

Fire Management in Wood Fuel Production Systems in Ghana: the case of GIZ Community Fire Management



Implemented by:
giz German-Zimbabwean
Cooperation

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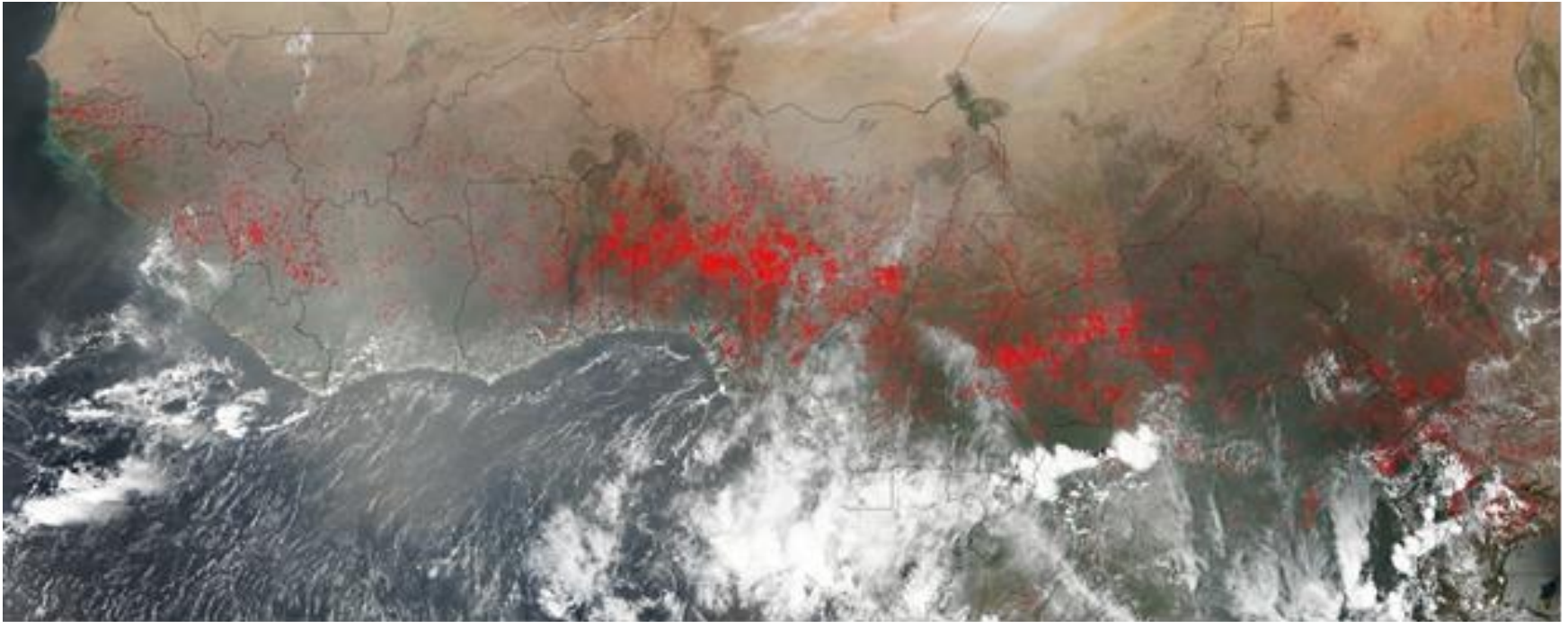
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Background

- Bushfire is a regular feature in landscapes across West Africa including Ghana.



Fires burning across West and Central Africa on February 6, 2017. Source: NASA (2017).



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Background

- Frequent bushfires have led to loss of forest cover and reduction in biodiversity of forest and savanna resources in Ghana.



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Background

- Many forest restoration programmes (e.g. GIZ Forest Landscape Restoration project) in Ghana are at risk due to potential bushfires.



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GIZ Fire Management Approach

- Baseline risk assessment
- Development of a bushfire management concept at the community level to help reduce fire risk
- Implementation of fire management concept

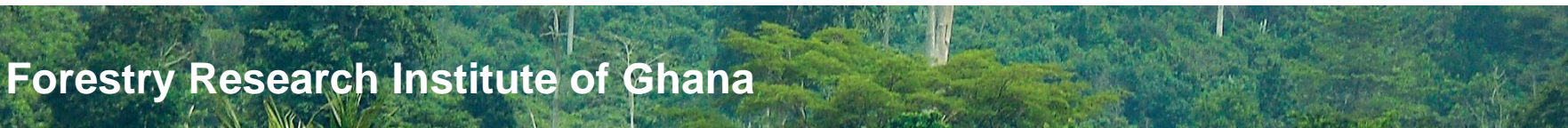


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Definition- Fire risk

- Bush fire risk is defined as the likelihood of a fire incidence taking place, the associated fire behaviour, and the impacts of the fire (Goldammer *et al.* 2017).
- The likelihood of a fire occurring depends on factors such as the fire history of an area and activities associated with livelihoods.



