

# Prevention of forest fires in small-scale plantation forestry in the Southern Highlands of Tanzania: Sharing experiences and building collaboration



Workshop on environmental collaboration, 19–20 April 2021, Mafinga, Iringa Region, Tanzania



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## SUMMARY

The workshop “Prevention of forest fires in small-scale plantation forestry in the Southern Highlands of Tanzania: Sharing experiences and building collaboration”, 19–20 April 2021, Mafinga town, Tanzania, was organized within the MAKUTANO research project, funded by the Academy of Finland (2019–2023) and implemented by the [University of Eastern Finland \(UEF\)](#), Finland, and the [College of Business Education \(CBE\)](#), Tanzania.

African Forestry (AF), a Tanzania-based professional NGO, acted as a convenor of the workshop. The workshop was preceded by fact-finding and data collection missions to Iringa and Njombe regions in 2018, 2019 and 2021. During the data collection missions, interviewees indicated wildfires as a serious challenge for commercial tree growing. It was concluded that there would be a need for a collaborative workshop to discuss the causes, effects, and prevention of forest fires.

The aim of the Mafinga workshop in 2021 was to strengthen collaboration between actors involved in small-scale commercial tree growing in the Southern Highlands of Tanzania by jointly reflecting and exchanging experiences on forest fires. In total, there were 27 invited workshop participants, including resident tree growers, urban-based investors, businesspeople, government officials and representatives of NGOs.

At the conclusion of the two-day dialogue and group work, the workshop participants put together three recommendations. First, the participants expressed the view that farmers and small-scale tree growers need to be trained in firefighting. Second, the members of the Village Natural Resource Committees (VNRCs) would benefit from further education and training to better fulfil their responsibilities. Third, it would be important for the village leadership and the members of village committees to receive legal training on village bylaws.

The recommendations conveyed by the workshop participants would require actions especially at the village level but also beyond. All the actors should collaborate, including the

representatives of Central and Local governments, NGOs, farmers, tree growers, businesspeople and villagers. The contribution of all actors is a must in order to prevent damages to forest plantations and other property.

“... ni jambo linalowezekana endapo kila mmoja atatimiza wajibu wake”

...it is possible if every person fullfills his/her role.

Mwalimu Julius Kambarage Nyerere.

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## **ACKNOWLEDGEMENTS**

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## **SWAHILI VERSION**

Swahili version of report available [here](#).

## **MAKUTANO RESEARCH PROJECT**

[MAKUTANO](#) – Translocal Forest Owners and Environmental Collaboration: An Action Learning Process of Forest Governance Transformation in Tanzania – is a research project (grant no. 320236) within DEVELOP Programme (2019–2023), which is a programme jointly funded by the Academy of Finland and the Ministry for Foreign Affairs of Finland. The main objective of the project is to study skills of environmental collaboration and conflict resolution methods among a group of forest owners and local community members in the Southern Highlands, Tanzania, and to trace how these skills are transformed and used in the future actions of these forest owners and the surrounding communities. The research collaboration involves partners from Tanzania, Mexico and Finland.

## **RESPONSIVE NATURAL RESOURCES GOVERNANCE –RESEARCH GROUP**

The MAKUTANO research project is an initiative of the [Responsive Natural Resources Governance -Research Group](#) at the University of Eastern Finland. The main aim of the research group is to analyze the local, bilateral and multilateral environmental governance interventions and agreements. The research group approaches these interventions, agreements and processes not only as mechanisms for policy implementation, climate change mitigation and greater environmental legality but also as mechanisms for environmental governance that can lead to major changes in natural resources governance and responsiveness among actors. A major research interest is changes in actors' participation in the various processes and instruments as well as the transparency of the processes in which important decisions about forest and land resources are made. The research group focuses on a number of case study countries, including Finland, Russia, Indonesia, Mexico, Mozambique and Tanzania.

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## 1 INTRODUCTION

In Tanzania, forest plantations were initially established as state companies, whereas the role of private companies became more important in the 1990s. Since the beginning of the 2000s, there has been a rapid expansion of small and medium-scale commercial tree growing, especially in the Southern Highlands. The increasing demand for timber has attracted both resident and urban-based investors to capture this new resource frontier.

