



Disaster Risk Reduction through Forest Management

Place, Date





Agenda

1. Climate change related threats
2. Types of natural hazards that result in disasters
 - Soil erosion
 - Flooding
 - Drought
3. Forests as a suitable Disaster Risk Reduction (DRR) strategy
4. Sustainable land use practices



What is the disaster?

Vulnerability

+Hazard

=Disaster





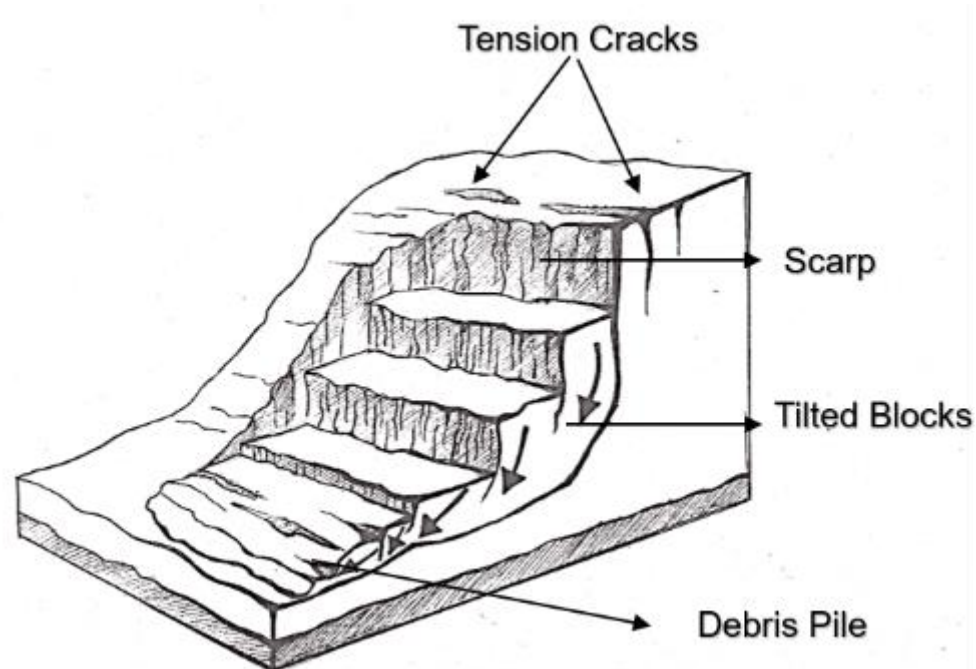
Type of disasters





a) Landslide

Landslide = movement of a mass of rock, earth or debris down a slope.





Landslide

Causes for landslides:

- Deforestation
- lack of bushes and shrubs with long roots
- Existing soil erosion and gullies
- Triggers for landslides:
 - Heavy rain
 - Rapid snow melt
 - Earthquakes





Soil erosion

Erosion - from the Latin word «erosio» - corroding destruction and demolition of the upper horizons of the soil as a result of the action of water and wind.

Soil Erosion = washing away of soil particles from one place to another

Types of soil erosion:

- Wind erosion
- Water erosion





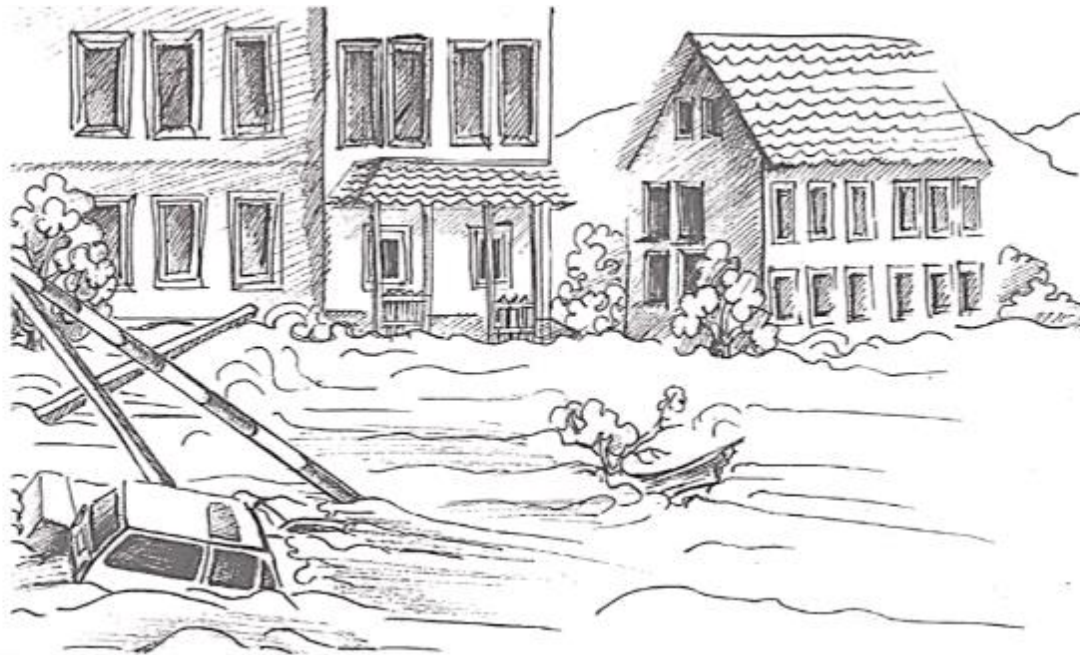
Factors increasing the risk of soil erosion

