Production, Value Addition, Marketing and Economic Contribution of Non Wood Forest Products from Arid and Semi Arid Lands in Kenya

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Presentation Outline

1. Background
2. Description of NWFPs
3. Status of Production
4. Value Addition
5. Trade and Marketing
6. Challenges
7. Conclusions and Recommendations

Introduction

- Non-wood forest products (NWFPs) are goods of biological origin other than wood, derived from forests, other wooded lands and trees outside forests.
- The level of NWFPs utilization in Kenya varies from one region or community to another based the ecological zones.
- Utilization is more pronounced in the Arid and Semi Arid Lands (ASALs) compared to high rainfall areas
- ASALs cover about 80% of the total land surface of Kenya
- Examples of NWFPs in ASALs are: honey, gums, resins, medicines, fruits, dyes among others.

Introduction

- The role of NWFPs in the Kenyan economy in the 80s and early 90s was minor
- Recent studies show heightened interests in NWFPs identification, research and development (Chikamai *et al*., 2004; Jama *et al*., 2008).
- The importance of NWFPs in times of adversity, is well documented (Arnold 2001; Falconer 1992, 1997; Falconer and Arnold 1992; ICRAF 2004; Shackleton and Shackleton 2004).

Introduction

- NWFPs are major sources for food, medicines, fodder, gums, fibre, cosmetic and cultural products.
- NWFPs received notable attention during the United Nations Conference on Environment and Development (UNCED) in 1992.
- Global demand for bio-products and nutraceuticals derived from NWFPs has been on the increase.
- The market for bio-prospecting is about USD 800 billion worldwide
- Global market for medicinal plants, for instance, is estimated at over USD 14 billion/yr

Objectives

- This paper reviews the production, value addition, marketing and the economic contribution of NWFPs in Kenya with a special focus on gums, resins, aloes , indigenous fruits , honey and bee products
- Key constraints on commercialization of NWFPs are highlighted and recommendations made

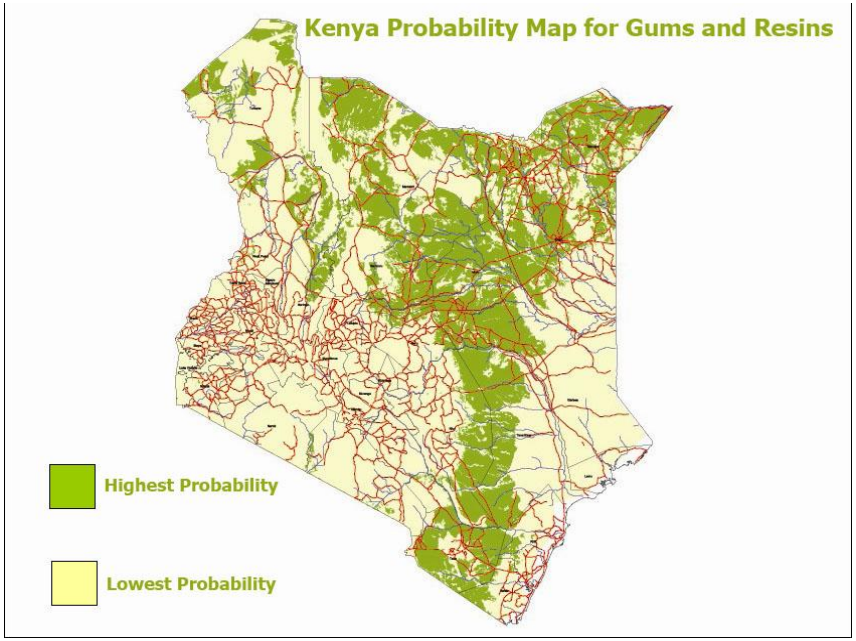
Gums and Resins

- These include gum arabic from *Acacia senegal* or *Acacia seyal* and commercial gum resins such as myrrh from *Commiphora myrrha*, Oppoponax from *Commiphora holtziana* and Frankincense from *Boswellia neglecta*.
- Produced in at least 7 ASAL Counties namely: Marsabit, Wajir, Garissa, Mandera, Turkana, Samburu and Isiolo.