In 2018, MAKUTANO researchers recognized that conflicts and misunderstandings are related to the increased interest in commercial tree growing and utilization of land.

In order to further understand the context and potential conflicts in the Southern Highlands, semi-structured interviews and focus group discussions (FGDs) were carried out in May 2018, in October 2019 and in February 2021 in Iringa and Njombe regions. These fact-finding missions formed the first phase of an action-oriented research process.

As a result of the above-mentioned fact-finding missions, a diverse range of interpretations related to small-scale commercial plantation forestry was mapped. Many of the interviewees mentioned wildfires as a serious challenge for commercial tree growing. The researchers and project inter-action partners (African Forestry and Maisha Shamba Association) concluded that there would be a need for collaborative actions to find appropriate ways how to mitigate forest fires.

The MAKUTANO research team and African Forestry, a Tanzania-based professional NGO, decided to organize a collaborative workshop to discuss the causes, effects, and prevention of forest fires. The idea was to convene a workshop to co-create knowledge and joint understanding of forest fires.



MAKUTANO project activities include supporting, co-organising and facilitating workshops which co-create empirical material and information both for researchers and for practical implementation in Tanzania – so called living knowledge.

Further information on collaborative research methods is listed here:

- Swantz, M-L. 1996. A personal position paper on participatory research: personal quest for living knowledge. *Qualitative Inquiry* 2(1): 119–136.
- [Reason, P. & Bradbury, H. \(eds.\). 2008. \*The Sage Handbook of Action Research. Participative Inquiry and Practice\*, 2nd ed. London: Sage.](#)
- [Pope, E. M. 2020. \*From Participants to Co-Researchers: Methodological Alterations to a Qualitative Case Study\*. \*The Qualitative Report\* 25 \(10\): 3749–3761.](#)

The workshop “Prevention of forest fires in small-scale plantation forestry in the Southern Highlands of Tanzania: Sharing experiences and building collaboration” was held on 19–20 April 2021 at the Forestry and Wood Industries Training Centre (FWITC) in Mafinga town, Iringa Region, Tanzania.

The workshop preparations included a total of 12 on-line sessions which were held from December 2020 to April 2021. Each session lasted 1.5 – 3.5 hours. The on-line planning sessions were attended by **Prof. Edda Tandi Lwoga**, **Dr. Ubaldus J. Tumaini** (College of Business Education, CBE), **Mr. Aristarik H. Maro** (Law School of Tanzania, LST) and **Mr. Kikolo Mwakasungula** (African Forestry, AF) in Tanzania, **Prof. Irmeli Mustalahti**, **Ms. Ida Herdieckerhoff** and **Dr. Antti Erkkilä** (University of Eastern Finland, UEF) in Finland as well as external trainers **Prof. Tuyeni Heita Mwampamba** (National Autonomous University of Mexico, UNAM) and **Dr. Mara Hernández Estrada** (independent consultant in consensus building and multiparty negotiations) in Mexico.

African Forestry (AF), as a convener of the workshop, invited all the participants. Prof. Lwoga, Dr. Tumaini, Mr. Maro and Mr. Mwakasungula facilitated the workshop in Mafinga. **Prof. Dismas L. Mwaseba** (Sokoine University of Agriculture, SUA) acted as an external observer.

The workshop participants arrived in Mafinga on Sunday, 18 April 2021. In total, there were 27 invited workshop participants (8 female, 19 male), including resident tree growers, urban-based investors, businesspeople, government officials and representatives of NGOs. A total of 12 invited persons had been interviewed during the fact-finding mission in October 2019. Before the commencement of the workshop, all participants signed a form where they gave their consent for data collection for research purposes, including audio recording.

## **2 BEGINNING OF WORKSHOP DAY 1**

The workshop started at the plenary hall of FWITC as planned at 8.00 AM. There was a short informal introductory moment where everybody presented themselves. Then people were advised to sit in such a way so that they could converse with someone they have not met before. This procedure was meant to enable workshop participants to start becoming more familiar with each other.

The workshop was opened by **Mr. Demetrius Kempton**, District Forest Officer at the Mafinga Town Council. He underscored the importance of the forest sector in the Southern Highlands, and the need for actions to prevent forest fires.



**Figure 1.** Mr. Demetrius Kempton, District Forest Officer at the Mafinga Town Council delivering the workshop opening remarks. Prof. Edda Tandi Lwoga and Mr. Kikolo Mwakasungula are seated on the left and right respectively.