Objectives of fire risk assessment

- ❑ To conduct a baseline fire risk assessment to provide an understanding of the extent of bush fire risk in the 10 communities.
- ❑ To identify livelihood activities associated with fire occurrence in the communities.
- ❑ To assess resources at risk within communities.
- ❑ Develop fire hazard and risk maps.

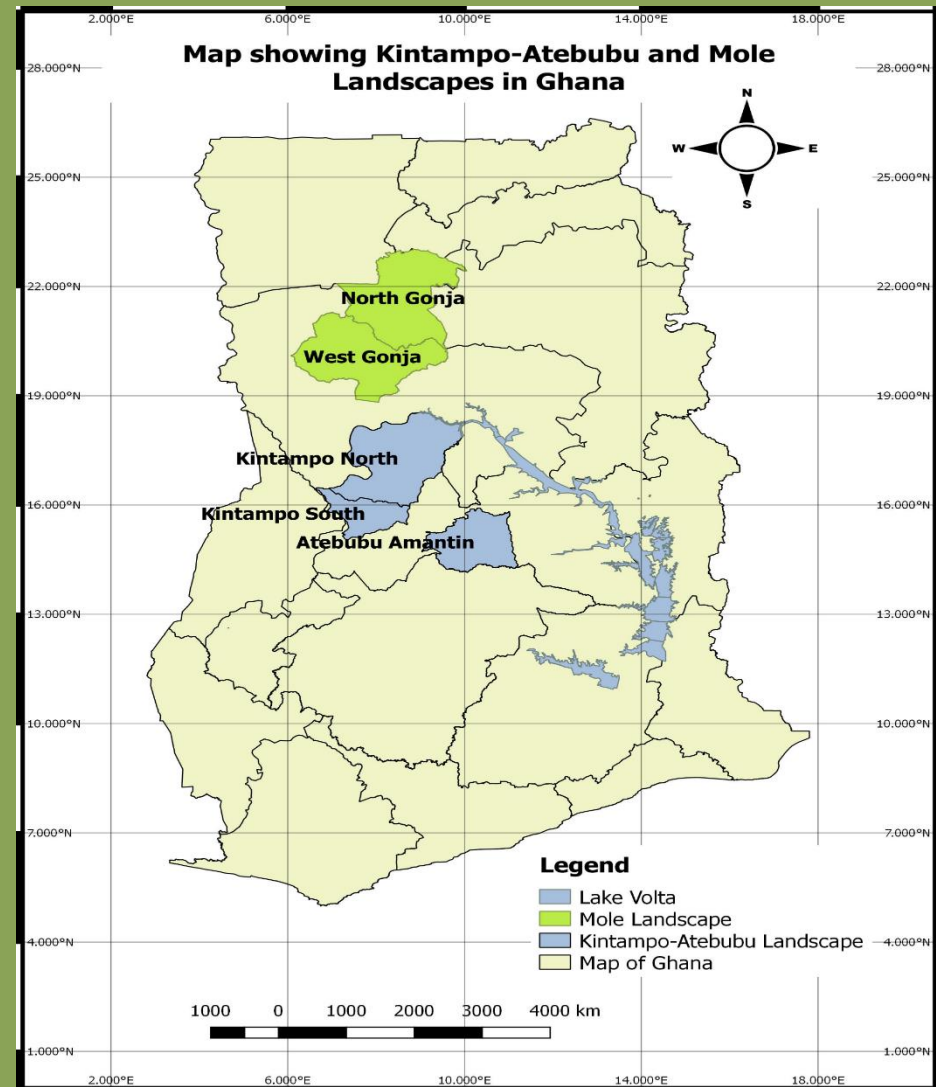


Project sites

Ten communities
10 selected projects
communities in two region

Bono East (i.e. Babato, Nante, Anyima, Beposo and Ajalaja Beposo)

Savanna (i.e. Kpulumbu, Mognori, Yazori, Soalepe and Achubunyor) regions.



Methods

- ❑ Three focus groups (men, women, youth)
- Key informants' interviews



Methods-Institutions

- Interview of representatives and Directors of key institutions:
- ❖ MOFA, EPA, GNFS, Planning officers of District/ Municipal Assemblies, Wildlife Division, Forest Services Division, NADMO and NCCE.



