

EFFORTS TOWARDS INCREASED FOREST COVER AS A MEASURE TO MITIGATE EFFECTS OF CLIMATE CHANGE

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INTRO & OBJECTIVES

- *A research was conducted in the Kakamega County around among the communities surrounding the Turbo Forest and Kakamega forest to determine efforts communities are putting into place to help increase the forest cover that will in turn mitigate the effects of climate change.*

METHOD

Household surveys using structured questionnaires were used to determine farmers who have put in place measures to plant trees, types of trees planted and management practises done on the Forests to promote their growth.

*Respondents understanding of
climate change*

Respondents gave various views of how they understood what climate change is. They include

- Unreliable rainfall
- Erratic rainfall
- Change in weather patterns
- Extreme drought
- High temperatures

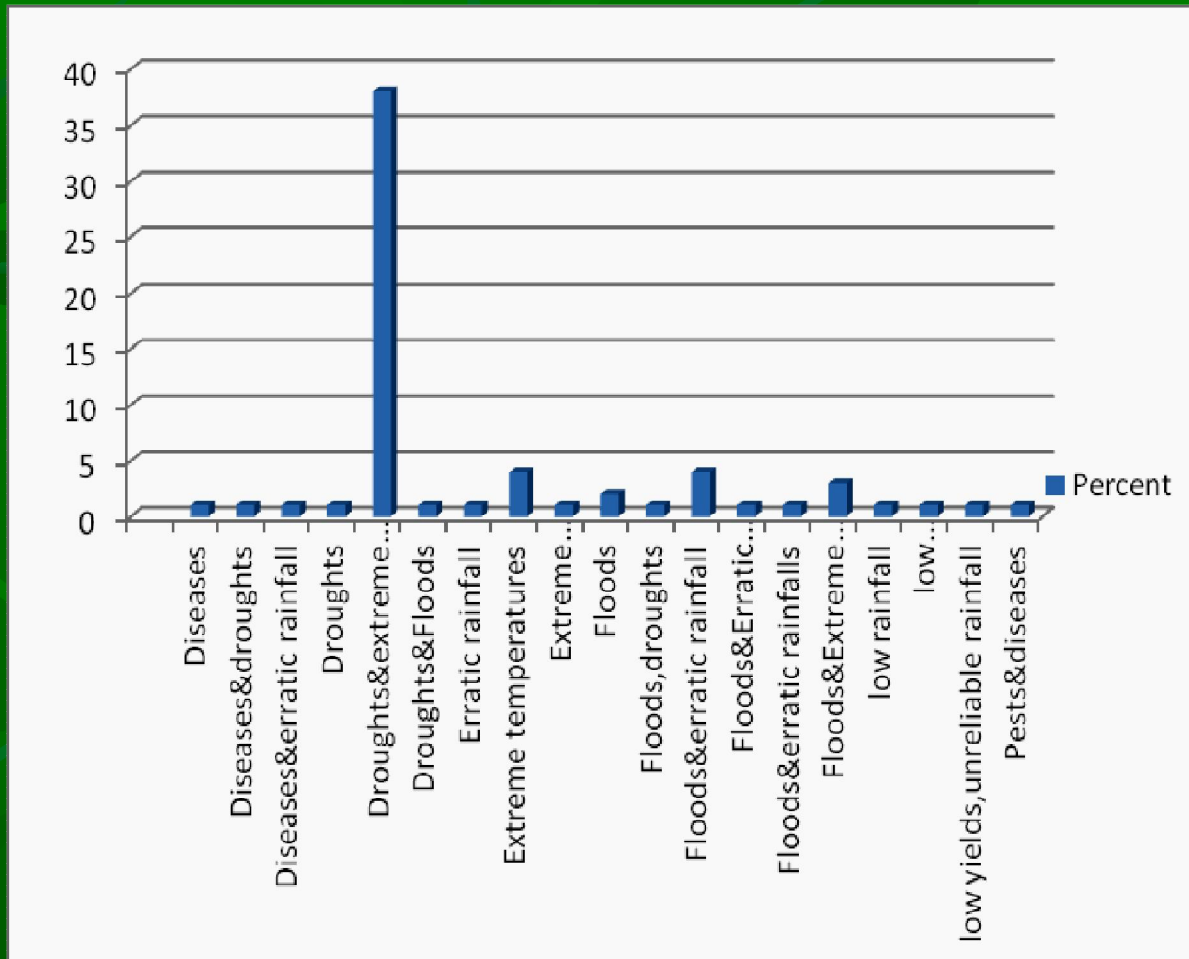
Effects of climate change

- Diseases and pests
- Prolonged droughts
- Floods
- Erratic rainfall
- Extreme temperatures
- Low yields