**Dr. Ubaldus J. Tumaini** explained the rationale of the workshop. The main aim of the workshop was to strengthen the collaboration between actors involved in small-scale commercial tree growing in the Southern Highlands of Tanzania by jointly reflecting and exchanging experiences on forest fires.

He requested everybody to observe all the necessary COVID-19 protocols as directed by the health professionals, including social distancing, washing hands with soap and clean water or using hand sanitizers, as well as wearing face masks.

Dr. Tumaini asked the workshop attendees to discuss and agree on working rules during the workshop. Consequently, after a short discussion, the participants agreed on the following workshop ground rules:

1. Mobile phones are on silent mode.
2. Facilitators give a sound signal when participant's speaking time is over.
3. When a person is given the floor, the other participants should listen carefully and not keep talking.
4. All views and opinions presented by fellow participants are listened to and appreciated. Everybody participates and promotes the participation of others.
5. Beyond the workshop event the participants are free to use information from the discussions, but they are not allowed to reveal who made any specific comment (Chatham House Rule).
6. Banter and jokes are welcome unless they are offensive to fellow participants.
7. Photography for workshop reporting purposes is allowed.
8. Audio and voice recording is permitted for research purposes.

Lastly, Dr. Tumaini explained the idea of the Parking Lot. A flipchart was placed at the back of the plenary hall for workshop participants to anonymously write their ideas and concerns. Participants were also advised to use the Parking Lot to write down matters they think are of importance but have not yet been addressed. The opportunity to use the Parking Lot was meant to ensure that the emerging important issues would not be forgotten.

The workshop attendees were also welcomed to contact Prof. Edda Tandi Lwoga or any other facilitator at any time to express their views or concerns and ask questions about the workshop.

At the end of the opening session, there was a presentation by **Dr. Samora Macrice**, Senior Lecturer at Sokoine University of Agriculture (SUA). He focused on forest fires in Tanzania though drawing on experiences from other countries such as Malawi, Mozambique, Kenya and Uganda. He concluded his talk by inviting everybody to reflect on how they could prevent forest fires in their home areas.



**Figure 2.** Dr. Samora Macrice, Senior Lecturer at Sokoine University of Agriculture (SUA), speaking on forest fires.

### **3 EMPATHY MAPPING EXERCISE**

**Prof. Edda Tandi Lwoga** elaborated on the empathy mapping exercise. The purpose of the empathy mapping exercise was to explore and share experiences on causes, effects and prevention of forest fires. This exercise was carried out in homogenous discussion groups.



**Figure 3.** Prof. Edda Tandi Lwoga elaborating on the empathy mapping exercise.

Participants were split into four discussion groups. The idea was to form homogenous groups where participants would have a fairly common understanding and experiences of uncontrolled forest fires. Each group was hosted by a facilitator who supported the group discussions and made sure that the workshop ground rules were respected.

The four homogenous discussion groups were:

1. Resident tree growers facilitated by Prof. Edda Tandi Lwoga.
2. Urban-based investors and their rural-based representatives facilitated by Dr. Ubaldus J. Tumaini.
3. Government officials facilitated by Mr. Aristarik H. Maro.
4. Businesspeople and NGOs facilitated by Mr. Kikolo Mwakasungula.

