of Members</th>
<th>Male</th>
<th>Female</th>
<th>Number of Hives</th>
<th>Modern Beehives</th>
<th>Traditional Beehives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Isuna</td>
<td>3</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>35</td>
<td>35</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>Mgori</td>
<td>5</td>
<td>109</td>
<td>55</td>
<td>54</td>
<td>1,966</td>
<td>292</td>
<td>1,674</td>
</tr>
<tr>
<td>3.</td>
<td>Ngimu</td>
<td>4</td>
<td>150</td>
<td>90</td>
<td>60</td>
<td>174</td>
<td>144</td>
<td>30</td>
</tr>
<tr>
<td>4.</td>
<td>Misughhaa</td>
<td>2</td>
<td>14</td>
<td>14</td>
<td>1</td>
<td>120</td>
<td>-</td>
<td>120</td>
</tr>
<tr>
<td>5.</td>
<td>Ntuntu</td>
<td>5</td>
<td>29</td>
<td>23</td>
<td>6</td>
<td>342</td>
<td>18</td>
<td>324</td>
</tr>
<tr>
<td>6.</td>
<td>Lighwa</td>
<td>2</td>
<td>14</td>
<td>12</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table IV Honey Production Quantities and Values in Ikungi District.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Beehives</th>
<th>Quantity of Honey Produced (Tones)</th>
<th>Value of Honey sold (Tshs)</th>
<th>Quantity of Beeswax (Tones)</th>
<th>Value of Beeswax sold (Tshs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>37,250</td>
<td>64.9</td>
<td>34,136,000</td>
<td>5.9</td>
<td>9,440,000</td>
</tr>
<tr>
<td>2008</td>
<td>39,002</td>
<td>69.1</td>
<td>46,800,000</td>
<td>7.4</td>
<td>11,100,000</td>
</tr>
<tr>
<td>2009</td>
<td>38,992</td>
<td>61.3</td>
<td>45,520,000</td>
<td>4.3</td>
<td>12,900,000</td>
</tr>
<tr>
<td>2010</td>
<td>38,611</td>
<td>51.8</td>
<td>43,700,000</td>
<td>4.8</td>
<td>11,700,000</td>
</tr>
<tr>
<td>2011</td>
<td>38,257</td>
<td>53.4</td>
<td>61,000,000</td>
<td>5.1</td>
<td>12,660,000</td>
</tr>
</tbody>
</table>

Source: Ikungi District Council, 2015
CHAPTER FOUR

4.0 FINDINGS OF THE STUDY

4.1 Existing Investment Opportunities;

4.1.1. Forestry:

(a) Timber:
The existing natural forests in the District are comprised of trees and vegetation of different species, which if, properly cared, managed and prudently harvested can be a good and reliable source of income to various investors. There are species of trees like Mninga, Mkola, Mtundu which provide the best kind of timber (hard wood) used in construction industry. It is estimated that the District still has about ___ of these species. 9

(b) Building Materials:
Apart from timber or hard wood, the Ikungi District natural forests are good source of other supportive building materials, which if properly cared, managed and prudently harvested, can generate revenue to investors.

(c) Beehives Manufacturing Materials:
The natural forests in the District have plenty of species of trees that are used to manufacture, both traditional and modern bee hives. With proper guidelines and management, the modern bee hives manufacturing factories or workshops can be established within the District with minimal or low costs.

9 Source: Ikungi District Council, 2015
(d) Gum Arabica:
The District is endowed with different species of acacia trees that are known for production of Gum Arabica. The potential of establishing Gum Arabica farms has not yet been tapped and fully exploited at all in the District. It is currently being exploited on small scale in the villages of Mlandala and Mduguyu. This is a good source of income if pursued on a commercial basis.

(e) Resins Production:
Production of resins can be done in the existing pine trees in the District. Pine trees, do grow very well in Ikungi District due to good climatic environment, and they can as well be planted in plenty on commercial scale. There is an unlimited potential for investors to invest in pine trees in the District and enjoy the benefits arising out of resins. Resins are used in making varnish, medicine and plastics.

(f) Fruits Production:
Ikungi District has a potential of farming or growing of different tropical fruits varieties such as avocados, mangoes, pawpaw, cashew nuts, grapes, guava to mention but a few. This potential has not been tapped and fully exploited on commercial basis.

(g) Plantation of Softwood Trees:
Almost all species of softwood trees that grow in Iringa region do also grow very well in Ikungi District. If concerted and deliberate efforts are made to attract investors in this area, the potential is so enormous.

(h) Charcoal Burning Business:
This business, if carried on in an organized manner through licensing of duly registered charcoal dealers and allocating them land to establish tree plantations, with guidelines on how to harvest and manage those plantations will contribute enormously towards proper forest management.
(i) Financial Returns from (Reducing Emissions From Deforestation and Forest Degradation) REDD

REDD is a United Nations led initiative where efforts to reduce deforestation and promote conservation of forests are awarded with a financial reward. REDD offers investors in forestry, opportunities to develop forest reserves that conserve trees and therefore mitigating against climate change. Currently, the Ikungi District Council or Government authorities have not yet given a thought on this potential.

(j) Mushrooms Growing:

The natural forests found in Ikungi District provide fertile sites for growing mushrooms on commercial scales. The demand of mushrooms in tourist hotels in Tanzania is extremely high. An investment in mushroom production will bring good returns to investors.

(k) Traditional Medicines:

Ikungi natural forests are known to have plenty of tree species that are used as medicines to cure a multiple of diseases. The flora available is a home to many herbs that are used in modern as well as traditional medicines. If well preserved the natural forests can provide an additional source of income through providing natural herbs.

(l) Amarula Drink:

Trees, from which a famous drink, known as Amarula is made from, are found in plenty within Ikungi natural forests. These trees are known by the native name as “MIHUVII”. These trees, if properly cared and increased in number can be another source of income to the people of Ikungi
4.1.2. Beekeeping

(a) **Conducive Climate:**

Presence of the conducive climate in the District that allows healthy growth of vegetation and plants favorable for beekeeping is a big plus. The whole of Ikungi District has a semi-arid climate that is preferred by honey bees. The available official records show that given the available forests and vegetation, the District has the capacity to house or be home to more than 160,000 colonies capable of producing about 2000 and 120 tons of honey and beeswax respectively per year.10

(b) **Swarms of Honey Bees:**

Presence of swarms of wild honey bees, both stinging and stingless, is an added advantage in beekeeping in the District. Availability of bees is a success factor in beekeeping business.

(c) **Availability of Wood to Make Modern Beehives:**

Availability of a wide range of wood that can be used to make or manufacture modern beehives at a low cost is an incentive in conducting beekeeping on a commercial scale.

(d) **Genetic Honey Potentials:**

The Mother Nature has given Ikungi District a broad pool of honey bees and natural forests capable of producing organic honey since most of the agricultural activities carried out in the District do not use artificial fertilizers or pesticides.

(e) **Markets for Honey Bee Products:**

Presence of big markets for all honey products (in local and international), both in, wholesale and retail of honey products is a good incentive for people to invest in beekeeping business.

---

10. Source: Ikungi District Council, 2015
(f) **Enough Land for Establishing Bee Reserves:**

There is a big room for creation of Bee Reserves in natural forests reserves. The District still has ample land with forests or plantations to establish Bee Reserves and Bee Farms.

(g) **Investment in Beekeeping Value-Chain Related Industries:**

There is ample room in investing in industries, factories or workshops dealing with all range of equipment or gears used in the whole value chain of beekeeping industry (harvesting, processing, packaging, quality certification, labeling etc.).

(h) **Employment Opportunities:**

Employment opportunities along the beekeeping industry value chain are enormous. This will enable so many people to earn income throughout the whole value chain.

(i) **Participation of Women and Youth in Beekeeping:**

There is a change of mindset in the beekeeping business these days. In the past, beekeeping was undertaken mainly by male elder people, but today more young people including women are interested in this business after having seen its socio economic potentials.

(j) **Government Support in Beekeeping:**

Unlike in the past years decision makers in the Government (Central & Local) have started taking keen interest in beekeeping in recognition of the economic benefits. The Ikungi District Council has set aside Tshs 172,340,000/= of its 2014/2015 budget to support forestry and beekeeping sector. It has donated 65 modern beehives valued at TShs…………….. to the Community (27 groups of beekeepers) since 2013. Future Development Initiatives (Fu-DI) has also distributed for free 1,200 modern beehives worth TShs………………. to 103 groups of beekeepers."
(k) Availability of Expertise in Beekeeping:

The availability of experts to disseminate knowledge and training on the best and sustainable practices of beekeeping to willing and ready beekeepers is no longer a big problem as it was in the past. Beekeeping experts though still few in number, they are readily available to educate and train people at a fee. Fudi, has trained 103 groups of beekeepers where each group has not less than 15 members.