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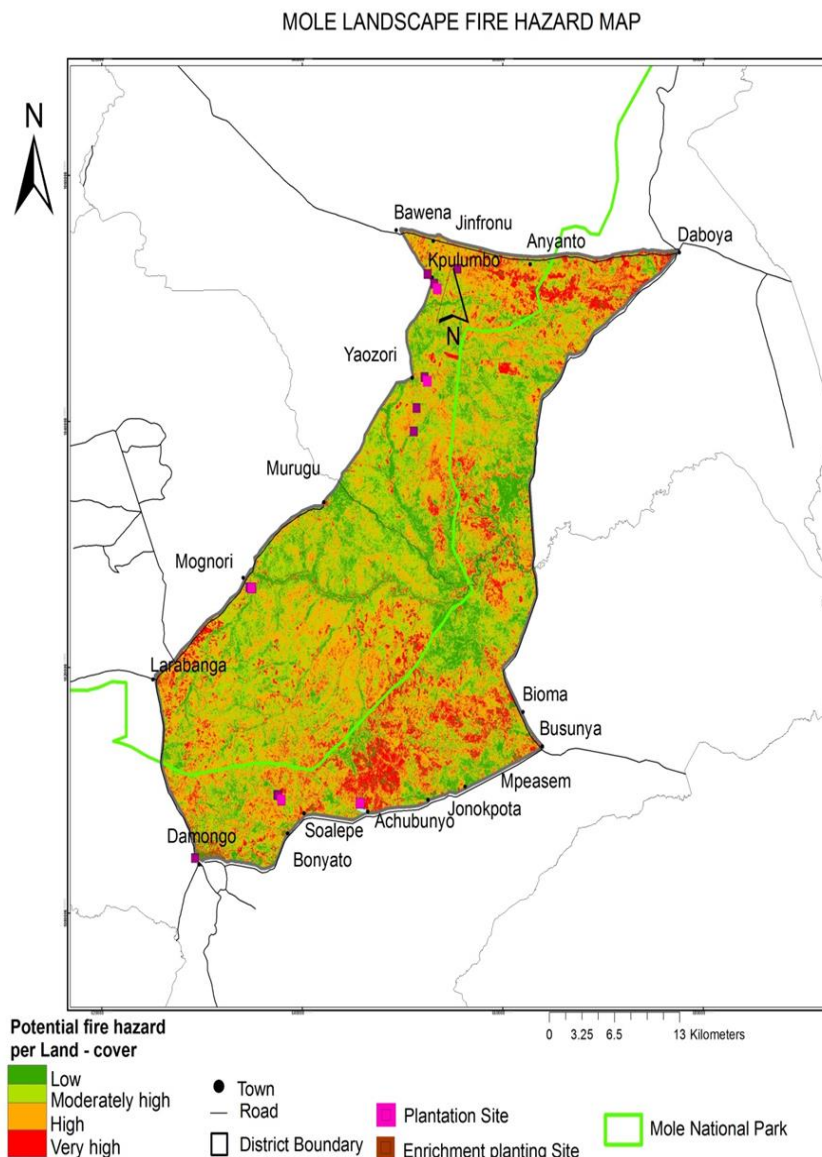
Spatial analysis

- ❑ Remote sensing (Sentinel and Planet Images) and GIS
- Establishment of criteria for scoring different factors affecting fire behavior and potential sources of ignition:
 - Land cover type, topography(slope, aspect, elevation)
 - Proximity to roads
- Production of fire hazard maps
- Calculation of vulnerability of project intervention sites