Adaptive strategies to climate change effects

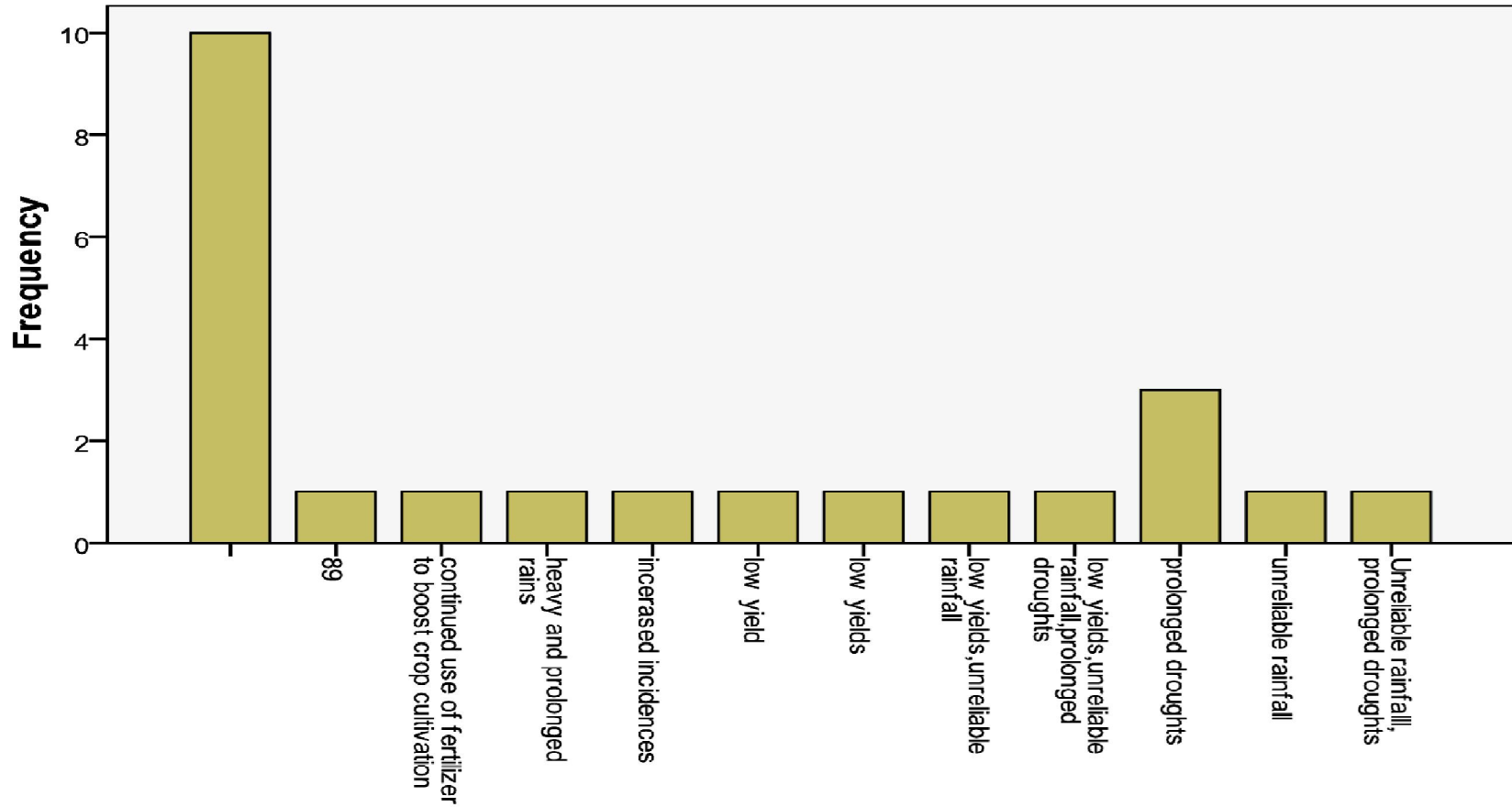
- Encourage farmers to plant more trees
- Use of organic fertiliser
- Encourage growth of indigenous crops
- Irrigation