(l) National Policy on Beekeeping:

Presence of the National Policy on Beekeeping which aims at promoting beekeeping business in the country is another incentive for people to invest in this sector. The Policy is a testimony that the Government is keen to develop this sector.

4.2 Investment Challenges and Constraints:

4.2.1 Forestry

(a) Illegal Harvesting of Natural Forests:

Illegal, uncontrolled and improperly managed harvesting practices of forest products have resulted into disappearance of species of high quality timber such as Mninga, Mkola, Mtundu etc.

The said uncontrolled practices have now moved to even harvesting of alternative species like Msake that are naturally known for conserving water resources. Areas that have been badly affected by this problem include Minyughe, Muhintiri, Iglansoni, Mtunduru, Ighombwe and Mduguyu.

(b) Uncontrolled Fire Burning:

Uncontrolled fire burning during land clearing for agriculture, construction sites, hunting and traditional poor honey harvesting practices, is a major source of deforestation. This happens almost in all villages in the District.
(c) **Presence of Mining Activities:**

Increase of mining activities, (licensed and non-licensed) that do not observe the environmental conservation and protection practices, are of great concern. The most affected areas are Muhintiri, Sambaru, Mang’onyi, Mlumbi, Taru and Matongo.

(d) **Human Activities:**

Forestry encroachment as a result of human activities including building of permanent houses, crop cultivation, overgrazing has also been a challenge to the protection of forestry. Increase in population has resulted in increase in demand for construction sites, building materials, more farms and grazing areas.

(e) **Charcoal Burning:**

Charcoal burning business is rapidly causing deforestation in the District. The fleet of cars and donkeys carrying on bags of charcoal from areas like Lighwa, Ntuntu, Mampando, Sakaa, Isuna, Nkuhi, Kambi ya Mkaa, Muhintiri, Iglansoni to mention but a few, on daily basis is alarming. Charcoal burning not only depletes the trees but also leads to loss of soil fertility and killing of macro and microfauna.

(f) **Knowledge Regarding Importance of Forestry:**

Insufficient knowledge, skills and inadequate understanding of the importance of forestry in the ecosystem by community members and some leaders (Political, Government, Religious, Civil and even Technical Staff) poses a big challenge. Most people, take for granted the presence of forests and vegetation, they think, that, since it is God given and therefore do not need any special care.

(g) **Depletion of Plants’ Pollinators:**

Environmental degradation is reducing or destroying habitat and foraging areas of plants’ pollinating insects and therefore depletes
pollinating insects like honey bees. The depletion of pollinating agents like honey bees will result in having no plants in the long run. This fact is not known to many people.

(i) Poor Coordination:
Lack of coordination among different government departments in policy making, information sharing and poor enforcement of laws and regulations also constrains development of the forest and forest products in the district.

(j) Absence of a District Body to Coordinate Users of Forests Products:
Absence of a District body to coordinate and oversea interests of users of forestry products in the District is impacting negatively on the sector.

(k) Absence of Committees at Village Levels:
Absence of Committees at the village levels that deal with forestry or environmental matters, such as establishing of nurseries, distribution of seedlings, is a constraint towards having sustainable forests.

(l) Shortage of Forestry Officers:
Shortage of qualified professional forestry officers as well as forestry extension officers is another bottleneck facing Ikungi district. The whole District of Ikungi has only two qualified forestry officers while there are no forestry extension officers. Given the size and the geographical set-up of the District it is not easy for these two officers to reach all the villages in the District regularly. This is particularly facing the remote villages where road conditions are also poor thus discouraging investors.

(m) Absence of District Land Use Plan and Titling:
Absence of land use plans and titling has caused unnecessary frictions between different users of land resources. At the planned
community natural forest reserves of Minyughe and Mlili, for instance, there are daily collisions between farmers, cattle keepers and beekeepers, each one claiming to have the exclusive right to use the reserved forests.

(n) **Shortage of Financial Resources:**

Due to financial constraints currently facing the Ikungi District Council, it has not been possible to date to complete the exercise of surveying the two natural forests reserves and gazette them. Again, shortage of the financial resources has resulted into the Councils’ failure to employ the requisite number of forestry District experts and even equipping the present ones with necessary working tools.

(o) **Political Interferences and Conflict of Interests:**

The political interference by politicians on environmental issues in Ikungi District is a major source of environment degradation. The politics of Ikungi District are dominated by two political parties, CCM and CHADEMA. Whereas CCM, which is the ruling party is advocating for the best practices of conserving the environment, CHADEMA is advocating the opposite! CCM Government has been relocating people from the natural forest reserves and settle them in the villages, CHADEMA to the contrary is telling the same people not to move, from forest reserves under the pretence of democracy (i.e. they have democratic rights to live in those reserves!!). While CCM Government is fighting against unlicensed charcoal dealers, CHADEMA is encouraging them to continue with that business, and sometimes even provide legal assistance to those who are booked for the offences of illegal charcoal business! CHADEMA is doing all these for political and not community interests at all.

4.2.2 **Beekeeping:**

(a) **Environmental Degradation:**

The speed of environmental degradation/deforestation in Ikungi District has affected the beekeeping industry in a big way. Thirty to fifty years ago, there were many thick natural forests in almost
all villages in the District, composed of a variety of species of trees and vegetation surrounded by reliable wetlands, providing people with many resources. Most of these natural forests were protected through various cultural and traditional rules and beliefs. These natural forests have been natural homes to honey bees population since time immemorial.

Today, there is a noticeable drop in the honey bee population compared to the past. In the past, dark swarms migrating from overpopulated colonies to establish new colonies were a common site, but these days, such sightings are rare. There is no doubt that, changes that are taking place in the environment are also affecting their behavior. According to a number of local beekeepers interviewed, even the seasons for harvesting have changed dramatically.

(b) Awareness on the Potentials Offered by Beekeeping:

Low awareness on the economic potentials found in beekeeping sector among the local communities in the District, (including the government, political, religious, NGO’s, CBO’s and media leaders), has contributed to the present low pace in beekeeping business in the District.

(c) Inadequate Science-Based Information:

Inadequate science-based information guiding beekeeping practices and decision making particularly in the areas of bee sites preparations, the right bee-hives to use, honey production, harvesting, transportation, processing, packaging, quality assurance, and marketing intelligence methods.

(d) Lack of Coordination along the Chain-Value:

Lack of coordination along the entire chain-value, thus minimizing the ability to establish and maintain sustainable and profitable beekeeping industry. Right now, each stakeholder in the beekeeping
business is confined on his area of “engagement” and not concerned with what others are doing in the Chain-Value.

(e) Lack of Standards for Other Bee Products:

Lack of standards for honey bee products (other than honey) and awareness by producers of existing honey standards has been constraining development of the sub sector. Not many beekeepers are aware of existing standards.

(f) Shortage of Qualified Professional Persons:

Shortage of qualified professional persons in the value chain in beekeeping sector is a major constraint. The Ikungi District does not have even a single qualified beekeeping officer; leave alone a field extension services officer. There are no quality assurance experts as well.

(g) Use of Pesticides in Farming:

In some areas, vegetable and crop farmers, particularly, those growing green vegetables on a large scale, are using pesticides in their farms to control insects and pests. Pesticides do kill honey bees when they go for foraging. The green vegetable farms at Mkiwa village for instance, use pesticides, thus, making the bees foraging areas around not fit for beekeeping as the honey to be made by bees foraging around is contaminated.

(e) Poor Beekeeping Practices.

Many beekeepers do not understand the best beekeeping practices. For example, it is not bee-appropriate to suppress colony development early by extracting too many combs with bees or by expanding the brood space too much. While this practice is not desirable, but that is what most beekeepers do during harvesting.

(f) Absence of Linkage Between Beekeeping and REDD:

There is no link between Beekeeping and Reducing Emissions from Deforestation and Forest Degradation (REDD). If REDD’s Rules are properly followed, can offer beekeepers opportunities to develop Bee
Reserves which will conserve both bees and trees as well as mitigating against climate change. The current National Beekeeping Policy (NBP) does not adequately address the issue of Bee Reserves in relation to REDD, despite the fact that REDD is an important global initiative.

(g) Absence of Guidelines to Guide Beekeeping in Gazette Forests and Game Reserves:

Absences of clear guidelines on how to conduct beekeeping activities in gazette Forests and Game Reserves is negatively impacting on the sector. There are no such guidelines on the current National Beekeeping Policy. Beekeeping is an environmentally positive activity and with the right structures in place, it is fully compatible with protected areas status.

(h) Quality of Honey.