- Deforestation
- Unsustainable land use management
 - Overuse of pastures
 - Low soil overage (especially lack of plants with long and extensive root system)
- Fast running irrigation water channels



Flood

Flood = Covering of a large area of land with water as a result of a sharp rise in the water level





Causes of floods

- Heavy rain
- Sudden snow and glacier melt
- Lack of afforestation along the rivers
- Blocked river due to mud- and landslides





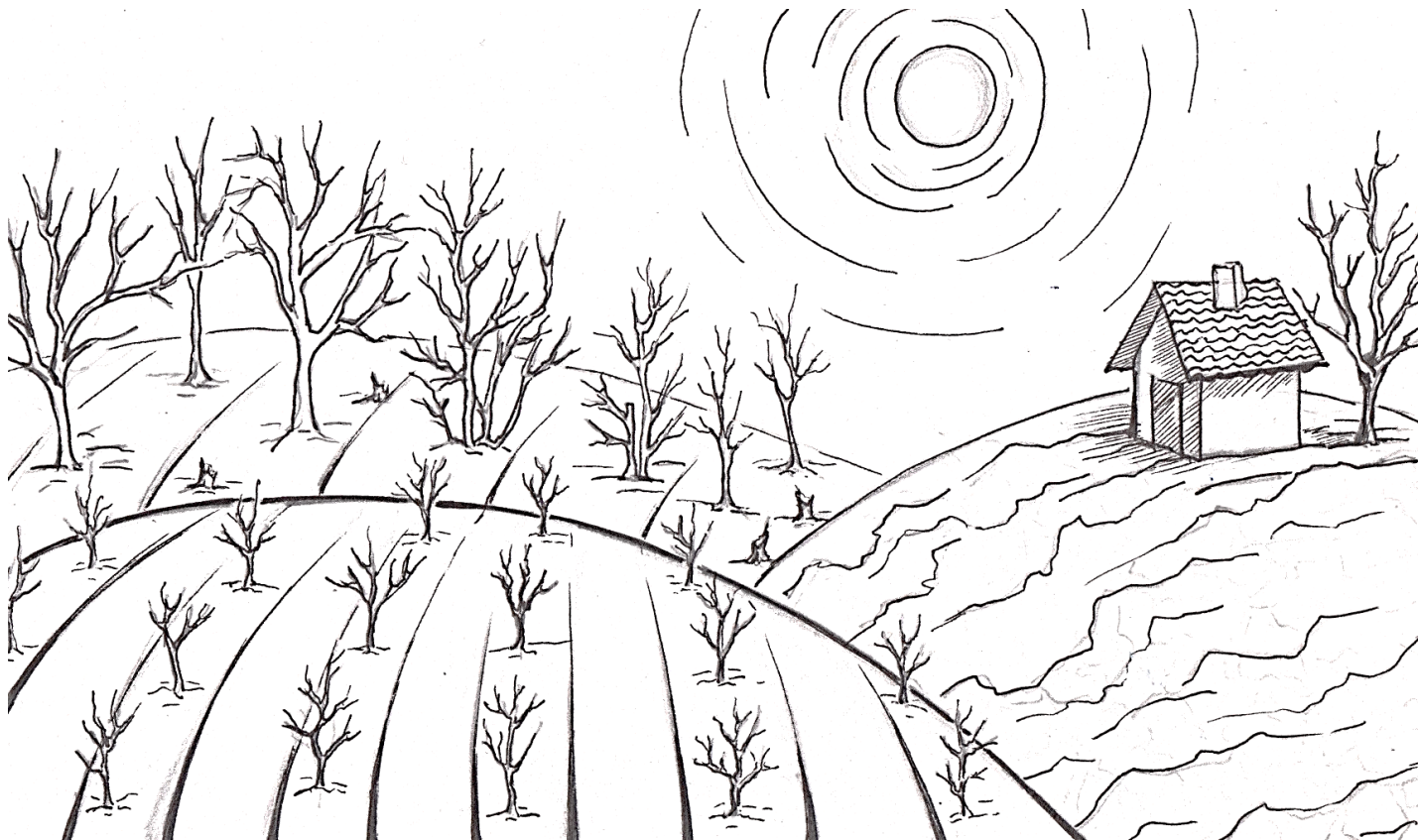
Measures to prevent floods

Protective measures against floods :

- Increase soil water retention capacity through increased soil cover;