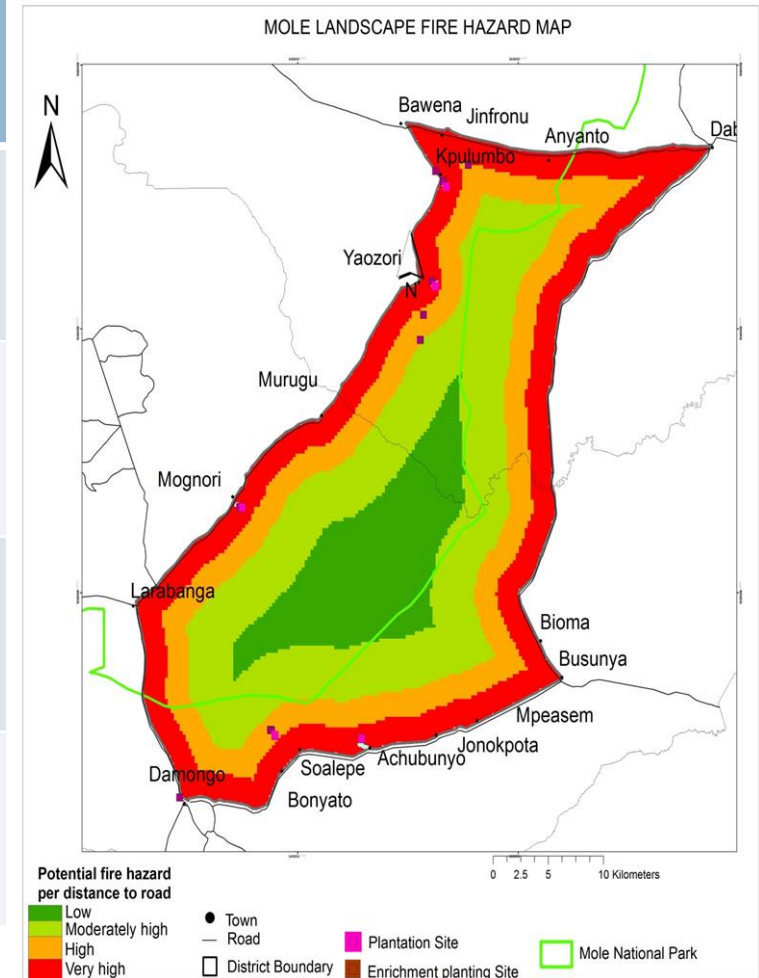
Classification- land cover

Land cover type	Fire Risk Probability	Rank
Grassland, cropland	Very high	4
Open Forest /woodland	High	3
Close-forest, Evergreen Shrub	Moderately high	2
Wetland, Riverine forest	Low	1

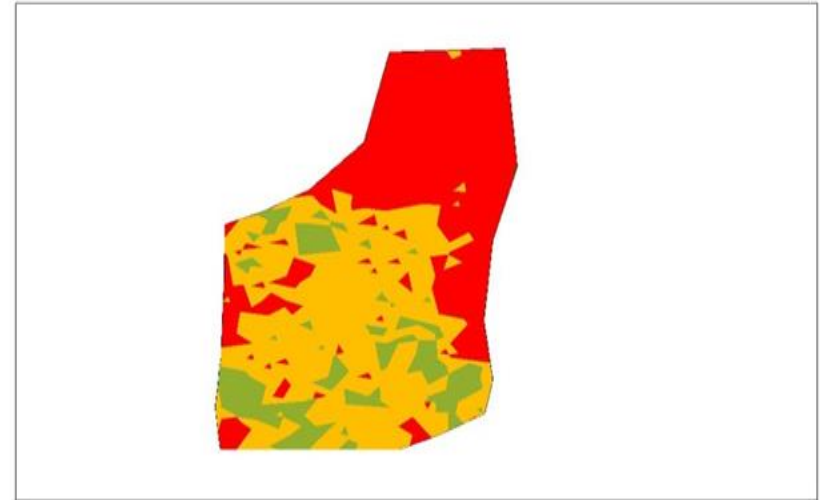
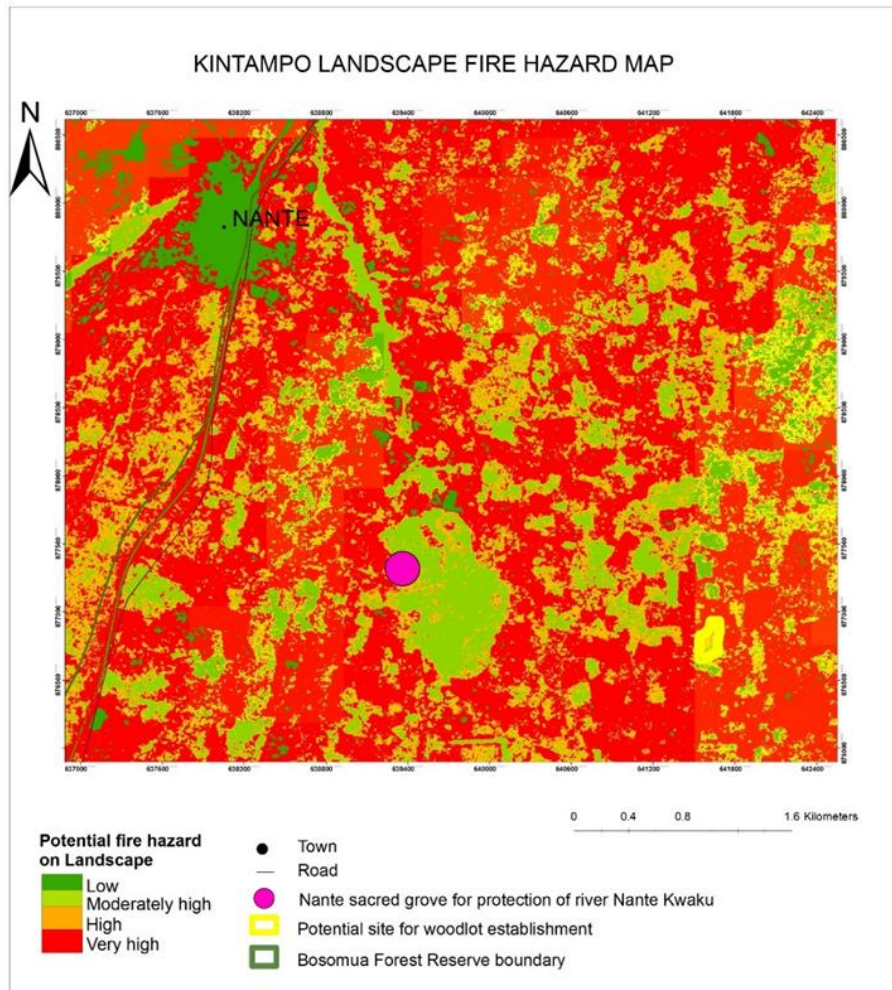