Although Ikungi District is known for its organic forestry honey, quality of its honey has been a matter of concern. About 95% of the honey produced in the District comes from the traditional local style-hives and a few modern hives. The honey in these hives is completely clean but quality starts deteriorating the moment beekeepers begin to handle it from harvesting, transporting, processing, packaging and labeling, all the way to the market.

(i) High Costs of Beekeeping Gears/Equipment's:

The cost of manufacturing of modern beehives, acquisition of honey bee harvesting gears, honey processing equipments, honey storage facilities, honey packaging materials and labeling is very high. The modern containers for storing honey are too costly for most beekeepers; as a result honey is stored in old plastics and glass bottles (e.g. empty Konyagi bottles) and sold either on the street or alongside other produce on the market stalls, which is not hygienically correct/proper.
(j) **Absence of Honey Collection Centers:**

There are no honey collection centers that are connected to reliable buyers. Each beekeeper keeps his/her honey products at his/her own home and in environments that are often not hygienic at all. Collection centers that are connected with reliable buyers can reduce transactions costs and increase profit for every beekeeper selling honey bee products through these centers.

(k) **Absence of District Land Use Plan:**

Currently the Ikungi District does not have a Land Use Plan; therefore, it is not easy to ascertain at this point the total size of land that will be set aside by the authorities to establish modern apiaries or Bee Reserves.

(l) **Absence of a District Formal Body to Coordinate and Oversee Beekeeping Industry/Sector.**

The importance of the body to coordinate standards relating to; the proper beehives, harvesting equipment/gears, packaging containers, bee products, quality assurance as well as issues relating to research results, trade policy and regulatory frameworks does not need any special emphasis at all. Such a body is direly needed.

(m) **Lack of Education and Training on Beekeeping:**

Beekeeping education, training and extension services at all wards and villages in the District are missing.

(n) **Beekeepers Associations:**

Absence of Beekeepers Associations within the District to promote networks and forums for sharing beekeeping information, compounds the challenges facing beekeeping in the District. As of now, there is no such an Association.

(o) **Poor Coordination Within the Government:**

Lack of coordination among different government departments within the Ikungi District Council (Forestry, Land, Agriculture, Beekeeping,
Wildlife, and Environment) in policy making, enforcement of laws/regulations and information sharing hinders the development of Beekeeping sector in the District. Each department seems to be dealing with its own policy and law enforcement independently.

(p) Lack of Knowledge Among Consumers Concerning the Quality of Honey Products:

Many beekeepers do not understand what kind of honey is the best and needed in the market. For instance, many retail consumers of honey think that the best honey is the white one harvested from unripe combs, which is totally wrong as the best honey is that harvested from black sealed combs.

(q) Lack of Beekeeping Demonstration Farms:

Absence of demonstration sites of beekeeping where community members can visit and learn from best practices of modern beekeeping is also constraining the pace of developing beekeeping sub sector in the District. Demonstration farms are regarded as learning sites where farmers can learn by practice. Currently there is only one such demonstration farm in the Ikungi District managed by Fu-DI at Mahambe village.

(r) Lack of Working Tools:

Requisite infrastructure to enable Ikungi District Council professional staffs to visit beekeepers at the villages is lacking. Lack of working tools and facilities affect good governance and sometimes compromising accountability in service delivery. The District does not have enough vehicles, motorbikes, computers, stationeries and moving cameras needed for field works.

(s) Effects of Draught:

Prolonged length of the dry spells and increased draught severity reduce available water for honey production and flowers formation.
This problem has in some occasions caused abscondment of colonies in some areas.

(t) Negative Minds About Beekeeping:

The general mindset of the people within the District is that beekeeping is a business for people living in the “bush” and not for urban people. The general thinking is that, beehives should be entirely erected in the forestry and not elsewhere!

(u) Low Entrepreneurial Skills:

There are very low entrepreneurial skills among most of the people living in rural areas of Ikungi. This is due to low literacy level as well as negative attitudes towards investments.

(v) Lack of Long Term District Development Plan:

Lack of Long-term District Development Plan and Villages Land Use Plans in Forestry and Beekeeping sector in the District and Villages do hinder the sustainable development on commercial basis of forestry and beekeeping businesses in the District.
CHAPTER FIVE

5.0 FINDINGS

5.1 Potential Investment Opportunities:

5.1.1 Forestry:

The Study has established that there are several investment opportunities that can be pursued in the Forestry sector in Ikungi District, if the requisite conducive environments are put in place. The District is endowed with natural forests made up of different species of trees and vegetation. These forests, if properly managed can be a good source of income to investors and the people of Ikungi district, through employment, harvesting of hard wood, building materials, fruits and charcoal. If properly managed, the acacia trees found in the District can produce a non-wood product called Gum Arabica for export. The District has plenty of pine trees which can also be used to produce resins. The climate in the District is also very conducive for production of mushrooms. No one has ever ventured into these new products in the District that is, Gum Arabica, resins and mushrooms. Furthermore, investors can as well invest in plantation of different species of softwood since the climatic conditions in the District do allow them to grow.

There is ample land to invest in plantations of fruit plants such as mangoes, avocados, cashew nuts, guava and grapes since they can prosper well in the natural climate obtained in the District. Furthermore, there is also a room for local communities to earn money through REDD, a United Nations led initiative, by properly managing the existing natural forest reserves or developing planted forest reserves that conserve trees as well as mitigating against climate change and register the same for REDD awards.
5.1.2 Beekeeping:

The Ikungi District is endowed with a natural climate, vegetation and plants that are most favorable for honey bees. Availability of swarms of honey bees is an exceptional advantage to the District. The District has; plenty of trees that are used to manufacture beehives at a low cost, enough land for establishing Bee Reserves and Apiaries and a good number of women and youth who are interested in beekeeping. Currently there are no industries or factories that manufacture equipment or gears used in the whole value chain of beekeeping. This absence is a potential in itself, waiting to be tapped by investors. The demand for bee products, both in local and international markets, is ever increasing, so it is an incentive for people to invest in beekeeping. Last but not least, the central location of Ikungi District, served by a tarmac highway, reliable and passable feeder roads and a railway line makes it easily accessible. Furthermore, headquarters of the four Divisions in the District are all connected to the National Grid Power, so establishment of any factory to cater for Beekeeping industries is feasible.

(a) Obtaining Challenges or Constraints in realizing these Opportunities:

The challenges or constraints that face the above identified investment opportunities in Forestry and Beekeeping sectors are almost similar if not identical in many aspects. The Study has established that there is an alarming rate of environmental degradation caused by the increasing human activities in the District as a result of poor agricultural farming practices, illegal harvesting of natural resources, uncontrolled fires and poor beekeeping practices. Lack of knowledge and awareness among the majority of community
members on environmental issues is a contributing factor to the environmental degradation. This challenge is compounded by the fact that the level of literacy in the District is very low which contributes to people’s failure from practicing environmentally sustainable agriculture, livestock keeping, beekeeping practices and protection of natural resources against degradation. Absence of a formal body to coordinate and oversee the Forestry and Beekeeping sector in the District has in a way contributed to interests of stakeholders in this sector not being addressed at all. Lack of the District Land Use Plan has also contributed to the current state of affairs in this sector, as one cannot ascertain which land is or will be set aside for Forest Plantations or Bee Reserves. The Chain-Value in Beekeeping has not been addressed as a package since each player in the chain does his or her own business independently without having formal coordination with other players in the chain. The usual challenge or constraint of shortage of financial resources is also central to realization or exploitation of some of the obtaining investment potentials in the sector.

5.2 Strategies To Exploit The Identified Opportunities:

5.2.1 Strategies That Apply to Both Forestry And Beekeeping:

(i) Creation of Formal Groups of Beekeepers and Users of Forests Products:

The business of beekeeping is currently being carried on solo basis by most of beekeepers. Even dealers in forestry products are carrying on their businesses on individual basis. In order to have an orderly manner of coordinating and managing the beekeeping and forestry businesses within the District, there is a need to ensure that most of the
operators in this sector, exist and operate in formal groups duly registered and where possible through the established Associations that cater for their interests. It is easy to manage and conduct trainings on environmental and climate change issues through formerly existing groups or Associations as opposed to individuals operating independently. Through the registered Groups or Associations, it is easy to coordinate and oversee their interests and have dialogue with the Government, Development Partners and Investors on various issues of mutual benefits to all stakeholders in the sector.