Concerns about climate change

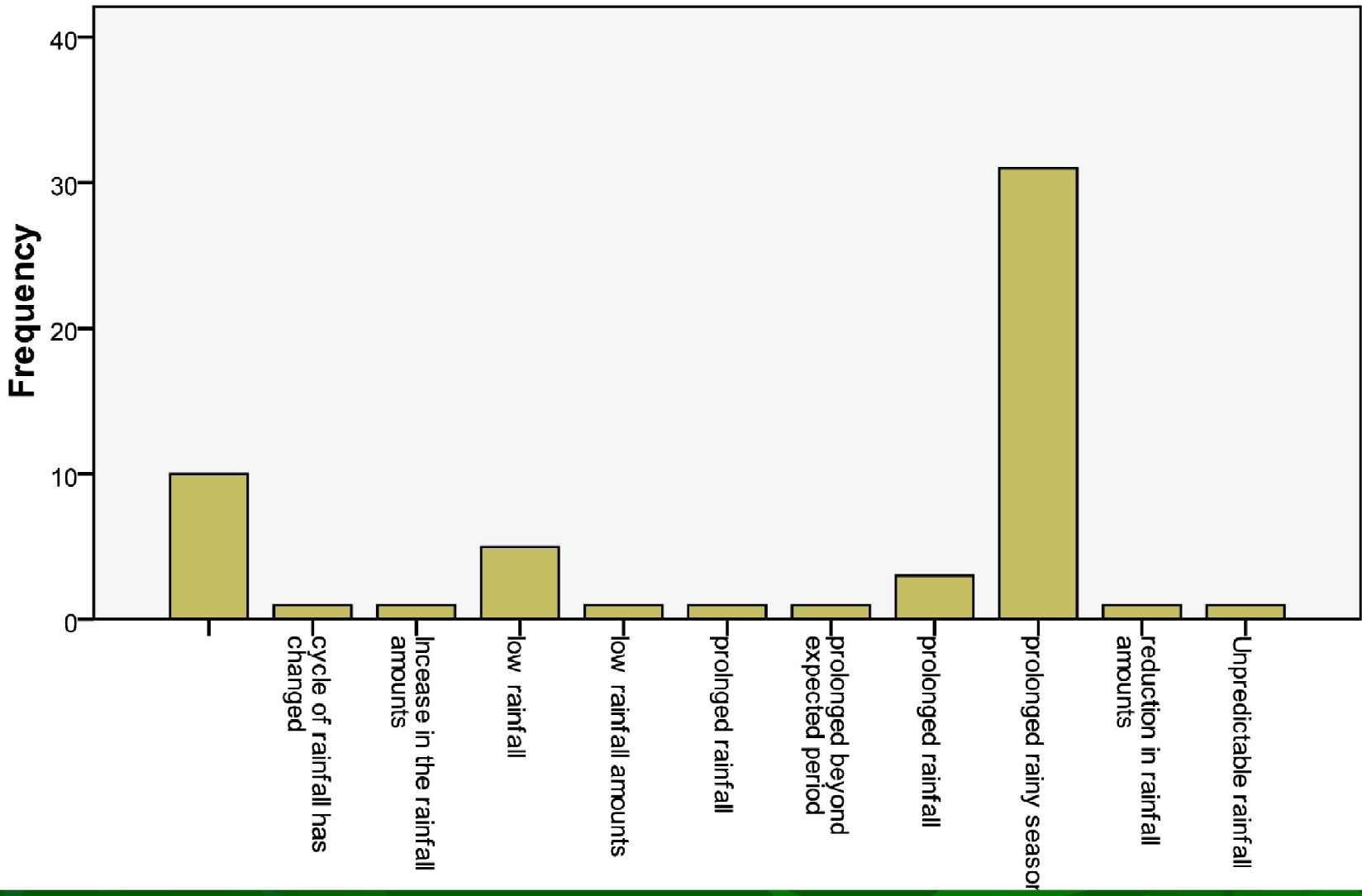


Out of 100 respondents 79 of them (79%) were able to respond to questions about climate change hence it showed they understood climate change and its effects but all understood it in different ways (figs. 1315). A proportion (21%) of the populace had no idea about climate change, which calls for intensified environmental education in this area. However 38% of the respondents cited droughts and extreme temperatures as their main concern as regards climate change. There was less understanding among the populace on the indicators of climate change and worse how to mitigate climate change (figs. 14).