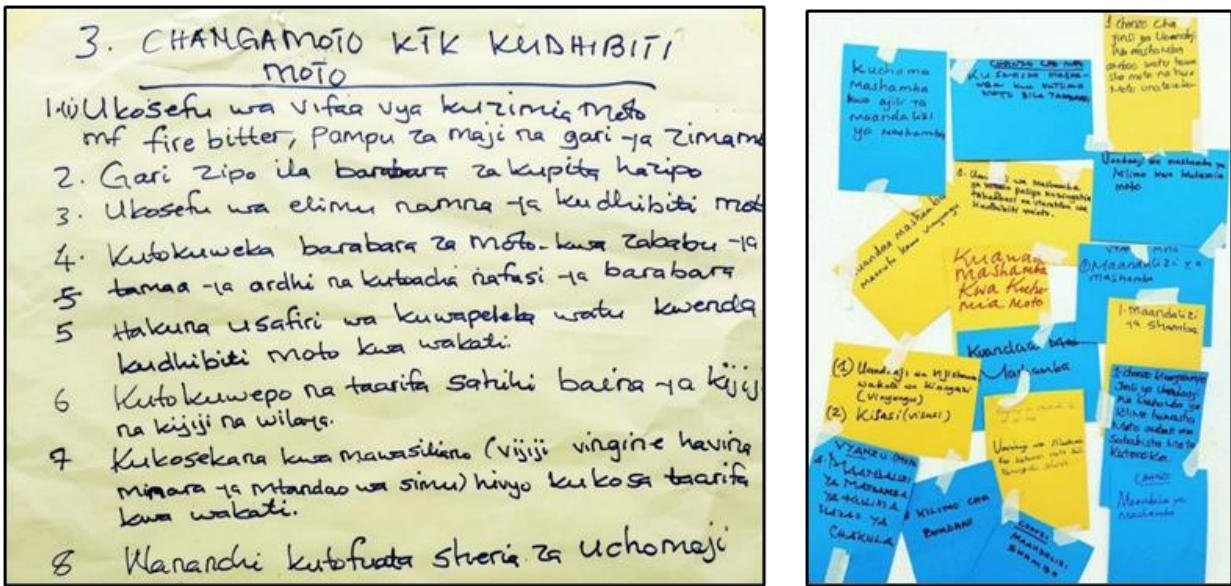
Group members were asked to share their experiences and opinions about four discussion themes related to forest fires:

1. Experiences. Recount a forest fire which broke out in your tree plantation or elsewhere in the village.
2. Causes. What was the cause of the fire incident? How did the fire affect your property?
3. Challenges. What problems or challenges did you encounter in firefighting?
4. Coping mechanism. What measures have you taken to prevent forest fires in the future?

Two groups remained in the plenary hall while the other two groups went to the next-door meeting rooms. Each group selected a secretary to write down the key issues discussed on flipchart paper. Each group also nominated one person to present the findings in the follow-up plenary session. Two hours were allocated for the discussions, in total 30 minutes for each theme.



**Figure 4.** Workshop participants sharing experiences on forest fires.



**Figure 5.** Examples of group work.

Finally, facilitators invited everybody to gather in the plenary hall where each group posted their flipchart papers on the walls. Each of groups had their turn to present the main findings and issues discussed.

The summary of group discussion is presented below:

1. Experiences.
  - a. Everybody had encountered one or more forest fire incidents.
  - b. Everybody acknowledged that they had been affected by forest fires in one way or another.
2. Causes.
  - a. Agricultural field burning.
  - b. Arson due to unsolved disputes and conflicts, such as land conflicts, and conflicts between resident farmers and translocal investors; arson in revenge for unpaid wages; arson caused by fraudulent businesspeople.
  - c. Careless use of fire by hunters, honey harvesters, charcoal burners, forest workers or children.
  - d. Weak law enforcement.



### 3. Challenges.

- a. Extreme weather conditions, such as torrid heat and strong wind, make the spreading of fire easier.
- b. Mountainous terrain makes plantations difficult to reach.
- c. Insufficient infrastructure, especially limited and poor road networks, which makes it difficult to access remote areas; poor or no telecommunication network is a serious challenge from the point of view of reporting.
- d. Poor preparation means lack of firebreaks, insufficient firefighting workforce, shortage of modern firefighting equipment and absence of fire detectors.
- e. Negligence in collaboration between translocal investors and villagers results in poor community response in firefighting and lack of motivation among the volunteer firefighters.
- f. Lack of skills in firefighting.

### 4. Coping mechanism.

- a. There is a need to establish fire control committees and to enforce bylaws on land preparation using fire; the use of fire in land preparation should be allowed only if there are at least 10 people in readiness for firefighting; firebreaks should be cleared and widened.
- b. Villagers should be encouraged to participate in firefighting.
- c. Forest fires and fire damage should be reported to ward and district offices.
- d. Collaborative land-use planning should be implemented to reduce land use conflicts. Collaborative Forest Management (CFM) should be encouraged.
- e. Effective means, such as signboards, should be used to warn the public against careless use of fire.
- f. All those who maliciously start fire for whatever reason should be prosecuted.