(ii) Provision of Requisite Education, Awareness and Knowledge on Environmental and Climate Change Issues, Including the Governing Policies and Laws:

There is an urgent need to create awareness of the local communities through their forest and beekeeping registered groups within Ikungi District on environmental and climate change issues through special tailored trainings. Stakeholders need knowledge on the way these issues affect their daily livelihoods with a view to sensitizing them to embark on production practices that take into account sustainable environment management systems. The tailored trainings should, among other things inform the community the effects of climate change and the best ways of addressing the challenges associated with climate change in forestry and beekeeping sector. The trainings should aim at building the capacity of the local community to adapt to the adverse effects of climate change through sustainable use of their natural resources.
(iii) Setting Aside Land for Establishing Forest Plantations, Bee Reserves as Well as Model-Bee Farms/Apiaries:

In order to address the question of availability of Land, the District Council should have a Land Use Plan that sets aside land for natural forests, forest plantations, Bee Reserves and Apiaries. Without having land specifically issued for development of Nurseries, Forest Plantations, Bee Reserves, Apiaries and Api-Agro-Forestry related industries, the investment potentials in the sector cannot be fully exploited.

Beekeepers as well as Forest plantations owners need to have Title Deeds to the land where their businesses are being operated from. They need to use the title deeds not only to secure their land from encroachment but also for pledging them as collaterals to access loans from financial institutions when the need arises.

The District Council should ensure that all the land for the above purposes is surveyed. Guidelines on the proper use of such land in the District need to be developed urgently and distributed to all Villages.

All villages in the District should be directed to set aside land for the above purposes too. Investors interested in establishing forest plantation and apiaries in Bee Reserves should be given first priority in land allocation.

(iv) Recruitment of More Forestry and Beekeeping Officers in the District:

As noted earlier, currently, the Ikungi District Council has only two Forestry Officers and not a single Beekeeping Officer. There are no field extension officers for forestry as
well as beekeeping business. In order for the above identified investment potentials in this sector to be economically exploited, recruitment of more Forestry and Beekeeping Officers as well as the field extension officers is critical. Experts in Forestry and Beekeeping businesses are needed to advise the local community at village levels.

The identified potentials can be tapped efficiently if there is enough technical staff to give advice, given the big number of villages (98) in the District. The Central Government and the Ikungi District Council should find a way of addressing this challenge the soonest possible.

(v) Searching for Sustainable Financial Resources to Fund the Strategies:

The success of most of the Strategies proposed hereto to address the identified Challenges, anchors on the availability of financial resources. Thus, if sustainable financial resources are not secured, the Investment Plan envisaged may not be a success. So, the task of identifying and mobilizing the financial resources is a critical one for the success of the Plan. Reliable and sustainable sources of Financial Resources need to be identified and professionally pursued.

(vi) Coordination Along the Entire Value-Chain in Beekeeping and Forestry Management:

The coordination among different government departments (forestry, land, environment, beekeeping) in policy making, enforcement of laws/regulations and information sharing is critical. Experience has shown that each government department administering a certain policy or law, always treat the policies
or laws under it as being superior to other policies or laws administered by other departments. This has created problems in areas where policies and laws are conflicting on certain matters. There is therefore a need to ensure the Government Departments coordinate and harmonize their working relations and, in particular, the Guidelines or Circulars issued to the community below for implementation.

(vii) Establishment or Strengthening of Land, Environment, Forestry and Beekeeping Committees:

There is an urgent need to ensure that every Village in the District has a committee to oversee all matters related to Land, Environment, Forestry and Beekeeping. Such Committees should among other things; be responsible for allocating land for Bee Reserves, Apiaries, Nurseries and Forest Plantations. Furthermore, such Committees should supervise the Management of Village Bee Reserves and Apiaries as well as Village Nurseries and Forest Plantations.

These Committees should prepare By-laws relating to Land, Forestry, Beekeeping and Environment Management and forward them to the Villages’ General Meetings for approval before the same are forwarded to Wards’ Development Committees, for vouching and on-ward transmission for final approval by the full District Council made up of Counselors. The Village Committees are also responsible for ensuring that prohibited activities do not take place in the Gazetted Bee Reserves.

(viii) Formulation of Policies and Promulgation of Laws that Cater for the Interests of Forestry and Beekeeping:

The Government (Central & Local), should ensure that all its Policies that have direct and indirect bearing to the Forestry
and Beekeeping sector are harmonized with a view to removing all conflicting clauses or provisions that do not seem to support the sector. For instance, all fees, (export fees, quality assurance fees) and fiscal charges on imports of materials or equipments used in the Value-Chain of Beekeeping are tax exempted.

(ix) The Government to take a Pro-Active and Lead Role in Addressing the Challenges

For the District Investment Plan to be a success the Government, should take a pro-active lead role, in formulating the right policies, conducting or coordinating researches, developing the curriculum and training materials on the sector and, coordinating all the stakeholders activities in the sector, and also providing access to international markets.

(x) Budget for Forestry and Beekeeping Sector Development

Both, Central Government and Ikungi District Council should set aside enough budgets to cater for the Forestry and Beekeeping sector Development. Enough funds should be made available for training and employment of more experts in the sector, as well as building of the requisite infrastructures.

5.2.2 Strategies That Apply Specifically to Each of the two; (Forestry and Beekeeping):

(a) Forestry:

(i) Establishment of Tree Nurseries and Distribution of Seedlings:

Currently there are several Villages in the District where the deforestation effects are so conspicuous. In villages such as Kimbwi, Sie, Kinku, Unyaghumpi, Nali, Urimi, Siuyu, Wibia, Dung’unyi, Damankia, Samaka, Puma, Utaho, Mahambe, Nkuninkana and Minyinga, there are no natural
trees at all in most of these areas. The land found around is so bare without any meaningful vegetation. There are only a few scattered plantation forests of soft woods in some of these villages. In order to offset deforestation in these villages, there is a need to urgently launch Api-Agro-Forest Programmes. Such programmes should go hand in hand with public awareness on the environmental and climate change issues advocating on the importance of trees and vegetation in the sustainability of the environment.

(ii) **Promotion of Non-Traditional Forest Products**

The local community in the Ikungi District is commonly used to the traditional forest products like, timber, wood, charcoal but not to non-wood forest products like Gum Arabica. Gum Arabica is a product produced from acacia trees, which are abundantly available in Ikungi District. Gum Arabica is a forest product that can commercially be exploited and sold in international markets. The Ikungi District is endowed with a lot of acacia trees of various species.

If deliberate efforts are made, Gum Arabica can be another source of income for the natural forests operators or owners.

The same applies to products like resins which are obtained from pine trees. The pine trees do grow very well in Ikungi District and therefore can be planted in plenty with a view to producing resins as a source of income.

(iii) **Establishment of Fruits Farms and Softwood Plantations**

The climatic conditions obtaining in Ikungi District are conducive for plantations of fruits producing plants such as mangoes,
avocados, cashewnuts, grapes, guava, oranges and pawpaws. There is a need to have a dedicated Commercial Trees Planting Scheme within the District with a view to establishing Special Nurseries to prepare Seedlings for fruits as well commercial tree Plants.

(iv) Registration with REDD-Initiatives

REDD is a United Nations Initiative where investors in efforts to reduce deforestation through management of natural forests and plantations, and conservation of forests are awarded with financial rewards. The Ikungi District Council may wish to register the two natural forests reserves, namely; Minyughe and Miliili for the award with the requisite authorities, if the two reserves meet the required test.

(v) Licensing of Charcoal Dealers:

In order to address the issue of Forests depletion through the charcoal business, the Ikungi District Council, instead of illegal fighting with charcoal dealers, should rather encourage and promote registration of formal groups and associations of charcoal dealers and license them, give them guidelines and titles of land to own and operate sustainable forest plantations for production of variety of forest products such timber, charcoal and wood fuel. This way, investors in charcoal business will significantly contribute towards the proper Forest Management in a sustainable way.

(vi) Promoting and Signing of Joint Forest Management Agreements and Community Based Forests Managements with more Villages:

In order to ensure that Communities take part in security, monitoring and Management of the Natural Forests Reserves and Forest related activities, there is a need to sign the above
Agreements with all Villages surrounding such Forest Reserve. The Agreements should expressly provide that, a certain percentage of fees payable by buyers of harvested trees will be retained and shared by the Villages surrounding such reserves. This way, the illegal harvesting and invasion of the natural forest reserves will be reduced.

(b) Beekeeping:

(i) Specialized Training in Modern Beekeeping Practices.

In addition to trainings on the importance of environment in beekeeping, beekeepers need specialized and tailored trainings on;

Modern and traditional beekeeping; beekeeping seasons, choice of apiary sites, beehives preparation and installation, management of beehives and colonies, bee enemies and their control, safe harvesting methods, beekeeping products, bee products transportation, honey processing, separating honey from beeswax, filtering, settling, storage, quality assurance/control, packaging, bottling, labeling and marketing in both local international markets.