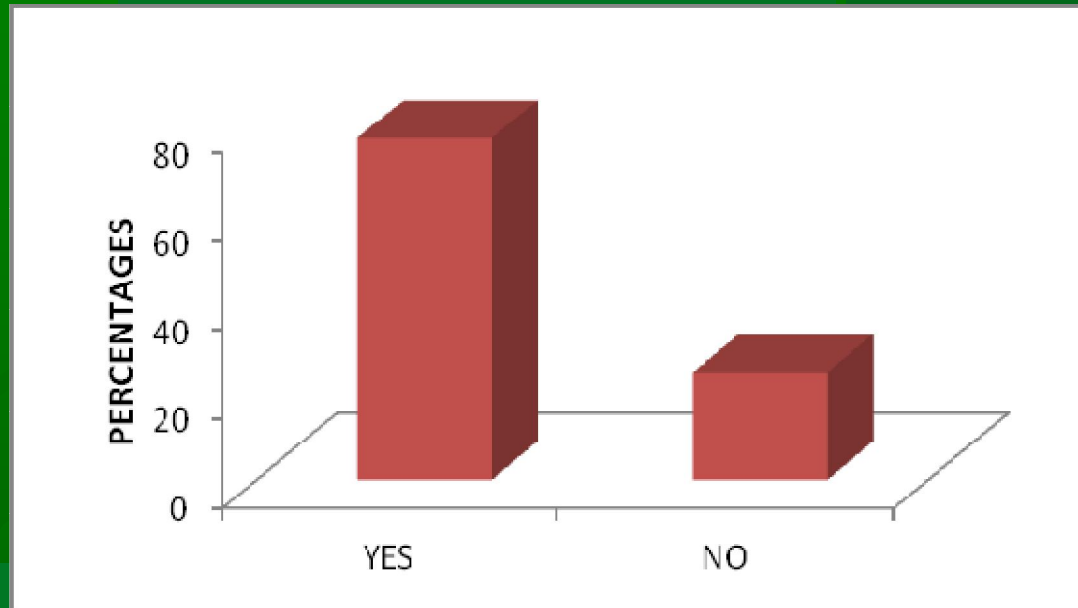
Indicators/effects of climate change



More data from respondents' reveals that a significant proportion (30%) of them understands changes that may be associated with climate change especially increased droughts (fig. 15). However, in general upto about 50% do not understand the changes that are associated with climate change.



Effects of weather patterns on agricultural practises

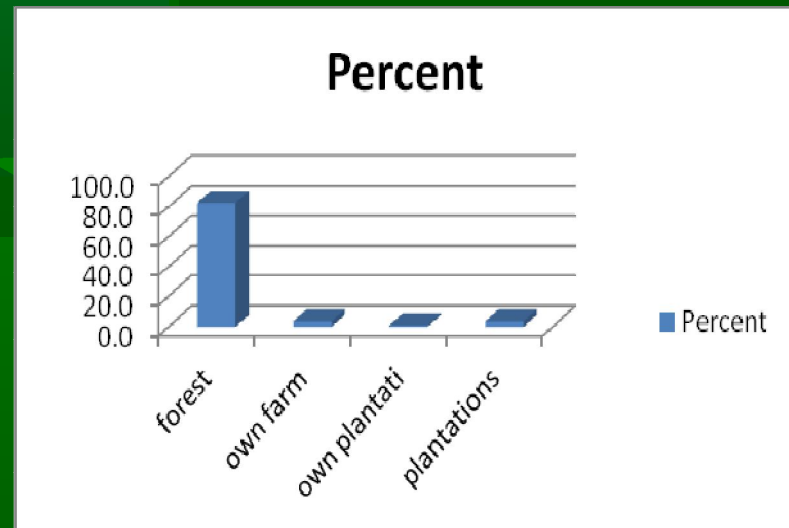


Upto 77 respondents (77%) admitted that agricultural practises have changed alot as a result of erratic weather patterns which are brought about by climate change (Fig.16). These have affected their farming practices, but they do not appear to understand the forces behind these changes. This calls for intensified education on climate change and its effects on local communities around the Kakamega forest.

Where the farmers obtain wood and non-wood products

Majority of the respondents (91%) were in agreement that most of their wood and non-wood products are obtained from the forest (fig. 17). Notably however at least 4% (4) stated they obtained these products from their own farms while one actually has an own plantation.

Source of wood and non-wood products	No. of Respondents	Percent
forest	91	91
own farm	4	4
own plantations*	1	1
Forest plantations	4	4
Total		100

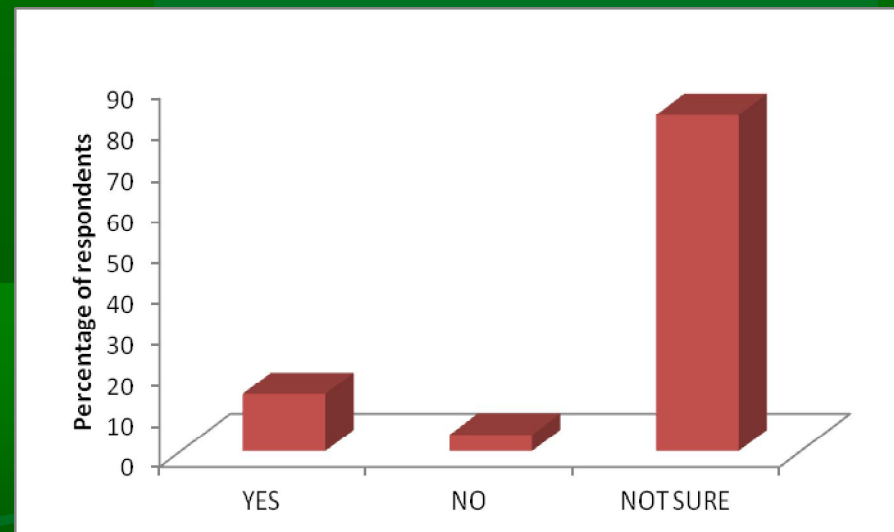


Despite the benefits accrued from the forest, the respondents were in agreement that there is still a lot of pressure exerted on the forest and its resources. Of the people interviewed 92% were in agreement that there is forest land exploitation (fig. 18). The reasons they gave for that included: *Burning charcoal, Collecting firewood and timber, Farming, High population pressure and high poverty levels.*