Classification-Proximity to road

Proximity to road	Fire Risk Probability	Rank
Less than 2 km	Very high	4
2 km- 4 km	High	3
4 km- 7km	Moderately high	2
8 km and above	Low	1



Fire Risk Map - Nante



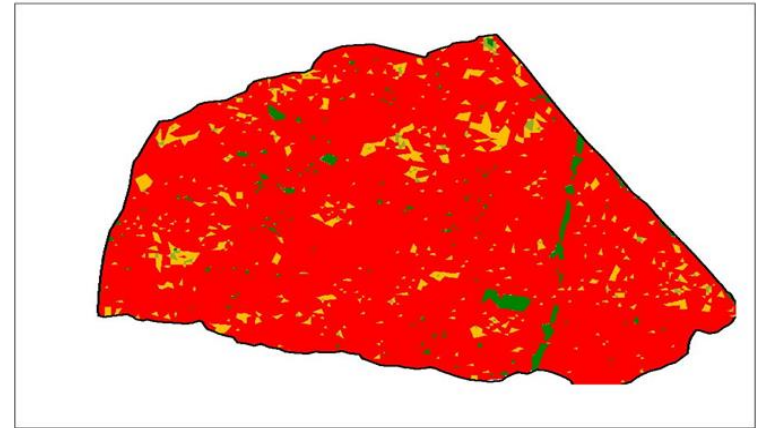
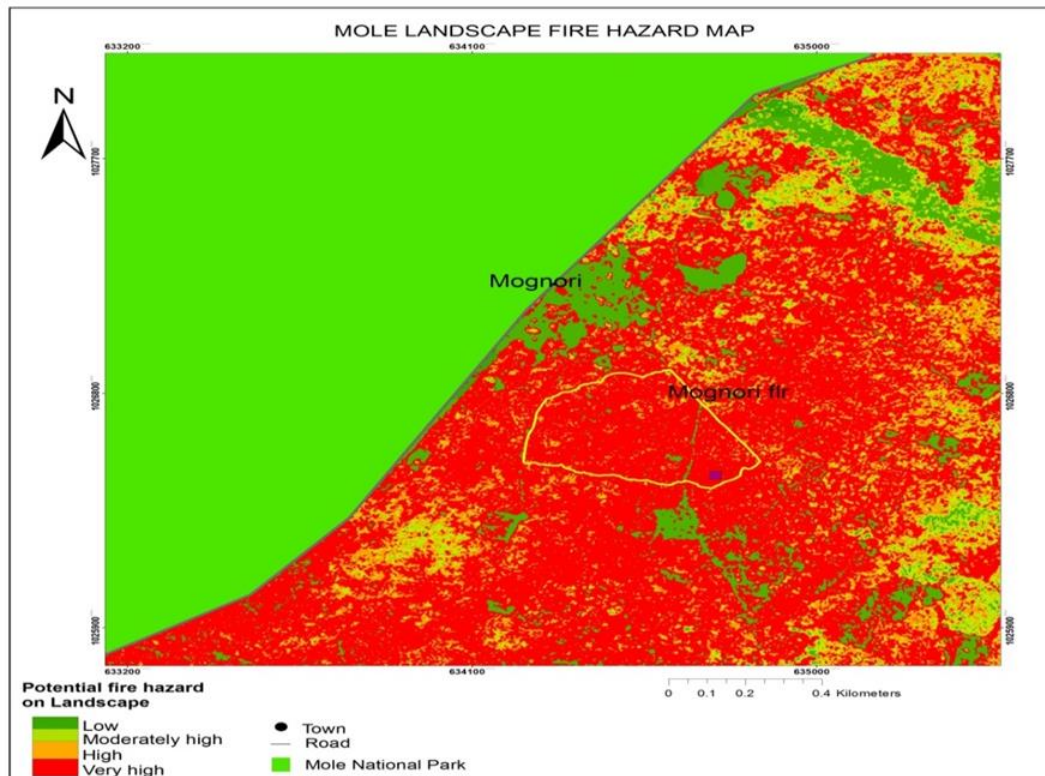
Less than half (37.9 %) of restoration area is at vey high risk



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Fire Risk Map- Mognori



Almost the whole restoration area (98.8%) is at very high risk



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Overview of fire management concept

❖ The concept addresses the following:

➤ Fire Prevention

➤ Fire Pre-suppression

➤ Fire Suppression



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Fire Prevention

- ❑ Focus was on education and law enforcement

- ❖ **Fire prevention education**

- **A fire prevention communication plan** detailing the target audiences for education and appropriate messages was developed.