## 4 WRAP UP SESSION

After the group presentations, workshop participants were asked to write on post-it notes one cause of forest fire and one coping mechanism they found important.

The post-it notes were collected by the facilitators and attached to the plenary hall walls. Facilitators grouped the post-it notes based on key messages.

As a result, the plenary meeting concluded that forest fires are caused by several factors, listed here:

1. Agricultural field burning.
2. Disputes and conflicts in society.
3. Weak enforcement of bylaws, particularly at village government level.
4. Low awareness on causes and effects of forest fires.

These were the four major points to be discussed on the following day of the workshop.

## 5 BEGINNING OF WORKSHOP DAY 2

On the morning of the second workshop day there was a brief presentation of the Forestry and Wood Industries Training Centre (FWITC) by **Mr. Freeman Massawe**, Acting Principal. His presentation was followed up by a 1-hour tour of the FWITC premises. The workshop attendees were able to observe furniture manufacturing and sawmilling equipment, advanced charcoal production technologies, and a tree nursery.



**Figure 6.** Mr. Freeman Massawe, Acting Principal of the Forestry and Wood Industries Training Centre (FWITC) giving a briefing on activities conducted by the Centre.

After the presentation everybody was asked to move to the plenary hall to recap lessons learnt from the previous workshop day. Participants were asked to write on cards one major issue they found important from the first workshop day.

The feedback received included remarks such as consequences of forest fires for the economy of a nation and individuals, forest fires induced by various conflicts, the precautionary measures needed when starting the fire, the poor implementation of the village bylaws and the introduction of modern farming practices.

Prof. Edda Tandi Lwoga then introduced the World Café exercise.

## 6 WORLD CAFÉ GROUP DISCUSSIONS

### 6.1 World Café method

The workshop participants were divided into four heterogeneous discussion groups. Group members had been selected by the facilitators in advance, namely at the end of the previous workshop day. The idea was to form heterogeneous groups to encourage joint learning. Thus, contrary to the previous day, groups were now composed of participants engaged in different activities and roles in plantation forestry. However, the gender and the power dynamics among the group members were taken into account to ensure a safe environment that would allow workshop participants to speak in a relaxed manner.

The purpose of this exercise was to conduct discussions on the four main causes of forest fires:

1. Agricultural field burning.
2. Disputes and conflicts in society.
3. Weak enforcement of bylaws, particularly at village government level.
4. Low awareness of causes and effects of forest fires.

The groups were instructed to address each cause of forest fire from three points of view:

1. Collaboration.
2. Actors.
3. Resources.

Four rounds of 30 minutes were given for discussion on each cause of forest fire.

Prof. Lwoga asked everybody to relax and to have a tea break. Workshop participants were called back to the plenary hall where the facilitators informed them that there were four

discussion areas and tables: two in the plenary hall and two in the meeting rooms next-door. It was explained that each table was dedicated to one cause of forest fire.

Prof. Lwoga said that each discussion table would have a table host and a facilitator. Both persons playing these roles would remain at the table, whereas other people would move every 30 minutes from one table to another. Members of group 1 would move from table 1 to table 2, and the members of group 2 would move from table 2 to table 3, and so on. Prof. Lwoga then invited the group members to move to their assigned starting tables.

The table facilitator welcomed the group members and introduced the topic to be discussed. The facilitator made sure that the discussion topic was understood by everybody, that discussion remained focused on the topic, and that all participants had equal opportunity to talk. The group members chose one person to act as a table host to write down discussion points on flipchart paper.

After 30 minutes of conversation, the facilitators asked members of each group to move to a different new table, for example members of group 1 were told to move to discussion table 2. The table hosts remained in place to welcome the next group and to host the next round of discussion. The table hosts told the new group what had been discussed around the table so far and asked the group members to build upon the discussion in reference to their topic. The table hosts added new discussion points on flipchart paper. After 30 minutes of conversation, the group members again moved to the next new table.

In total there were four rounds of 30 minutes collaborative dialogue around each of the four causes of forest fire. Thus, information on causes of fire accumulated after each discussion round. The exercise, known as World Café, is one of the methods for co-creation of knowledge.

After the lunch break, all workshop attendees gathered in the plenary hall where the four table hosts summarized discussions on each of the four causes of forest fire.