b) Participation in forest Conservation and Management

Realizing that there is a lot of pressure exerted on the forest resources by the populace, this study sought to determine whether the local communities were interested in efforts to conserve the forest. It was important to know whether the community is knowledgeable about the challenges facing the conservation of the forest.

Participation in forest conservation	No. of Respondents	Percent
YES	14	14
NO	4	4
NOT SURE	82	82
TOTAL	100	100



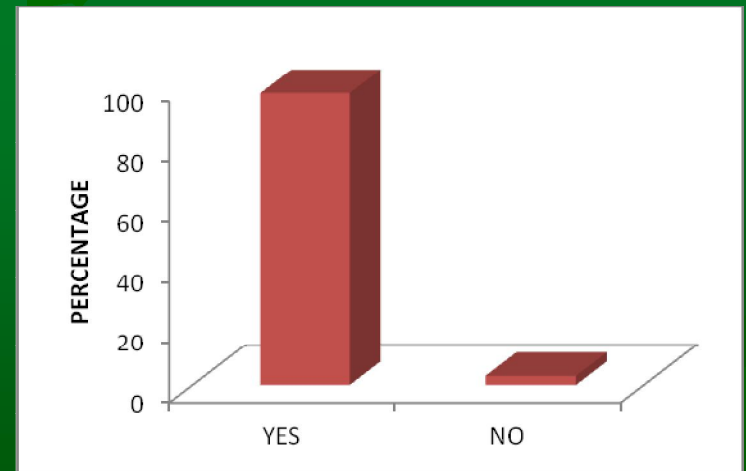
Most of the respondents 82 (82%) are not sure of any challenges that face the conservation of the forest (fig. 20) while 14% (14) of the respondents admitted that yes there are challenges facing the conservation of the forest and among the challenges they gave included:

- Unwillingness of the community around the forest to participate in the conservation of the forest,
- Lack of awareness on the importance of the forest,
- Increase in population around the forest,
- Increased poverty levels,
- Community seeing one as a betrayer when he/she acts as a scout of the forest,
- Charcoal Burning and soil scooping.

However 4% (4) of the respondents did not agree that there are challenges facing conservation and management of the forest. These responses clearly illustrated a need for an expanded and more targeted environmental education program.

i.Availability of forest resources

Availability of Forest Res.	No. of Respondents	Percent%
YES	97	97
NO	3	3



Most respondents 97 (97%) admitted that there is a change in the composition of the forest as a result of their own actions which is reflected in the diminishing availability of resources (fig. 21). Only 3 (3%) did not agree that there is a change in the forest cover and forest composition as portrayed in the diminishing resource availability. Some of the resources the farmers obtained from the forest include Fuel wood, thatch grass, medicine, Honey, among others as shown also in Figure 12.

i.Change in forest cover

Change in Forest Cover	No. of Respondents	Percent%
NO	1	1
YES	99	99

Apart from diminishing resources, majority of the respondents (99%) admitted that there is indeed change in the forest cover (fig. 22). Some of the reasons they gave for this include:

- agriculture,
- charcoal burning,
- deforestation and
- Overgrazing.

As regards responses to changes in forest cover the respondents gave the following as possible solutions and actions to stop changes in the forest cover:

- Reduction of grazing in the forest,
- afforestation of the degraded areas,
- allocating people land to cultivate on,
- Public awareness through sensitization and education of the community,
- encouraging and funding the women conservation groups and
- Cooperation between KFS, KWS and the community.