- **Posters on fire prevention** developed and displayed at vantage areas within the community.

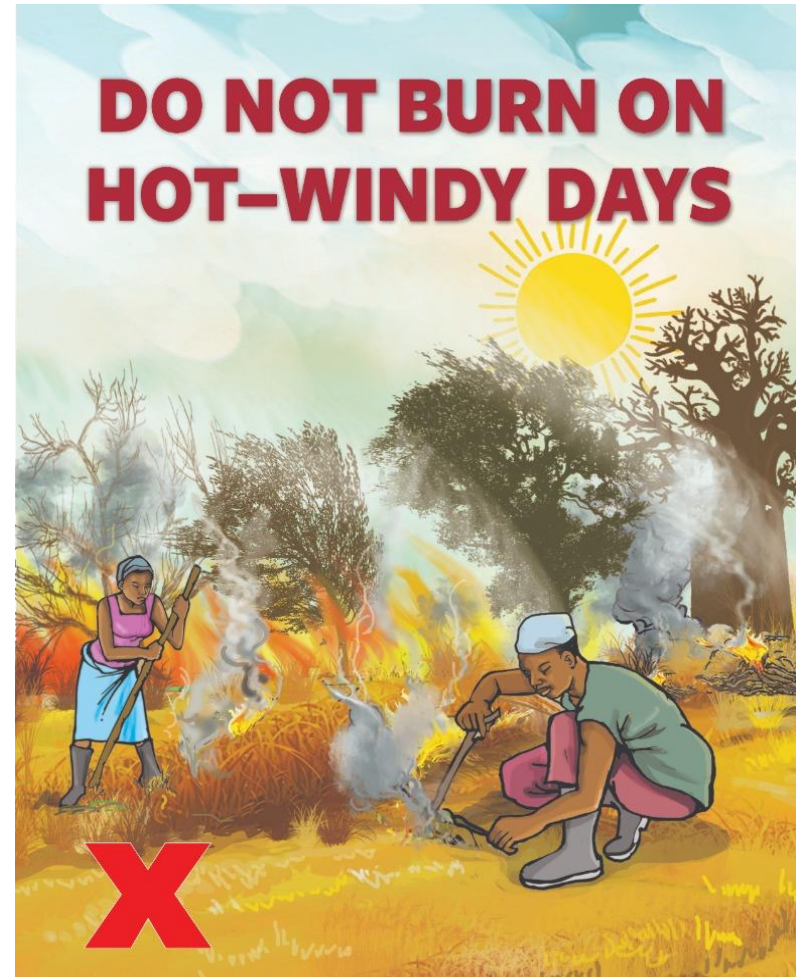
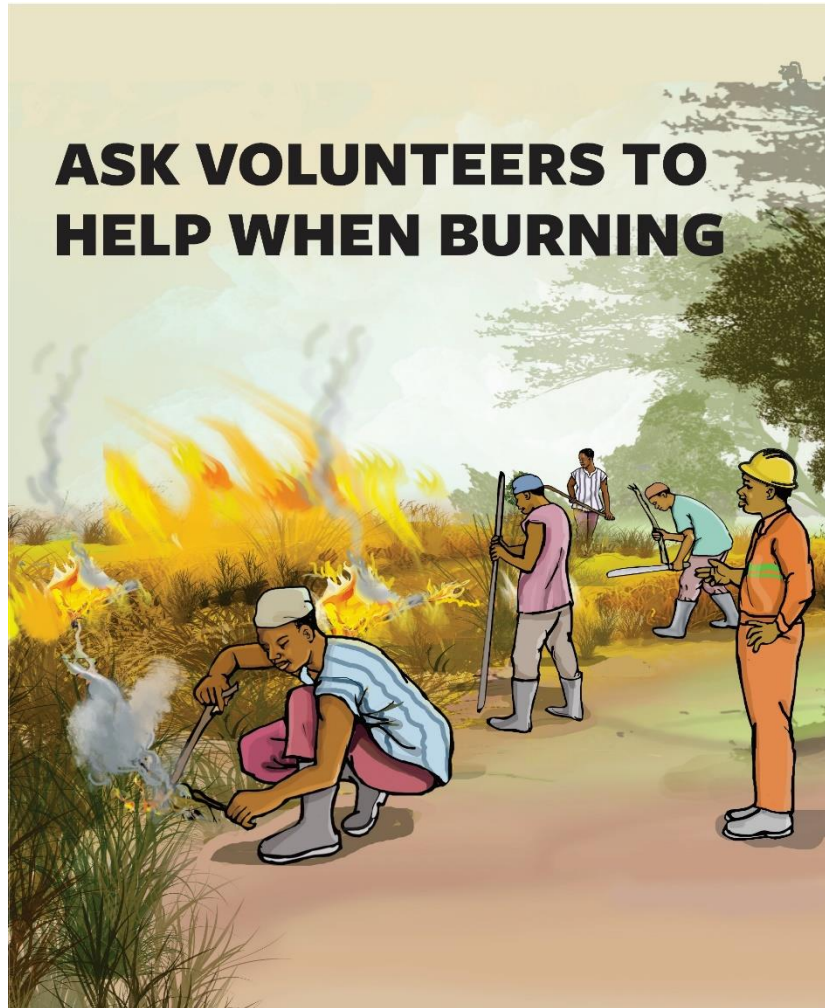
- ❖ **Community rules** were developed.