Gums and resins

- Kenya is a major exporter of resins (myrrh, hagar and frankincense) being number three after Ethiopia and Somalia.
- Potential production is estimated at 10,000 MT (for gum Arabic)-USD 9.5 M (export value)
- 8000 MT (for myrrh, Hagar, frankincense)-USD 5.2 M (export value)

Status of production



Species	Potential production Kg ha^{-1}
Acacia senegal	50 to 337.5
Boswellia neglecta	262.5 to 993
Commiphora holtziana	*150 to 450*

Commodity	Potential production (MT)	Average Production (MT)
gum arabic	10,000	58-100
Resins	8,000	2361

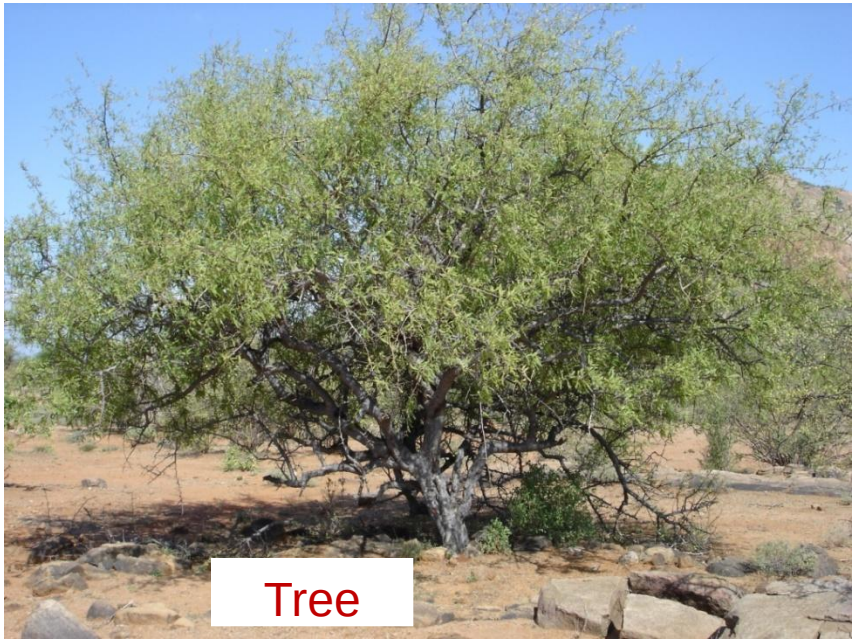
Varieties of *Acacia senegal*

Var. kerensis

Var. senegal

Var. leiorhachis

Frankincense from *Boswellia neglecta*



Tree

White incense

Branch with angled fruits