16% of the respondents believe that reduction of grazing in the forest would help in its conservation while a small proportion had no idea of what should be done.

i. Responsibility for forest conservation

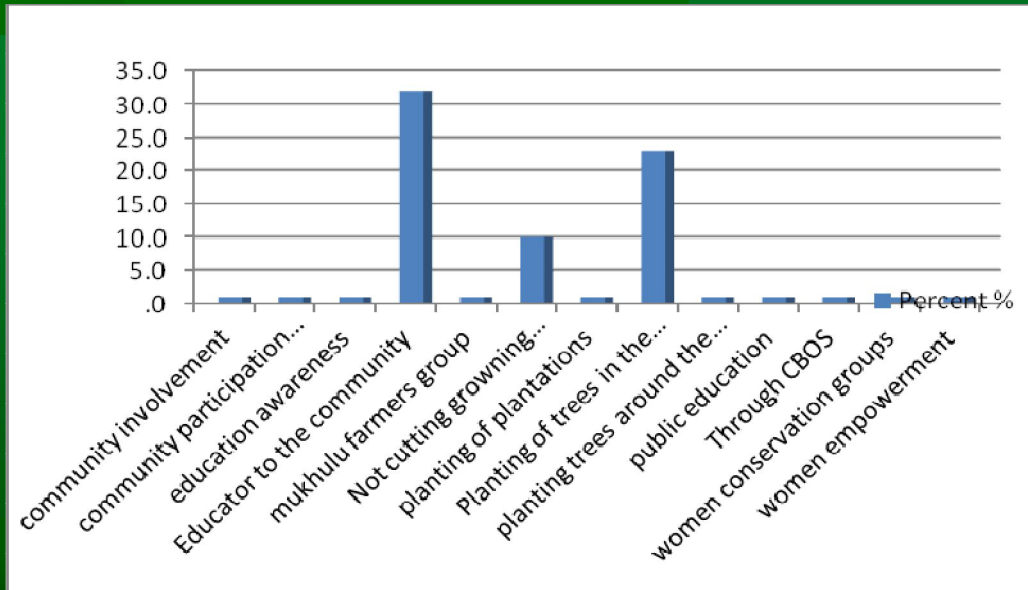
Responsibility for conservation	No. of Respondents	Percent (%)
PUBLIC	11	11
PRIVATE	2	2
CBOs	6	6
NGOS	1	1
COMMUNITIES	80	80
Total		100

80% of the respondents were of the view that the community around the forest should be responsible for the conservation of the forest (fig. 23). Others felt that NGOS (1%), Private organizations (2%) and civil societies (6%) should also assist in the conservation of the forest. This shows the developing sense of ownership about the forest by the local communities. This requires that communities be equipped with skills at all levels that will enable them to manage the Kakamega forest effectively. Communities should also be educated on their roles and those of the government agencies to avoid conflicts.

Ways in which people should participate in forest conservation

- Attending meetings organised to educate the public on forest conservation
- Participate in the forest conservation issues
- Having forums on forest conservation
- Participating in afforestation activities
- Involvement in the youth and women conservation groups initiatives
- Women empowerment and formation of women conservation groups

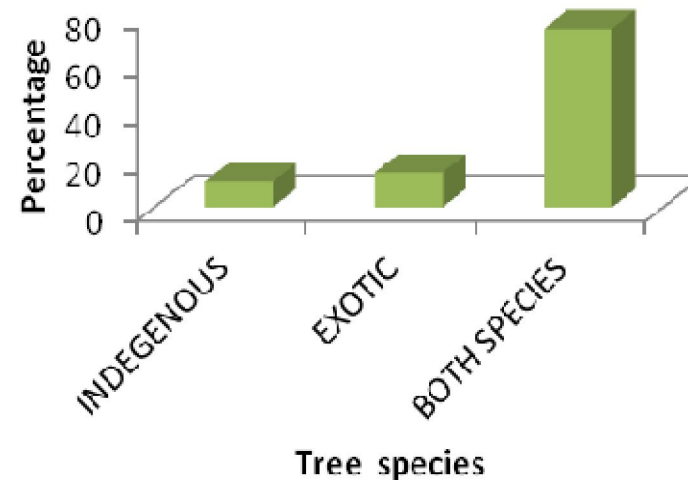
Majority of the respondents (78%) admitted to participating in forest conservation in one way or another. This suggests a more willingness to participate in future forest conservation. Upto 35% and 25% proportion preferred working as community educators and tree planting respectively in the forest to increase forest cover (fig. 24). Generally the respondents showed particular intention on community participation in conservation aspects.