(ii) Increase of Modern Bee Hives in the District:

It is believed that 95% of honey produced in the District comes from traditional beehives since there is still a small number of modern hives (box bee hives). The reasons advanced for the small number of modern beehives is the high costs of acquiring or manufacturing them. In order to reduce the acquisition or manufacturing costs, the Ikungi District Council or the Tanzania Forests Services Agency can be requested by Beekeepers Associations or NGO’s like Fu-DI that are currently making beehives and distribute them for free to various groups,
to allocate specific number of trees from natural reserves to be harvested for purposes of manufacturing beehives and distribute them to the beneficiaries. In the same vein, groups of Beekeepers may as well make such applications direct to the Ikungi District Council or Tanzania Forests Services Agency (TFS).

(iii) Establishment of Industries or Factories to Produce Equipment or Gears Required in the Value-Chain of Beekeeping Industry.

The high costs of equipments and materials used in the whole value-chain of beekeeping can be considerably reduced if industries or factories manufacturing such equipment or honey processing plants equipped with modern processing machineries, quality assurance equipment, the right packaging containers and barcodes as well as labeling materials are built or supply centers are established within Ikungi District.

For such industries or factories or supply centers to be established certain factors making a business case to investors must be in place. Such factors include; enough and sustainable supply of honey, stable power supply, accessible roads to the supply and markets areas, high demand of bee products and cooperation from the Government and local community within the District. A case can be made to attract investors since the key prerequisite factors are in existence.

(iv) Establishment of Honey Collection Centers.

There is a need to sensitize beekeepers or buyers of bee products to establish honey collection centers that will be connected to reliable buyers. Such centers will reduce transaction costs and increase profit for every beekeeper selling honey through these centers.
If there are reliable quantities of honey supply, collection centers will competitively be established within a short span. What the investors want to see is the presence of sustainable quantities of honey to justify the investments in establishment of collection centers.

(v) **Formalization of Beekeeping Activities in Forest and Game Reserves.**

Currently beekeepers are not allowed access to Forests found in Game Reserves by Wildlife Regulations. There is a need to formalize beekeeping activities in Forest and Game Reserves. Beekeeping is an environmentally positive activity and with the right structures in place, it is fully compatible with protected area status. However, there are no Guidelines for this in the current National Beekeeping Policy. There is a need to set out clear roles and responsibilities for all stakeholders, especially the beekeepers. Beekeepers are required to know what is, and what is not allowed in a protected area.

They need to know their responsibilities, what kind of User-Agreements to be in place or fees to be paid.

(vi) **Creation of the Link between Beekeeping and REDD.**

The current National Beekeeping Policy (NBP) does not adequately address the issue of bee reserves in relation to REDD despite this now being an important global initiative. Deliberate efforts need to be made by the Ikungi District Council to have the two natural forest reserves of Minyughe and Mlilii registered for REDD’s award consideration. This will incentivize the villages surrounding these Forest reserves to take more care in managing the forest reserves if they are ensured that in so doing they will be financially rewarded.
Furthermore, REDD can offer beekeepers opportunities to own trees plantations and establish bee reserves which conserve both bees and trees, as well as mitigating against climate change.

(vii) Control Use of Pesticides.

Though use of pesticides in agricultural farms is not common in many areas of the District save for a few isolated cases. But where it becomes necessary to use pesticides, farmers should be advised on how to select and apply them with great care; never use pesticides when flowers are open, as open blossoms will be killed when sprayed on. If one must spray, it must be done early or late in the day when crop flowers are closed.

(viii) Trees Plantation Schemes to Include Nectar Bearing Plants and Trees That Blossom at Various Times.

In order to increase local forage areas, farmers, or beekeepers and tree plantation owners should be encouraged to plant diverse plants that blossom at various times throughout the season in order to attract a diversity of bees and provide suitable nesting habitat.

(ix) Digging of Dams or Water Wells to Cater for Dry Seasons.

Unpredictable and unstable rainfalls are having detrimental effect in forestry and beekeeping activities. For instance, during dry seasons, bees do face critical shortage of water in some areas, in the District, which draught has, on several occasions, caused colonies to abscond. In order to address this challenge, dedicated dams or wells or bore holes can be established within Bee Reserves or established Apiaries areas so that bowls can be created within the proximity for
the bees to get water and where possible some irrigation activities on the vegetation around can be done as well.

(x) **Creation of Special Apiaries for Stingless Bees.**

In the past, non-stinging bees were abundantly present and around in villages, in the District; but these days they are rarely found! Apart from producing high quality honey, the stingless honey bees are excellent pollinators of a wide range of sizes of flowers due to their smaller bodies compared to the stinging honey bees. Deliberate efforts need to be made for establishment and management of Apiaries of stingless bees within homestead.

(xi) **Establishment of Revolving Funds.**

In order to enable many low income people to afford modern beehives, each registered group of beekeepers should be encouraged to establish a Revolving Fund to enable every member of the group to afford acquisition of modern beehives on credit from the Fund.

(xii) **Specialized Training on How to Prepare Bankable Projects**

In order to build the capacity of the groups of beekeepers in the District, there is a need to introduce capacity building training programmes to train them on how to prepare bankable projects that will make easy to access credits or financial assistance. Even the Ikungi District Council itself should train its staff on how to prepare investable projects so that it can as well access funds from financial institutions.
Establishment of Eco-Tourism in Beekeeping.

If the Ikungi District Council and its Villages can establish and properly manage Bee Reserves where modern Apiaries for both stinging and stingless bees can be established, such developments will be the foundation for creation for Eco-Tourism within the District. Tourists will be attracted by the way beekeeping activities are being carried on while promoting and protecting the ecosystem at the same time. In other words, people will come to witness how environment conservation can go hand in hand with beekeeping. Thus, some income can as well be generated through eco-tourism.

Establishment of Biogas Production Systems at Households Level

Establishment of Biogas Systems at Ikungi household level may be a solution to deforestation. It offers a potentially affordable and sustainable means for rural householders to meet their energy needs. Where biogas is used in cooking, less wood is used, resulting in a reduction in tree cutting and inhalation of smoke from wood fires which have caused health problems among rural communities, especially women and children.

Fuel Serving Mud-Stoves

Introduction and establishment of less or few wood-mud stoves at Ikungi household levels may reduce deforestation and minimize the risk of lung diseases caused by burning wood in badly ventilated homes. Furthermore, it supports the empowerment of local women as the need for less wood collection gives them more time for education and other economic activities.
5.3 Stakeholders and Their Roles in Exploiting the Opportunities:

In order for the Ikungi Investment Plan in Forestry and Beekeeping to be a success, a high level of collaboration and commitment among the Stakeholders is required. The key stakeholders and their respective roles include the following:

(i) The Central Government

The role of the Central Government for the success of the Investment Plan is critical. The Government must ensure that, the policies and laws that govern the Forestry and Beekeeping sector are constantly reviewed to foster the development of this sector, the training institutions in the sector are properly funded to be able to produce enough experts, training materials and research publications that can be made available to the communities, enough experts in forestry and beekeeping including extension services officers are employed and dispatched to the Village and Ward levels, the requisite standards of bee products are set, reviewed and observed by all producers. The Government should promote beekeeping based industries and trade through exempting them from paying import and excise duties in respect of the equipment needed for construction of such industries or materials, particularly, the packaging and labeling materials required by such industries. The Government should subsidize costs related to certification of bee products for quality assurance purposes since such costs are so high and not affordable to small individual beekeepers. More importantly, the Government should set aside enough budget to cater for the forestry and Beekeeping sector development.
(ii) The Ikungi District Council

The most important player for the success of this Plan is the Ikungi District Council. The District Council is the main actor responsible for; overseeing the implementation of policies and laws regulating forestry and beekeeping sector, deployment of the required human resources and expertise, funding of certain operations, supervising the execution of the Plan, coordinating all the activities conducted by other players, public and private, NGO’s, CBOs, Religious, organizations, foreign investors, Development Partners and International Organizations. The District Council is responsible for preparing the District Land Use Plan and set aside land for Bee Reserves, Apiaries and for establishing Nurseries and Tree plantations.

(iii) The Villages Governing Councils

The execution of the Investment Plan will, by and large, be executed at village levels, so the full participation of the Villages governing structures is necessary. The Villages leadership need to be sensitized on the awareness of the Investment Plan. Villages should also be advised to set aside land for Bee Reserves and modern Apiaries. The Villages should be able to set aside specific sites for tree plantations and nurseries development. The Villages Governing Councils should make by-laws to provide for the proper use and management of natural resources in the Villages. The Villages should sign Joint Forest Management Agreements with the Government for purposes of reducing illegal harvesting and invasion of the natural forest reserves.