- River bed stabilization through planting trees along river banks and on mountain slopes;
- Keeping natural river flow and account for areas that are flooded every year;
- Digging water channels (e.g. along agricultural terraces) so that the water can be guided off the agricultural field.



Drought

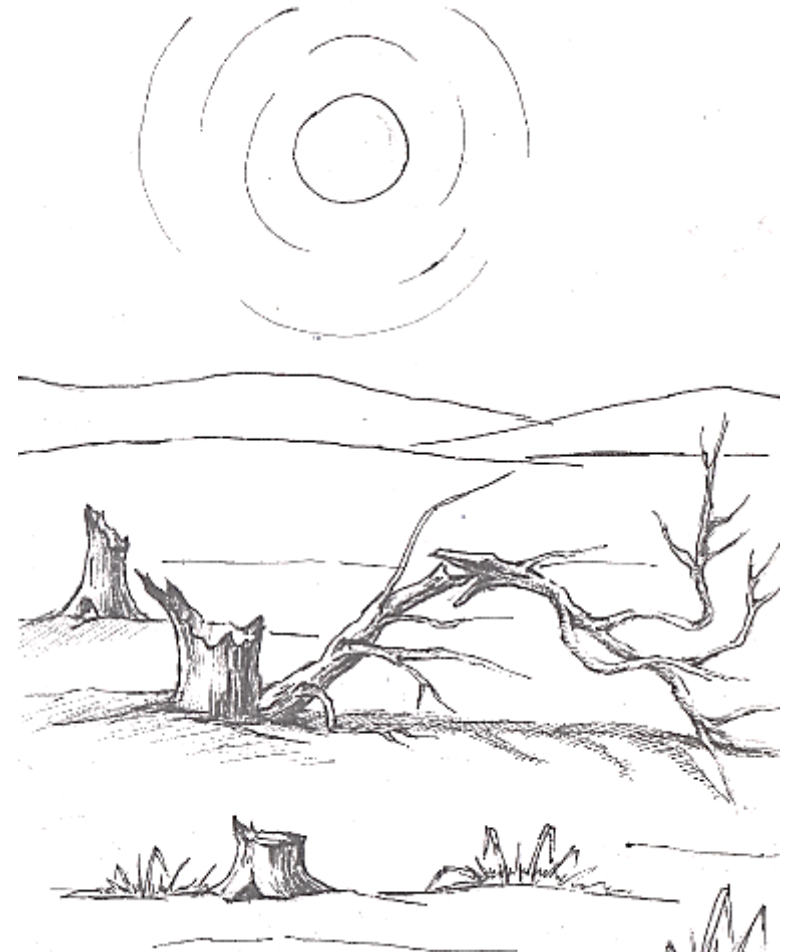




What is a drought?

Drought = temporary decrease in water level or availability of moisture significantly lower than the normal or expected rate for a certain period of time.

Long term drought = Water availability <80% of the average available over the past 20 years.