c) On-Farm Tree Planting

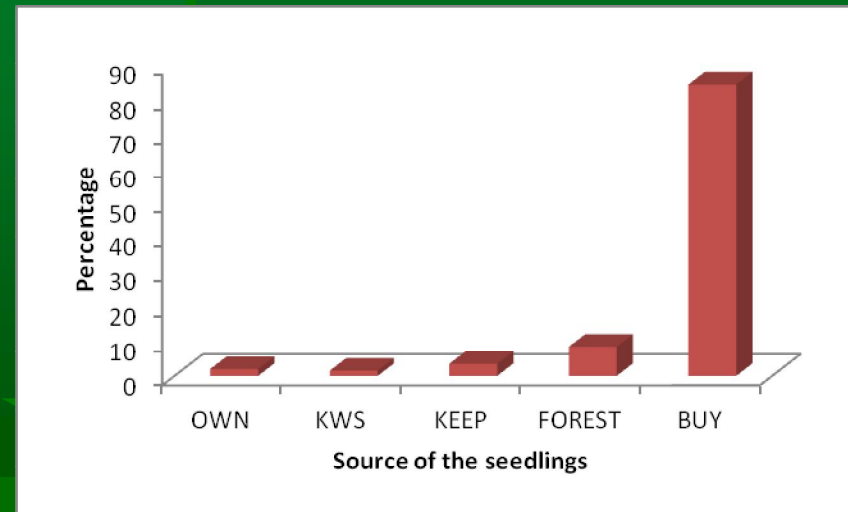
One of the ways of reducing pressure on the forest for wood products is to plant trees on individual farms. The study sought to determine the extent of tree planting on individual farms. We observed that many respondents had seedlings/saplings and trees growing on their farms. As observed below (fig. 25), all respondents plant tree species on their farms. However majority of the respondents 74 (74%) plant both indigenous and exotic tree species while 12(12%) plant indigenous only and 14 (14%) plant exotic tree species. All the respondents had both mature trees and saplings on their farms. This suggests the willingness the local communities to engage more in woodlots planting on their individual farms to meet firewood and timber demands. Although only 10.9% planted indigenous trees it showed an appreciation of their value to them.

Type of trees	No. of respondents	Percent %
INDIGENOUS	12	12
EXOTIC	14	14
BOTH	74	74



i. Source of seedlings for individual farmers

Source	No. of respondents	Percent%
OWN	2	2
KWS	1	1
KEEP	3	3
FOREST	9	9
BUY	85	85



85 individuals or 85% of the respondents buy seedlings from individuals or community tree nurseries that they plant on their farms (Fig. 26). It was evident that KEEP as a CBO also plays a role in the conservation of the forest because they provide seedlings for the farmers to plant on their farms to ease pressure from the forest. Respondents who admitted that KEEP provide seedlings comprised 3% of the respondents. Very few individuals have their own tree nurseries.

Table 2: Average number of tree seedlings on-farm

Number of Individuals	Number of Seedlings
27	1 to 10
16	11 to 20
21	20 to 40
10	41 to 60
6	61 to 80
1	200 to 350
1	400 to 800

The average number of tree seedlings/saplings found on individual's farms is shown in table 2 above. About 27 individuals had between 1 and 10 seedlings on the farm, 16 individuals (11-20 seedlings), 21 individuals (20-40 seedlings), 10 individuals (41-60 seedlings), 6 individuals (61-80 seedlings), 1 (approx. 200 seedlings) and 1 (approx. 400 seedlings). The latter 2 farmers can serve as good extensionists to the other farmers.

Table 3: Average number of mature trees on individual farms

No. of Individuals	No. of Mature Trees
26	2 to 20
29	21 to 40
33	41 to 80
1	more than 89

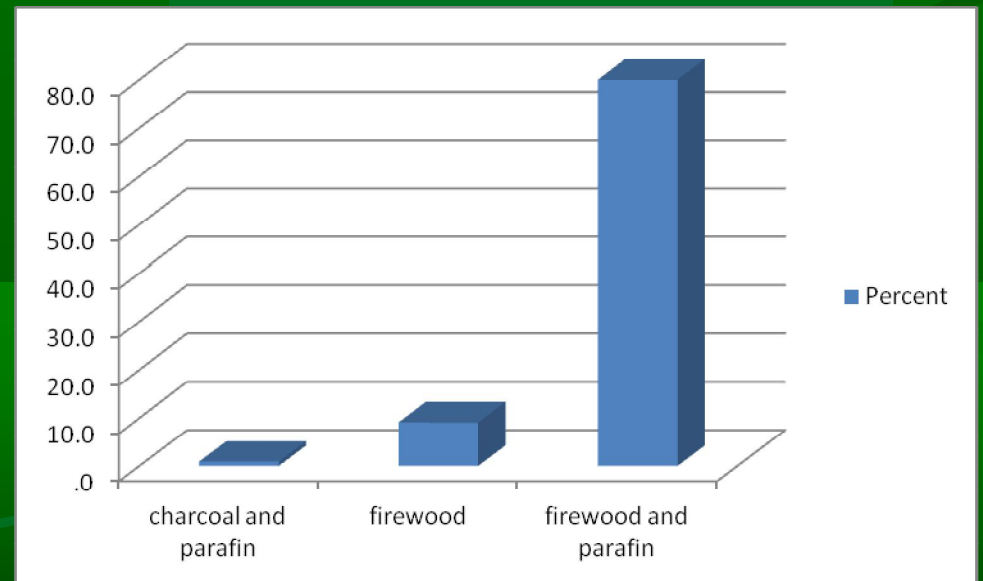
The distribution of average number of mature trees on the farms of the respondents were as follows (Table 3); 26 individuals (2-20 mature trees), 29 individuals (21-40 mature trees), 33 individuals (41-80 mature trees) and 1 individual with approximately 89 mature trees. The presence of mature trees on-farm can indicate the farmers' non-reliance on forests for fuelwood and timber for domestic use, which inevitably reduces pressure on the forest. This means that more efforts should be made to encourage more on-farm tree planting.