(iv) Local Private Investors in Forestry and Beekeeping Businesses

The investors envisaged by the Investment Plan include; individuals, cooperatives, CBOs, NGOs, companies and religious institutions. Their role is to invest in the sector through putting money in forestry and beekeeping businesses. Their motives are basically profit driven since they don't
invest for the sake of investing. They put money so that they can get good returns. They can invest in establishment of nurseries, seedlings distribution, establishment of tree plantations and forest products processing plants and distribution of equipment.

Furthermore, they can invest in manufacturing and distribution of modern beehives, establishment and management of bee farms. They can as well invest in establishing industries that manufacture equipment used in beekeeping sector ranging from harvesting, processing, quality assurance, packaging and labeling equipment and materials. They can as well invest in establishing facilities to distribute such equipment or gears.

As investors, they will actively participate in conservation and management of forestry, bee fodder plants in villages through establishment of Bee Reserves, Apiaries, Nurseries and tree plantations. They are expected to enter into Joint Management of Bee Reserves and Forests Reserves with Villages.

(v) Marketers of Forestry and Bee Products:

The success of the Investment Plan is also pegged upon presence of reliable markets for forestry and bee products that will be produced from Ikungi District. The role of institutions searching for markets, both local and international; in order to get good and reliable prices of the goods produced by investors is important. The marketing system should be organized through associations or groups of beekeepers.
(vi) Manufacturers of Equipment, Gears and Materials used in Beekeeping Sector:

Bee products can only bring money if they are properly handled from harvesting all through to the market. The role played by factories dealing with manufacturing of equipment, gears and packaging materials used in the whole Value-Chain of beekeeping does not need a special emphasis. These industries include those manufacturing; bee products harvesting equipment, bee products processing and quality assurance equipment, bee products packaging and labeling materials. These are key players whose role must be recognized and accommodated by this Plan.

(vii) Training Institutions on Forestry and Beekeeping:

The training institutions on forestry and beekeeping science, though are known to be few, can be used to develop tailor-made short training programmes for beekeepers so that beekeepers at Village levels could attend such trainings to gain knowledge and skills in modern beekeeping practices.

(viii) Foreign Investors:

Foreign investors can play a key role in forestry and beekeeping sector if they can be invited to invest in the District upon assurance that they will be given land to either establish commercial bee farms or build bee products processing industries. Foreign investors will provide a reliable export market of bee products.

(ix) International Community Organizations:

There are a number of international organizations which, if approached, can provide financial assistance for capacity building through technical assistance, training and transfer of technology. They can collaborate in provision of extension services, training and research. They can also be of great assistance in facilitation of implementation of international obligations. Such organizations include UNDP, UNEP, FAO, to mention but a few.
(x) Financial Institutions:
Currently there is no any bank or financial institution that provides financial services in Ikungi District. A deliberate move needs to be done to attract banks or financial institutions to open offices within the District. Some of these institutions need to be identified and requested to provide entrepreneurial trainings to groups of beekeepers. Capacity building training programmes is organized for selected groups of beekeepers to teach them on how to prepare Bankable or Fundable projects so that groups involved in beekeeping or tree plantations can be trained on how to access capital through credits from financial institutions.

(xi) Sectoral Associations:
There are several Associations established in the sector which can be contacted for assistance or knowledge sharing. Such Associations include, Tanzania Beekeepers Association, Tanzania Honey Council, Tanzania Honey Dealers Association etc.

(xii) Ikungi District Diaspora:
Ikungi District has many people (Diasporas) who hail from Ikungi District but living outside the District and have financial resources to invest in the District. Deliberate efforts need to be done to entice, woo and attract them to come and invest home.

(xiii) Stakeholders’ Joint Committee:
For the Investment Plan to be a success there must be a special committee to oversee its execution. This Committee should draw representatives from the Ikungi District Council (representing the public), private sector drawing members from Beekeepers Groups or Associations or Civil Society institutions with interest in beekeeping. The said Committee should be chaired by a person from the private sector. This Committee can as well be used as a Lobby Committee to approach
and negotiate with institutions that are looking for investment opportunities, like the pension funds (NSSF, PPF, PSPF, LAPF etc.).

5.4 The Interventions or Actions Required In Exploiting the Opportunities and Their Geographical Fit.

Interventions to exploit the existing opportunities can be done either jointly or severally by both public and private sectors. The public sector should come affront to provide facilities which do require heavy outlay of capital and whose investment payback period is long and do not often attract private capital. The private sector should then come in and invest after the requisite facilities, where necessary, have been put in place by the public sector. However, there are also interventions which do not give quick tangible returns and which are not likely to attract private capital instantly as investment decisions by private sector are driven by profit motives. For instance, interventions on capacity building through establishing of formal economic groups, providing trainings, capacity building of the leaders, establishment of nurseries, establishment of demonstration farms do not attract private investors quickly. Investments in these areas are rather done through donors’ as well as public funds. The following interventions may be quickly done through donor funds.

(i) Establishment of Formal Economic Groups at the Village Levels

In order for the Investment Plan to be a success, involvement of the community at village levels in implementation of the Plan is critical. It is important to establish or strengthen the formal groups that will be used as champions throughout the execution of the various programmes under the Plan. Experience has shown that it is easy to coordinate beekeeping as well as tree planting projects through groups rather than through individuals. If resources are to be mobilized and deployed it is economical and efficient if that can be done through registered groups or associations. At least two economic groups should be
established at each village, and each group should have not less than 20 or more members where female and youth are the majority. Each group should be assisted to establish a demonstration farm (an apiary). The groups should be trained on the best practices of forestry and beekeeping.

An abridged budget for this item is given hereunder

<table>
<thead>
<tr>
<th>Activity</th>
<th>Groups</th>
<th>Year 1 2015</th>
<th>Year 2 2016</th>
<th>Year 3 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>A summary of Costs on Mobilization, Sensitization, Admin, Levy</td>
<td>202</td>
<td>67</td>
<td>67</td>
<td>68</td>
</tr>
<tr>
<td>Total in Tshs.</td>
<td>76,810,500</td>
<td>25,603,500</td>
<td>25,603,500</td>
<td>25,603,500</td>
</tr>
</tbody>
</table>

A detailed budget is attached as Annexure 1

(ii) Training on Modern Practices of Forestry and Beekeeping:

The training programmes to train the selected economic groups and the Village leaders need to be prepared to train them on the importance of environment in beekeeping and forestry. Specialized trainings on the best practices of Forestry and Beekeeping as well as the role of Village leadership in implementing the best beekeeping practices.

An abridged budget for this item is given hereunder

<table>
<thead>
<tr>
<th>Activity</th>
<th>Groups Rep's</th>
<th>Year 1 2015</th>
<th>Year 2 2016</th>
<th>Year 3 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>A summary of Training costs &amp;Trainers &amp; Participants expenses, Admin, Monitoring and Evaluation</td>
<td>404</td>
<td>134</td>
<td>134</td>
<td>136</td>
</tr>
</tbody>
</table>

A detailed budget is attached as Annexure 2.
(iii) Capacity Building of the Village and Ward Leaders Including Counselors:

Capacity building to Village Executive Officers, Village Chairpersons, Members of the Village Governing Councils and Counselors is critical. These leaders must be given knowledge on policies and laws governing forestry and beekeeping sector, in particular; how to make or prepare by-laws, joint management agreements of Forests and Bee Reserves, and to establish Bee Reserves and Apiaries.

An abridged budget for this item is given hereunder

<table>
<thead>
<tr>
<th>Activity</th>
<th>Total leaders</th>
<th>Year 1 2015</th>
<th>Year 2 2016</th>
<th>Year 3 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>A summary of Training costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IKUNGI LGA's Leadership VEO,s</td>
<td>1262</td>
<td>420</td>
<td>420</td>
<td>422</td>
</tr>
<tr>
<td>WEO,s,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEO's</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counselors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1176</td>
<td>14</td>
<td>4</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grand Total in Tshs.</td>
<td>135,854,550</td>
<td>45,284,850</td>
<td>45,284,850</td>
<td>45,284,850</td>
</tr>
</tbody>
</table>

A detailed budget is attached as Annexure 3

(iv) Establishment of Nurseries for Preparation of Seedlings for Distribution:

Since there are areas in the District which do not have trees or natural vegetation/plants as a result of deforestation, there is an urgent need to assist such local/communities to commence reforestation programmes. Nurseries of seedlings of different commercial trees need to be established (Api-Agro-Forestry)
where seedlings of both commercial trees and bee fodder plants can be prepared. Establishment of Nurseries should go hand in hand with trainings on how to establish and manage them. Well planned and managed tree planting programmes need to be launched and actors in the Plan take part or play their respective roles.