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Fire Prevention



"Forest Landscape Restoration through a sustainable wood-energy value chain project"



"Forest Landscape Restoration through a sustainable wood-energy value chain project"



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Pre-suppression planning

- Resource mobilization (Logistics, equipment, human resources)
- Recruitment, training and provision of incentives for fire volunteers (180 volunteers trained so far)
- Inauguration of fire volunteers in the community(12 durbars organised)
- Fuel modification (focus on fire belt and green firebreaks)
- Development of fire danger rating index



Pre-suppression planning- resource mobilization



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Recruitment and training



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Training- institutions

- Thirty (30) personnel from key institutions were trained



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Pre-suppression- inauguration

- Trained volunteers (180) were introduced at community durbars



Pre-suppression- Green fire break

Green fire break is a passive band of evergreen vegetation that has the potential to pre-suppress wildfires or modify the speed and intensity of a raging wildfire.



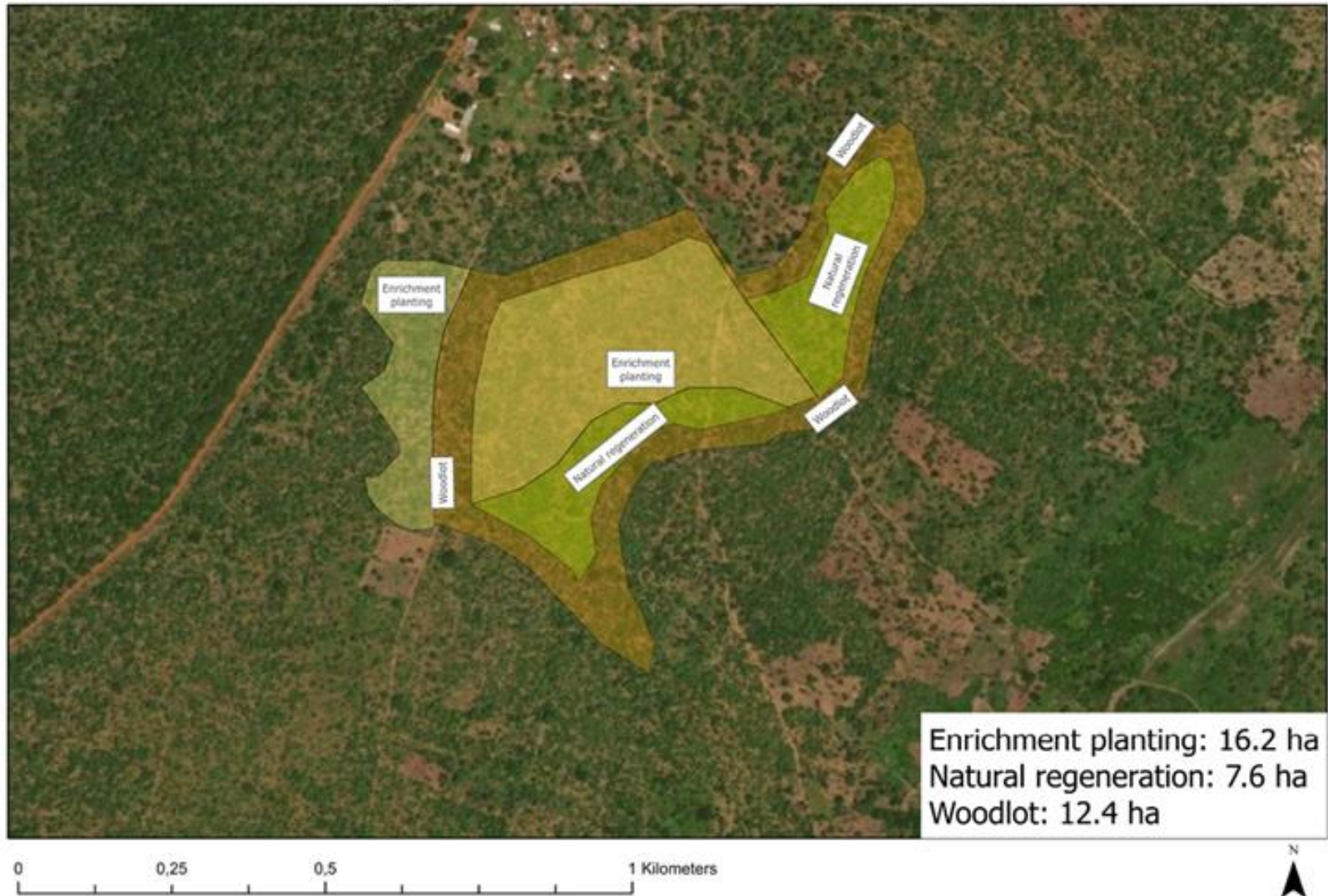
Senna siamea green fire break



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Green firebreak as woodlots