SCALING UP ADOPTION OF ENERGY SAVING TECHNOLOGIES AND TOOLS

a) Adoption of Energy Saving Technologies and Tools

The Kakamega forest is the main source of firewood for the local communities. Firewood is the basic energy source for cooking in majority of the homesteads (fig. 27). Upto 88% of the respondents stated that a combination of firewood and paraffin were their main sources of energy and lighting. Because the demand for firewood locally and globally is on exponential rise, it was important to determine the extent to which the local populace are adopting energy-saving technologies in villages around the forest. It was also important to determine whether there is available expertise to handle such energy-saving devices.

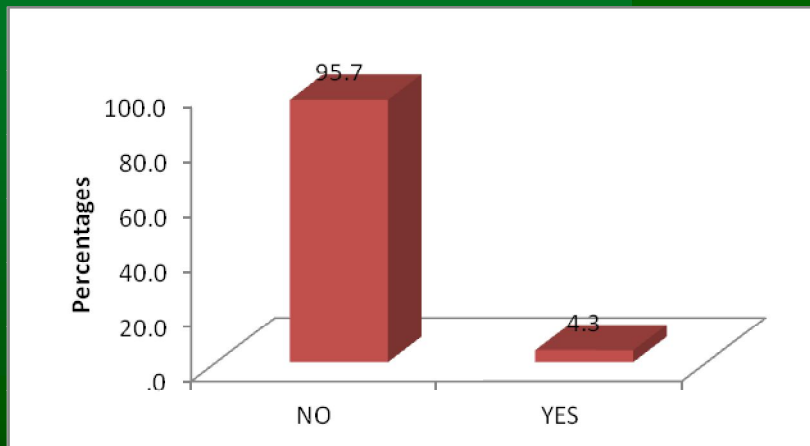
Source of Energy	No. of respondents	Percent%
charcoal and parafin	1	1
firewood	11	11
firewood and parafin	88	88
Total	110	100.0



Own energy saving stoves

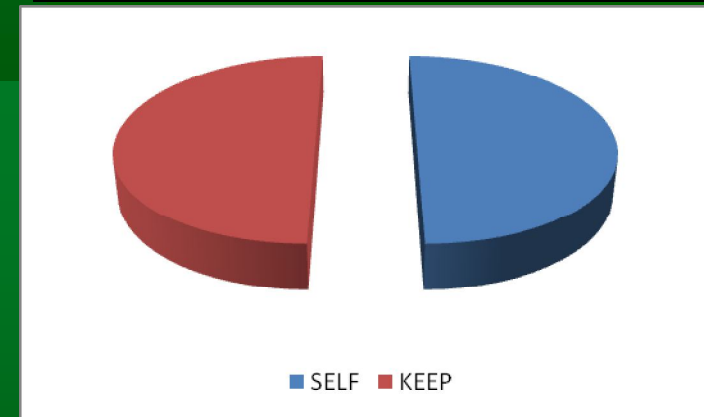
Our survey shows that 95.7% of the respondents do not own energy saving stoves as is the case with most families around the forest (fig. 28). There were, however, relatively few families (4.3%) that had these gadgets installed.

ITEM	No. of respondents	Percent%
NO	96	96
YES	4	4
Total	100	100



i. Installation of the energy saving stoves

Installation	No. of respondents	Percent%
SELF	2	50
KEEP	2	50



The source of energy that the respondents have embraced for cooking and lighting is paraffin and fuel wood. Of the respondents who admitted that they have installed the energy saving stoves, 2 (50%) of the people with the stoves did it by themselves while the rest 2 (50%) were assisted by KEEP to install the jikos.

Knowledge on installation of jikos

There is scanty knowledge of the installation of the jikos

Proof that they were trained:

- Had Badges
- Certificates

These findings clearly suggest the need for intensified training of personnel and CBOs in installation of energy-saving technologies and the ready availability of these technologies and education for mass adoption by communities living within the Kakamega forest ecosystem.

CURRENT ACTIONS

- All the CFAs (8) and the WRUAs have now established indigenous tree seedlings nurseries for planting on-farm and in forest degraded sites.
- Education and awareness
- Production of playful materials to
- Energy saving stoves