An abridged budget for this item is given hereunder

<table>
<thead>
<tr>
<th>Activity</th>
<th>Households</th>
<th>Year 1 2015</th>
<th>Year 2 2016</th>
<th>Year 3 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>A summary of establishment of tree nurseries ie Training, Procurement, Management, Monitoring, Evaluation &amp; Administration</td>
<td>50,700 @ 20 Seedlings</td>
<td>1,014,000</td>
<td>338,000</td>
<td>338,000</td>
</tr>
</tbody>
</table>

Grand Total in Tshs. | 566,315,100 | 188,771,700 | 188,771,700 | 188,771,700 |

A detailed budget is attached as Annexure 4

(v) Establishment of Demonstration Bee Farms:

For each Village, there should be two demonstration bee farms. One farm for stinging bees and the other one for stingless bees.
An abridged budget for this item is given hereunder

<table>
<thead>
<tr>
<th>Activity</th>
<th>District Villages</th>
<th>Total cost for Demo-houses</th>
<th>Year 1 2015</th>
<th>Year 2 2016</th>
<th>Year 3 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>A summary cost of establishing Beehouses / Farms ie Training, Management, Monitoring and Evaluation</td>
<td>101 @ 2</td>
<td>202</td>
<td>67</td>
<td>67</td>
<td>68</td>
</tr>
<tr>
<td><strong>Grand Total in Tshs.</strong></td>
<td>354,510,000</td>
<td>118,170,000</td>
<td>118,170,000</td>
<td>118,170,000</td>
<td>118,170,000</td>
</tr>
</tbody>
</table>

A detailed budget is attached as Annexure 5

(vi) Training on Entrepreneurial Skills:

In order to scale-up the beekeeping and forestry husbandry business, it is important to build the capacity of the beekeepers in accessing credits or financial assistance through training on preparations of investable or bankable projects in the beekeeping as well as forestry business.

An abridged budget for this item is given hereunder

<table>
<thead>
<tr>
<th>Activity</th>
<th>Group Rep's</th>
<th>Year 1 2015</th>
<th>Year 2 2016</th>
<th>Year 3 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>A summary of training cost To Groups Representatives i.e Training package, DSA to Groups Reps</td>
<td>404</td>
<td>134</td>
<td>134</td>
<td>136</td>
</tr>
<tr>
<td><strong>Grand total in Tshs.</strong></td>
<td>39,815,100</td>
<td>13,271,700</td>
<td>13,271,700</td>
<td>13,271,700</td>
</tr>
</tbody>
</table>

A detailed budget is attached as Annexure 6
Formation of Ikungi District Investment Committee:

A committee composed of members representing the public and private institutions or organizations must be established to champion search for investors in forestry and beekeeping sector in Ikungi District. Members of this committee must possess requisite knowledge and skills in investment, business, marketing, legal as well as diplomacy in negotiations. This committee should be tasked to promote and sell the Investment Plan to potential investors, both local and foreign.

An abridged budget for this item is given hereunder

<table>
<thead>
<tr>
<th>Activity</th>
<th>Committee Members</th>
<th>Year 1 2015</th>
<th>Year 2 2016</th>
<th>Year 3 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>A cost summary of formation of 7 IDIC members ie Mobilization, formation and a budget for meetings</td>
<td>7 Members</td>
<td>7 Meetings</td>
<td>7 Meetings</td>
<td>7 Meetings</td>
</tr>
<tr>
<td>Grand total in Tshs.</td>
<td>14,840,000</td>
<td>13,440,000</td>
<td>13,440,000</td>
<td>13,440,000</td>
</tr>
</tbody>
</table>

A detailed budget is attached as Annexure 7
(viii) **Preparation of Ikungi Investment Forum:**

The Ikungi District, should through, the District Investment Committee organize an Investment Forum for the District whereby the potentials available in forestry and beekeeping can be disclosed to potential investors. In that way, the existing investment potentials in forestry and beekeeping obtaining within the District will be known to the potential investors.

*An abridged budget for this item is given hereunder*

<table>
<thead>
<tr>
<th>Budget: Preparation of Ikungi Investment Forum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Activity</strong></td>
</tr>
<tr>
<td>---------------</td>
</tr>
<tr>
<td>A summary of costs for preparation of Investment Forum ie Investors Invitations, Meeting costs, Admin etc</td>
</tr>
<tr>
<td>Grand total in Tshs.</td>
</tr>
</tbody>
</table>

*A detailed budget is attached as Annexure 8*
(ix) **Regular Meetings with Ikungi Diasporas:**

The District Investment Committee should have regular, meetings with people who hail from Ikungi but live outside Ikungi District to exchange views on how best they can participate in making the Investment Plan a reality. The Diasporas should feel that they are partners in the development process in Ikungi District.

*An abridged budget for this item is given hereunder*

<table>
<thead>
<tr>
<th>Activity</th>
<th>No of Diasporas</th>
<th>Total cost</th>
<th>Year 1 2015</th>
<th>Year 2 2016</th>
<th>Year 3 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>A summary of costs for preparation of Meetings with 300 Diasporas at centres in Mwanza, Dar and Arusha every year</td>
<td>300</td>
<td>3 Meetings</td>
<td>3 Meetings</td>
<td>3 Meetings</td>
<td>3 Meetings</td>
</tr>
<tr>
<td>Grand total in Tshs.</td>
<td></td>
<td>37,960,000</td>
<td>37,960,000</td>
<td>37,960,000</td>
<td>37,960,000</td>
</tr>
</tbody>
</table>

*A detailed budget is attached as Annexure 9*

### 5.5 The Required Inputs For Interventions:

The required inputs for each proposed intervention will be provided for in a more detailed manner in the respective budgets prepared for each intervention. We have appended to this study the required inputs, as **Annexure 1 to 9** for the interventions that the study has so far identified.
5.6 Sources of Funds to Finance the Planned Activities:
The planned activities will be financed by funds to be mobilized from the following sources: Central Government, Ikungi District Council, Tanzania Forest Fund, Private Forest Programme, Forest Development Trust, Private Agricultural Support Sector, Community members, Private sector, United Nations Development Programme and Donors to be identified in due course. The amount to be mobilized from the above sources are indicated in the Tables I, II & III annexed at the end of this study under the title A Summary of Ikungi Planned Projects for year 2015 - 2017 and Their Respective Sources of Funding.

5.7 Critical Risks and Accountability Involved in These Interventions:
The critical risks associated in these interventions include;

(i) Poor adoption rate of knowledge that will be given to local communities which sometimes leads to wasted teaching materials.

(ii) Vandalism to projects assets where no proper security safety mechanisms are provided.

(iii) Wasted bee products in initial days due to inexperience.

(iv) Longer lag time between planting of trees as well as manufacturing of beehives and the harvesting or production periods.

(v) Diseases that do arise during caring of tree seedlings.

(vi) Lack of political will always make it difficult for some interventions to be put in place on time. For instance, the opposition party, Chadema in Ikungi District is “supporting” people who are in charcoal business as well as those living in forest reserves.
(vii) Delays in decisions making by the Government (both Central and Local) deter investment in forestry and beekeeping. As of now, neither the Ikungi District Council nor the Villages have set aside land to be used as bee reserves. In absence of such land, it may be difficult to attract commercial investments in beekeeping in the District.

(viii) None availability of required resources on time.
CHAPTER SIX

6.0 CONCLUSIONS & RECOMMENDATIONS

6.1 CONCLUSIONS:
This study was mainly undertaken as part of the Pro-Poor Economic Growth and Environmentally Sustainable Development project. The study was intended to develop a District Investment Plan and identifying the existing investment opportunities or potentials in forestry and beekeeping sector in Ikungi District, the underlying challenges in exploiting the opportunities, the strategies that can be used to exploit the opportunities and the requisite interventions based on financial, human resource, infrastructure needs and environmental mitigation costs.

The District Investment Plan should be able to attract both public and private investments in the District to be implemented and contribute towards reducing poverty in the District through gender mainstreaming, sustainable management of domestic natural resources and climate change adaptation.

The study has identified several investment opportunities in forestry and beekeeping that can be exploited if the Investment Plan is properly executed. The implementation of the Plan should in due course be able to address the environmental challenges, gender inequality, poverty and the impacts of climate change.

6.2 RECOMMENDATIONS:
The identified investment opportunities or potentials if properly pursued or exploited will assist the Ikungi District to reduce poverty, improve the quantity and quality of the natural environment, minimize the impact of climate change and promote gender equality. The proposed interventions by the public sector can be implemented by the Ikungi District Council without a need to require any approval from the Central Government or amendments of existing policies, laws and regulations.
It is a matter of the District Council authorities to resolve to implement the Plan and secure collaboration of the identified actors and move ahead in a properly planned way.