**Figures 7 and 8.** Workshop participants involved in the World Café exercise.

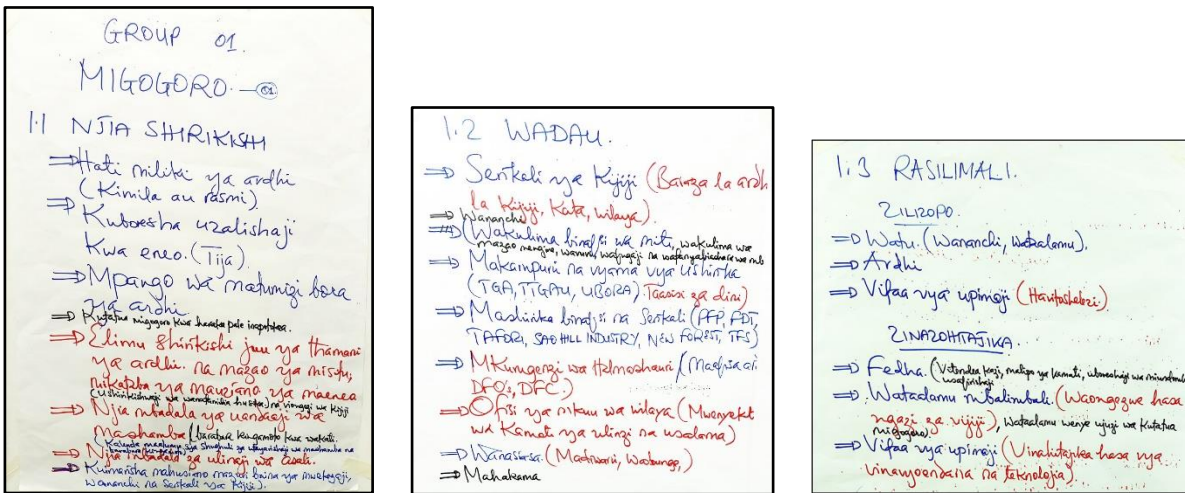


Figure 9. World Café exercise. The first group used blue ink, and the other groups added their experiences using the red and black ink respectively.

6.2 Agricultural field burning

A workshop participant remarked:

“When people are in the fields for agricultural activities, they usually cook food. When they finish their farming activities and return to their homes, some of them do not put out the fires properly. This is something that causes fires to increase and destroys people's property.”

“Sometimes when people prepare their fields, they start by cutting down trees and shrubs and later burn the stumps of the trees. You find that when he burns the stumps of some trees, the fire remains burning under the roots [...]. It becomes a big fire and destroys the plantations.”

6.2.1 Collaborative measures in firefighting

During the discussion rounds the workshop participants deliberated on collaborative measures needed to prevent forest fires caused by agricultural burning. The four groups concluded that controlled burning is largely used by farmers as an agricultural practice in land clearing and in land preparation to improve the productivity of acid soils.

Several collaborative measures were proposed to improve the control of fire during agricultural field burning. Above all, in the opinion of workshop participants, it would be important to involve local leaders and people experienced in firefighting. District Councils have a key role in providing effective agricultural extension. The participants expressed that there is a need for local agricultural activity calendars.

Moreover, participants proposed collaborative formulation of bylaws on agricultural field burning. There is also a need for guidelines for alternative farming methods to replace the use of fire. Short rotation cropping in the plantation buffer zones could be promoted. It was proposed that village governments collaborate with schools to educate learners on how to prevent wildfire incidences.

### **6.2.2 Actors in firefighting**

The World Café group discussions resulted in several potential collaborators who would have an important role in preventing wildfires caused by agricultural field burning. Actors needed in collaborative efforts included farmers, resident tree growers, urban-based investors and their resident employees, local and village government authorities, forestry and agricultural experts, businesspeople, firefighting specialists, schools and churches, and NGOs.

### **6.2.3 Resources in firefighting**

Workshop participants concluded that there is a need for several types of resources to control fire during field preparation. In general, it seems that District Councils do not allocate sufficient funds to allow agricultural and forestry extension officers to monitor and advise on agricultural field burning.

Workshop participants proposed that hamlets and villages keep a list of potential workers who could assist in agricultural field burning. Accordingly, the village leadership were advised



to collaborate with businesspeople and other actors to procure firefighting equipment, including fire beaters and water pumps.