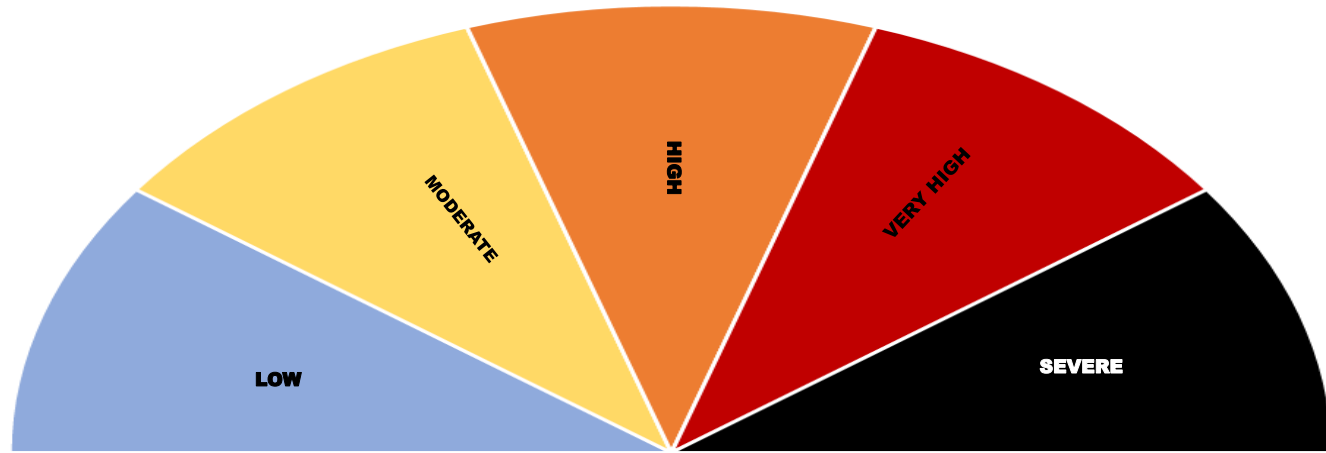
Mognori restoration and woodlot sites



Pre-suppression-Fire Danger Rating

Community Fire Notice Board

Fire Danger Index Rating for Today

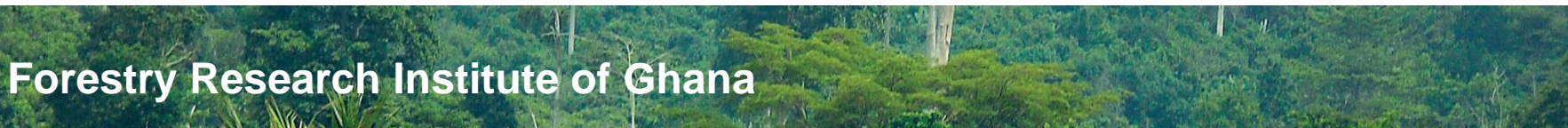


FDI Ratings					
COLOUR	BLUE	YELLOW	ORANGE	RED	BLACK
RATING	0-40	41-60	61-69	70+	POOR VISIBILITY
BURNING	ALLOWED	ALLOWED UNDER SUPERVISION	NOT ALLOWED	NOT ALLOWED	NOT ALLOWED

- The Fire Danger Rating Index indicates how dangerous a fire would be if one starts.
- Portable weather station installed in each landscape.



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Suppression

- Deployment of all trained fire volunteer squads in the project communities to help control fire during the dry season.
- Monetary and other incentives (health insurance) during the fire season (December-March).
- Project partners to liaise with other companies for support in cash and kind for fire volunteers during the fire season.



Take home messages

- Comprehensive fire risk assessment is crucial for understanding priority areas for fire management in wood production systems. It should be done before any planting takes place.
- The detailed fire management concept should ensure active community engagement in all three aspects of fire management.
- Partnership of key institutions already working in the landscape is indispensable for ensuring long-term sustainability of community fire management efforts.



Thank You