6.2.1 Prioritization of Interventions on Geographical Fit:

The interventions proposed should be geographically prioritized according to the seriousness of the degradation found in the District. The reforestation programmes should start in those areas badly affected by deforestation whereas beekeeping should start on those areas with natural forests currently.

6.2.2 The Time Frame:

The Time Frame for execution of each project will be provided in the inputs required by nature of each intervention.

6.2.3 Governance Structures for the Success of the Plan:

While the implementation of the Investment Plan will be under the umbrella of the District Council, the Coordination of the activities should be done by the Investment Committee to be established.

6.2.4 Expected Deliverables and/or Outputs:

At the end of the projects Ikungi District should be an example in conserving environment full of natural forests reserves and plantations made of commercial trees of different types and a hub of organic honey in Tanzania.

6.2.5 Monitoring and Evaluation:

Monitoring and Evaluation is expected to be conducted on quarterly basis. Regular visits on site will be one of the tools to be used.
6.3 INVESTMENT QUICK WINS:

Investment in beekeeping pays good returns quicker than investment in tree plantations. Quick win will come out from honey and beeswax within a year whereas Gum Arabica and mushrooms can also be quick winners in a span of 4 months from the kick-off of the projects under the forestry projects.
(i) Establishment of Formal Economic Groups

<table>
<thead>
<tr>
<th>Financial Resources:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobilizations, Sensitization 101 groups</td>
<td>Tshs 65,650,000.=</td>
</tr>
<tr>
<td>Management Expenses:</td>
<td></td>
</tr>
<tr>
<td>Total Budget</td>
<td>Tshs 76,810,500.=</td>
</tr>
</tbody>
</table>
(ii) Training on Modern Practices of Forestry and Beekeeping:

<table>
<thead>
<tr>
<th>Budget Category</th>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Human Resources:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Resource/Trainers Package</td>
<td></td>
<td>Tshs 1,680,000.=</td>
</tr>
<tr>
<td><strong>Financial Resources:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>404 Group Rep's DSA's</td>
<td></td>
<td>Tshs 16,160,000.=</td>
</tr>
<tr>
<td>404 Group Rep’s Transport Costs</td>
<td></td>
<td>Tshs 16,190,000.=</td>
</tr>
<tr>
<td><strong>Capacity Building Infrastructures:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procurement of 202 Bee Hives</td>
<td></td>
<td>Tshs 32,320,000.=</td>
</tr>
<tr>
<td>Procurement of 101 Harvesting Gears</td>
<td></td>
<td>Tshs 30,300,000.=</td>
</tr>
<tr>
<td>Digging cost of 101 Wells/Ponds</td>
<td></td>
<td>Tshs 40,400,000.=</td>
</tr>
<tr>
<td><strong>Management Expenses:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management, Monitoring and Levy</td>
<td></td>
<td>Tshs 23,298,500.=</td>
</tr>
<tr>
<td><strong>Total Budget</strong></td>
<td></td>
<td>Tshs 160,348,500.=</td>
</tr>
</tbody>
</table>
Annexure 3

(iii) Capacity Building of Village and Ward Leaders including Counselors:

- **Human Resources:**
  - 3 Resource/Trainers Package Tshs 1,680,000.=

- **Financial Resources:**
  - 1316 Leaders 2 Days DSA’s Tshs 68,360,000.=
  - 1316 Leaders Transportation costs Tshs 46,075,000.=

- **Management Expenses:**
  - Management, Monitoring and Levy Tshs 19,739,550.=

- **Total Budget** Tshs 135,854,550.=
(iv) Establishment of Nurseries for Preparation of Seedlings for Distribution:

- **Human Resources;**
  - 3 Resource/Trainers Package  Tshs 1,680,000.=

- **Financial Resources:**
  - 404 Group Rep's DSA's costs  =  Tshs 16,160,000.=
  - 404 Group Rep's Transport Costs  =  Tshs 16,170,000.=

- **Environmental Mitigation Costs:**
  - Raising Seedlings - 100,000 pcs  =  Tshs 150,000,000.=

- **Capacity Building Infrastructures:**
  - Drilling Water Wells - 20 Wells  =  Tshs 300,000,000.=

- **Management Expenses:**
  - Management, Monitoring and Levy  =  Tshs 82,285,100.=

- **Total Budget**  Tshs 566,315,100.=
(v) Establishment of Demonstration Bee Farms:

<table>
<thead>
<tr>
<th>Capacity Building Infrastructures:</th>
<th>Tshs 303,000,000.=</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishment of 202 B/Houses/Farms</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Management Expenses:</th>
<th>Tshs 51,510,000.=</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management, Monitoring and Levy</td>
<td></td>
</tr>
</tbody>
</table>

| Total Budget                                                | Tshs 354,510,000.= |
(vi) Training on Entrepreneurial Skills:

<table>
<thead>
<tr>
<th>Human Resources;</th>
<th>Tshs</th>
<th>1,680,000.=</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Resource/Trainers Package</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial Resources:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>404 Participants DSA’s</td>
<td>Tshs</td>
<td>16,160,000.=</td>
</tr>
<tr>
<td>404 Participants Transportation expenses</td>
<td>Tshs</td>
<td>16,190,000.=</td>
</tr>
<tr>
<td>Management Expenses:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management, Monitoring and Levy</td>
<td>Tshs</td>
<td>5,785,100.=</td>
</tr>
<tr>
<td>Total Budget</td>
<td>Tshs</td>
<td>39,815,100.=</td>
</tr>
</tbody>
</table>
(vii) Formation of Ikungi District Investment Committee:

<table>
<thead>
<tr>
<th>Human Resources:</th>
<th>Tshs</th>
<th>1,400,000.=</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formation of the Committee</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Financial Resources:**

| Members DSA’s and Transport costs | Tshs | 6,370,000.= |

**Infrastructures:**

| Hiring of Conference Rooms        | Tshs | 3,500,000.= |
| Admin, Communications, Secretarial| Tshs | 2,100,000.= |
| Tea, Refreshments and lunch       | Tshs | 1,470,000.= |

**Management Expenses:**

| Management, Monitoring and Levy   | Tshs | NIL         |

**Total Budget**

| Tshs | 14,840,000.= |
(viii) Preparation of Ikungi Investment Forum:

<table>
<thead>
<tr>
<th><strong>Human Resources:</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource/ Presenters Allowances</td>
<td>Tshs 2,800,000.=</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Financial Resources:</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Invited Investors Allowances</td>
<td>Tshs 2,500,000.=</td>
</tr>
<tr>
<td>Committee Members DSA's</td>
<td>Tshs 350,000.=</td>
</tr>
<tr>
<td>Committee Members Transport</td>
<td>Tshs 560,000.=</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Infrastructures:</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hiring of Conference halls</td>
<td>Tshs 3,000,000.=</td>
</tr>
<tr>
<td>Admin, Communications, Secretarial</td>
<td>Tshs 1,000,000.=</td>
</tr>
<tr>
<td>Tea, Refreshments and lunch</td>
<td>Tshs 1,710,000.=</td>
</tr>
<tr>
<td>Publications i.e. Posters, Brochures etc.</td>
<td>Tshs 1,000,000.=</td>
</tr>
<tr>
<td>Transportation for Organizers, Contingencies</td>
<td>Tshs 700,000.=</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Management Expenses:</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Management, Monitoring and Levy</td>
<td>Tshs NIL</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Total Budget</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tshs</td>
<td><strong>13,620,000.=</strong></td>
</tr>
</tbody>
</table>
(ix) Regular Meetings with Ikungi Diaspora:

<table>
<thead>
<tr>
<th>Human Resources;</th>
<th>Tshs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource/Presenters Allowances</td>
<td>1,800,000.=</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Financial Resources;</th>
<th>Tshs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Committee Members DSA's</td>
<td>1,050,000.=</td>
</tr>
<tr>
<td>Committee Members Transport</td>
<td>1,680,000.=</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Infrastructures:</th>
<th>Tshs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hiring of Conference halls</td>
<td>3,000,000.=</td>
</tr>
<tr>
<td>Admin, Communications, Secretarial</td>
<td>2,100,000.=</td>
</tr>
<tr>
<td>Tea, Refreshments and lunch</td>
<td>27,630,000.=</td>
</tr>
<tr>
<td>Transportation for Organizers, Contingencies</td>
<td>700,000.=</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Management Expenses:</th>
<th>Tshs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management, Monitoring and Levy</td>
<td>NIL</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Budget</th>
<th>Tshs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>37,950,000.=</td>
</tr>
</tbody>
</table>

NB: In all cases, who is to be paid Daily subsistence allowance?