Black incense

Myrrh from Commiphora myrrha

Tree

Stem – rough bark

Myrrh - gum resin

Commiphora holtziana

Tree

Main stem/bark

Gum
hagar

LOCAL AND COMMERCIAL USES OF GUMS AND RESINS

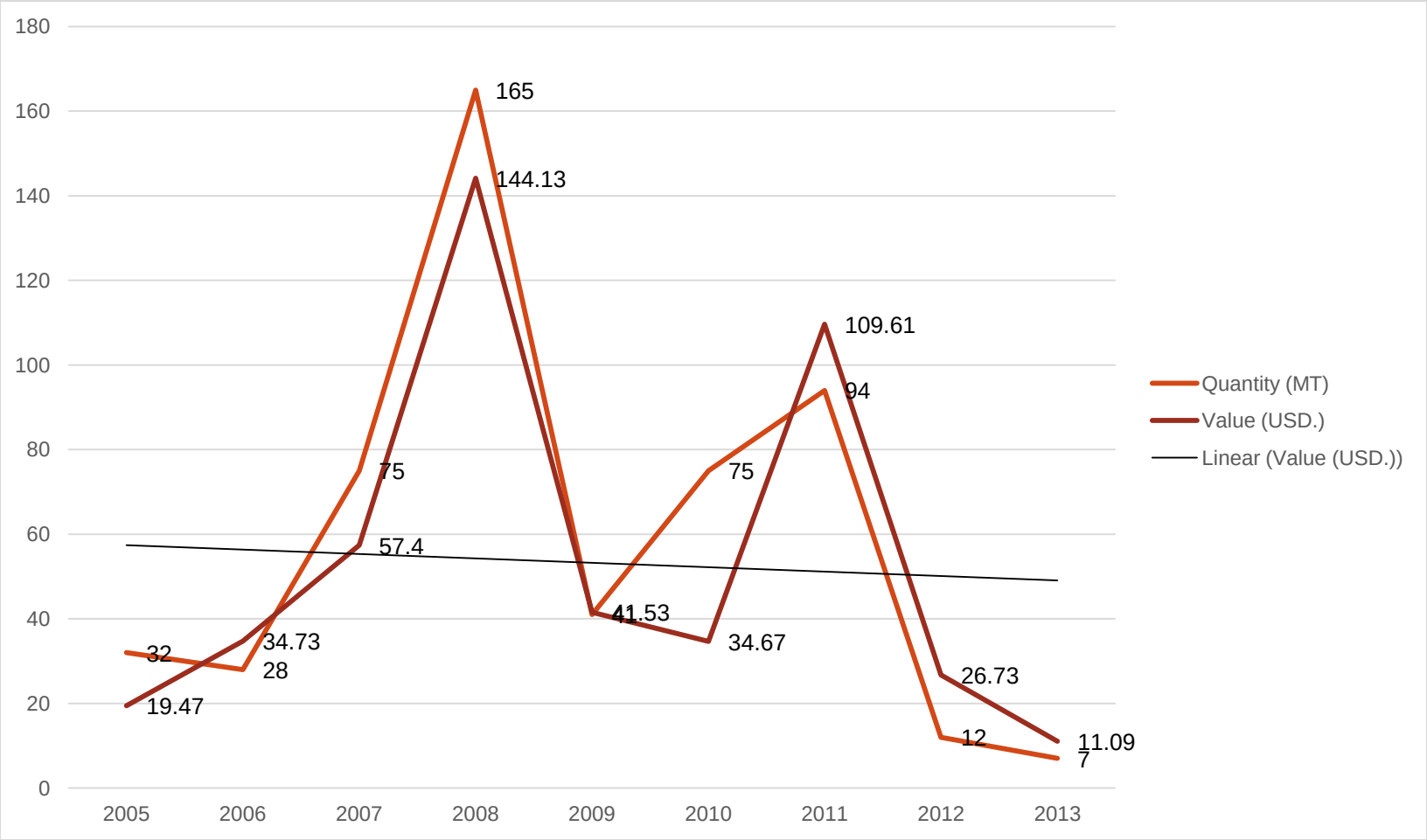
Commodity	Local uses	Commercial uses
Gum arabic	• Chewed as gum	• Pharmaceutical , Adhesive, Paint, Printing, Food and confectionary industries
Myrrh	• Ink in quranic schools • Insect and snake repellent • Medicine	• Insect and snake repellent • Cosmetic, flavors and medicines (tonics, stomach remedies, mouth washes, tooth paste).
Frankincense	• Chewed as gum • Incense • local perfumes medicine	• essential oil in perfumery, cosmetic and flavour industries
Oppoponax	• Acaricide, • Medicine – snake bites, foot rot, mange	• Medicine