Availability of modern firefighting equipment should also be ensured. Furthermore, all the actors need also to collaborate in construction of roads leading to forest plantations.

### **6.3 Forest fires induced by conflicts**

A workshop participant recalled:

“A fire broke out in a nearby village due to a dispute caused by town planners when they came to set boundaries. They set boundaries in such a way that a large area belonging to the villagers was cut and transferred to the investor. Citizens made a follow-up to ensure that the boundaries were adjusted so that the area belonging to the people was restored, but officials and the investor did not adjust the boundaries. Later, when the investor planted trees, some of the citizens went and secretly burned the trees. The whole farm burned down and even when the villagers were asked to help in extinguishing the fire, they refused to put out the fire. The area is still open [devoid of trees] to this day and the investor has not replanted trees.”

#### **6.3.1 Collaborative measures to mitigate conflicts**

There are several potential conflicts which may induce a forest fire. While some conflicts are caused by land disputes, others are a result of misunderstanding between translocal investors and their resident employees.

Conflicts may also occur between individuals and are thus related neither to land disputes nor to commercial tree growing. Participants deliberated on collaborative measures for mitigating such conflicts.

The following five key observations were presented at the plenary session:

1. Participatory land use planning is an important tool to prevent and address potential land disputes. Title deeds (customary or statutory) should be prepared and issued to land users.
2. Conflicts should be resolved immediately after they emerge.
3. Land trade should be transparent and involve all the family members. Smallholders could be better informed on timber and land markets.
4. Alternative methods to the use of fire in land preparation or honey harvesting could be introduced.
5. Relationships between investors, citizens, and the village government should be improved.

### **6.3.2 Actors to mitigate conflicts**

In the plenary session, the participants concluded by identifying the key collaborating actors needed to mitigate conflicts, and consequently, to prevent forest fires.

The actors listed included:

1. Tree growers, farmers, pastoralists, businesspeople, politicians (including councilors and members of parliament).
2. Government organizations. [Tanzania Forest Services Agency \(TFS\)](#), [Tanzania Forestry Research Institute \(TAFORI\)](#), Local Government (land tribunals at village, ward and district level; District Commissioner; District Executive Director; District Forest Officers; judiciary).
3. Private enterprises. [SAO Hill Industries Ltd.](#) and The New Forest Company Ltd., [Ubora Forestry Solutions](#).
4. NGOS. [Forestry Development Trust \(FDT\)](#), [Participatory Plantation Forestry Programme / Private Forestry Programme \(PPF\)](#), [Tanzania Tree Growers Associations Union \(TTGAU\)](#), Tree Growers' Associations (TGAs).

### **6.3.3 Resources to mitigate conflicts**

Workshop participants mentioned several available and required resources to mitigate potential conflicts. Funds would be needed to purchase modern firefighting and surveying equipment, to upgrade road infrastructure and to pay allowances for the members of village committees. Participants highlighted that at the village level there is a need for experienced persons to put collaborative methods to good use.

## **6.4 Forest fires due to weak law enforcement**

A workshop participant pointed out that:

“The cause of the fire is poor law enforcement from the council level to the village level [...]. Although citizens are aware of the procedures to follow when they want to start a fire, when their fellow citizen breaks the law and starts a fire, they protect him, they do not take action for fear of being penalized when they themselves start fire in future and the fire destroys other people's trees. Therefore the community hides those who starts the fire which destroys other people trees and thus makes it difficult for leaders to take any action.”

“In natural forests it is easy to legislate and enforce the law but in planted forests it is very difficult to enforce the law [...]. Perhaps it is better to persuade people to agree to enact and enforce the law among themselves [...]. If you force the law on them, it will not be enacted or enforced. And even in the TFS forests, if a citizen starts a fire and burns trees, if you take him to court there is a risk of other villagers coming to take revenge and burn more trees [...]. So you have to persuade them not to start a fire again that will cause the trees to burn.”

### **6.4.1 Collaborative measures for effective law enforcement**

Participants discussed thoroughly how to improve law enforcement to reduce forest fires. It was agreed that forestry matters should be discussed more often at village meetings. Obviously, a village government may have difficulties to reach out to every single farmer.

Therefore farmers and tree growers should organize and have a representative who would collaborate with the village government.