Commercial uses of gum arabic

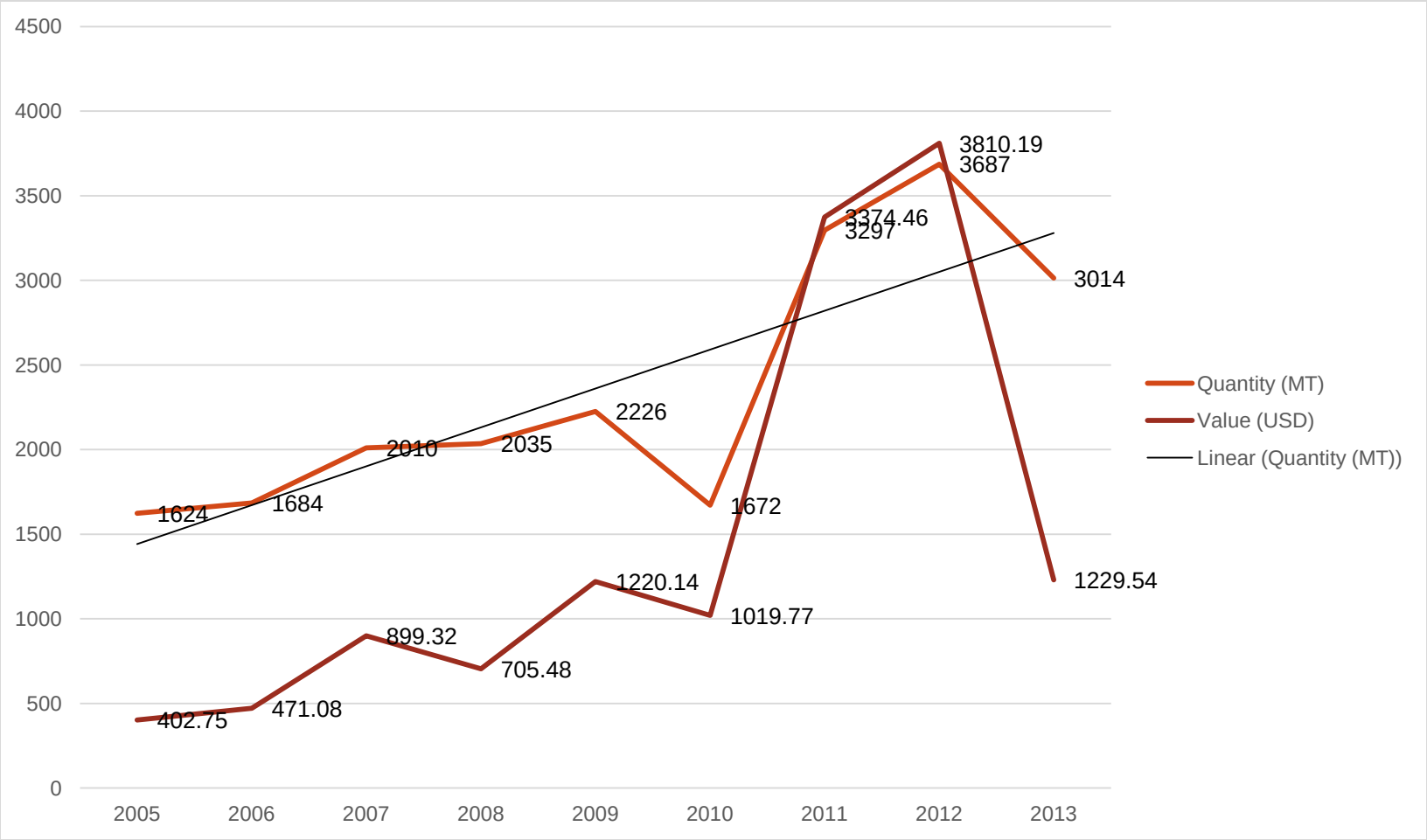
Value Addition

- Most of the gums and resins produced in Kenya are exported in raw form
- A small quantity of the total volume of resins is processed for essential oils.

Gum arabic trade trend 2005-2013



Gum resins trade trend 2005-2013



ALOES

- Approximately 60 species of aloes, occurring mainly in the wild in ASALs
- *A. Secundiflora*- over 90% of traded aloe gum in the country.
- Other commercial species include: *Aloe turkanensis, A scabrifolia, A. calidophia an rivae*.

Production of aloe sap

- No of harvestable leaves per aloe plant: 13 (ranging from 5 to 31)
- Constituting 46.4 % of leaves
- The sap yield per aloe plant is 68.3 ml (ranging from 8.3 to 380 ml).
- The potential yield of aloe gum (Kwale County) estimated at 175.3 Kg per ha

Aloe hair shampoo

Aloe Products

Aloe soap

Trade and marketing of Aloe and aloe products

- The producer price of aloe sap is about US$ 0.53 per litre
- Aloe gum is exported mainly to China or Saudi Arabia for US $ 2.1-3.2 per kg.
- Locally: aloe gum is sold for US $ 0.9-2.1/kg to small and medium scale manufacturers of soap aloe cosmetic products

4.0 INDIGENOUS FRUITS

- 400 (57 families) out of 800 (105 families) indigenous food plants are fruit plants
- 7 most important indigenous fruits are:

✓*Tamarindus indica* (tamarind),

✓*Adansonia digitata (*baobab),

✓*Ximenia americana*

✓ *Carissa edulis,*

✓*Ancybotrys tayloris*

✓ *Ziziphus mauritiana*

✓ *Dialium*

✓*Others include: Vitex doniana*, *Vitex payos* and *Sclerocarya birrea* (marula).