There is a need to improve the fire reporting system both at village and district level. This would help the district leaders understand the extent of forest fires and act accordingly. Persons found to be guilty of starting a forest fire should be arrested and punished as decreed by law. Consequently, the villagers would be afraid of starting fires without permission.

Primary and secondary students should be given education on forest fires, including information on potential criminal sanctions. Bylaws issued on agricultural burning by the Village Natural Resource Committees (VNRCs) should be known to everybody. Leaders who break the law should be held accountable.

#### **6.4.2 Actors for effective law enforcement**

Participants listed several actors needed in law enforcement. The following actors were mentioned:

- Village governments (including VNRCs).
- Office of the District Commissioner (ODC).
- District Executive Director (DED).
- Ward Executive Officers (WEOs).
- Agriculture department.
- Private institutions.
- Religious institutions.
- Tree Growers' Associations (TGAs).
- Forest officers.
- Judiciary.
- Citizens.

### **6.4.3 Resources for effective law enforcement**

Citizens and village government leadership as well as financial resources and appropriate expertise are needed for effective law enforcement.

## **6.5 Forest fires due to low awareness**

A workshop participant narrated:

“There are large caves [...] [on the ground where] bees make their beehives [...]. So, I think young people came in and harvested the honey using fire. When they left, I think they did not take precautions to make sure they put out the fire. Later in the day, especially in the afternoon, the heat of the day and the increasing wind speed, I think, caused the fire to spread to the neighbourhood villages.”

“Those who were harvesting honey were not found.”

### **6.5.1 Collaborative measures to raise awareness**

Participants cited various collaborative methods for raising awareness and skills in forest management:

1. There is a need for demonstration sites where farmers and tree growers could learn by practice.
2. Small-scale tree growers should receive hands-on training in their resident villages.
3. Tree growing could be on the agenda in each village meeting and gathering.
4. Women and youth groups need to have practical training in firefighting, agricultural burning and a controlled use of fire in general.

### **6.5.2 Actors needed in the awareness raising**

Farmers, translocal investors, forestry experts, village government leadership, NGOs and forest companies are needed to improve awareness of forestry matters in general and skills in forest work in particular.

### **6.5.3 Resources needed for awareness raising**

Participants concluded that the villagers have a paramount role in efforts to prevent damages caused by uncontrolled forest fires. Awareness should be raised and training provided with the assistance of governmental and non-governmental educational institutions, as well as the media, including television, radio, social media, newsletters and booklets.

## **7 WORKSHOP RECOMMENDATIONS**

At the end of the workshop, Prof. Lwoga facilitated discussion on workshop resolutions and recommendations. The first recommendation highlights the importance of education.

### **7.1 Farmers and small-scale tree growers**

Farmers and small-scale tree growers in the villages do not have adequate knowledge nor training in firefighting. Therefore different actors from village to regional level could combine their forces and come up with collaborative measures to improve the situation. This would require District Forest Officers (DFOs) to work closely with the village and ward leaders. The Forestry Development Trust (FDT), Participatory Plantation Forestry Programme / Private Forestry Programme (PFP) and Tanzania Tree Growers Associations Union (TTGAU) could be contacted and asked to provide training on forest management.

The second recommendation emphasizes the role of the Village Natural Resource Committees (VNRCs).

## 7.2 Village Natural Resource Committees (VNRCs)

VNRCs deal with environmental matters, including agricultural burning, forest fires and firefighting. However, committee members – who are also village residents – may have inadequate understanding of forest fires. The workshop participants proposed that the village leadership makes sure that the newly appointed committee members receive adequate training on their responsibilities. If there are no available qualified trainers, the village leadership could liaise with District Council to look for extension officers. Alternatively, the village leadership may contact NGOs involved in forestry extension.

The third recommendation relates to capacity building among the members of the village governments.

## 7.3 Village governments

The workshop participants were of the opinion that the members of the village government should receive training on environmental matters. Thus, the village government should have adequate capacity to administrate bylaws on natural resources, including bylaws on agricultural burning. The village leadership should ask the District Council to allocate legal experts to train the village decision-makers on bylaws. It would be important to ensure broad participation among the different village committees.





Workshop on environmental collaboration:

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19–20 April 2021, Mafinga, Iringa Region, Tanzania



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