Comparison of Indigenous fruits with domestic fruits

IFT	VITAMIN C (mg/100g)
Adansonia digitata	170-150
Sclerocarya birrea	180 mg/100g
Banana	10 mg/100g
Orange	50 to 70 mg/100g

Value addition

- Value addition has resulted increased self life and incomes to the farmers.
- Products include: juices, wine jam, powder and sweets from fruit pulp
- 1 kg of processed *Vitex payos* fruits generates two liters of Vitex wine sold for US $ 0.8 a liter. (10 times that of raw fruits)

Marketing and commercialization of indigenous fruits

- 10 out of 50 potential marketable IFTs are sold in local towns and urban centres
- Four of them: *Tamarindus indica*, *Adansonia diginata*, *D. orientale* and *Syzigium guineense* marketed nationally

Honey and Bee products

- The national average honey and beeswax production is estimated at 25,000 MT and 250 MT respectively valued at US $ 46.631,579
- National production potential estimated 100,000 MT (honey) and 10,000 MT (beeswax)
- Due low adoption levels of improved technologies as many beekeepers are using indigenous knowledge, skills and equipment

Marketing of honey and beeswax

- Very high demand for honey both in Kenya and overseas.
- Kenya licensed to export honey to the European Union
- Major outlets: supermarkets, health shops, retail shops, hotels, roadside kiosks, pharmaceutical industries, hawking, traditional breweries, confectioneries and open air markets
- local marketing structure involves individual farmers, cooperatives, CBOs, NGOs, traders, processors, packers and other actors in the value chain

Key constraints for commercialization of NWFPs

- Commercialization is impeded by a number of factors that can be classified as: production, marketing, policy and institutional barriers

Production challenges

- Production mainly from the wild, some of trees have unhealthy population with low natural regeneration
- Limited domestication of species
- Poor and unsustainable production practices leading to low yields of NWFPs and damage to trees
- Inadequate quality control of the products
- Inadequate information on production potential and their variations among sites, counties and varieties

systems- Challenges

- Poor marketing infrastructure
- Poor market organization
- Unethical marketing practices
- Poor pricing and linkages with markets
- Lack of product standards for some of the products
- Inadequate data and limited market information systems on some of the products.
- Limited value addition along the value chains

frameworks

- Inadequate policies on the development of NWFPs enterprises
- Over harvesting of NWFPs leading to land degradation and loss of biodiversity

Conclusions and recommendations

- NWFPs have great potential for diversifying income and improving the livelihoods of rural people in the ASAL areas and ensuring environmental sustainability and reversal of the loss of biodiversity.
- However, sustainable management of NWFPs requires an enabling policy and institutional framework to safeguard social and environment concerns associated with the commercialisation of the natural products from communal lands.

Recommendations

The following interventions are recommended in order to enhance the sustainable commercialization of NWFPs in Kenya:

- Inclusion of NWFPs issues in the harmonized National and County government laws and policies in order to enhance community participation in their conservation and management;
- Promotion and strengthening NWFPs value chains for sustainable commercial production;
- Research and technology development and transfer

Recommendations

- Knowledge management
- Capacity of the local people to benefit from these natural resources
- Enhancing partnerships, synergies and complementarities including public-private partnerships for resource mobilization and investment on NWFPs.

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KEY POINTS

- Non-wood forest products (NWFPs) are goods of biological origin other than wood, derived from forests, other wooded lands and trees outside forests.
- Key examples of NWFPs in ASALs are: gums, resins, medicines, fruits, honey and beeswax.
- NWFPs have great potential for diversifying income and improving the livelihoods of rural people in the ASAL areas and ensuring environmental sustainability and reversal of the loss of biodiversity.
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- knowledge management;
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