Types of drought

Metrological drought

- Reduced rainfall

Hydrological drought

- Reduction of natural flows, ground water level

Agricultural drought

- Reduction of moisture in soil

Socio-economic drought

- Demand on water is higher than natural supply



Reasons of drought

Natural causes

- Short-term periodic fluctuations in precipitation
- Long-term climatic changes

• Anthropogenic causes

- Desertification
- Excessive grazing and poor land management
- Deforestation
- Overuse of land resources
- Unsustainable water management



Reduction of drought consequences

Readiness

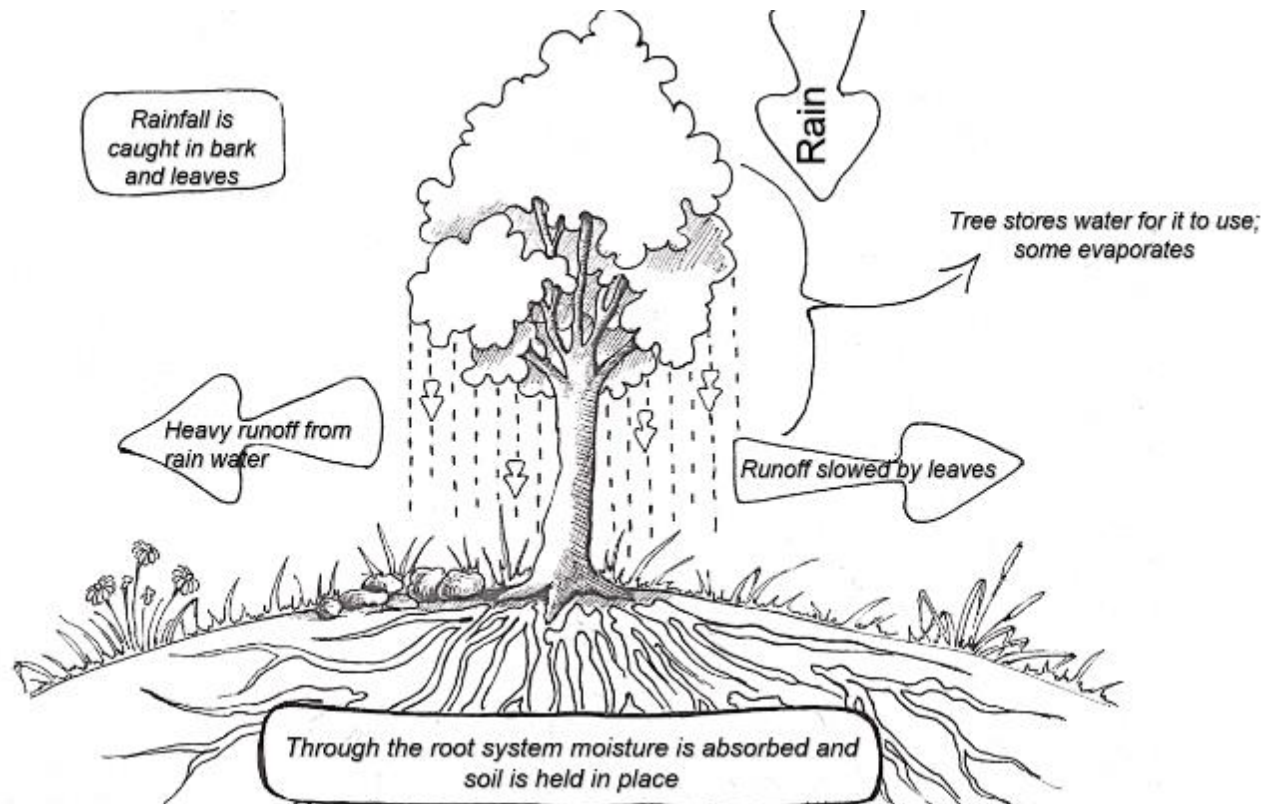
- Monitoring of heavy rains and water level.
- Sustainable use of water
- Sufficient food for storage.
- Recovery measures.
 - Revegetation of the plant cover
 - Afforestation

Reduction

- Sustainable land use management:
 - Avoid forest degradation and invest in reforestation activities
 - Avoid excessive grazing
- Sustainable use of water:
 - Drip irrigation
 - Planting suitable crops.



Disaster Risk Reduction through Forest Management





Disaster Risk Reduction through Forest Management

Forests provide the following disaster risk reduction functions:

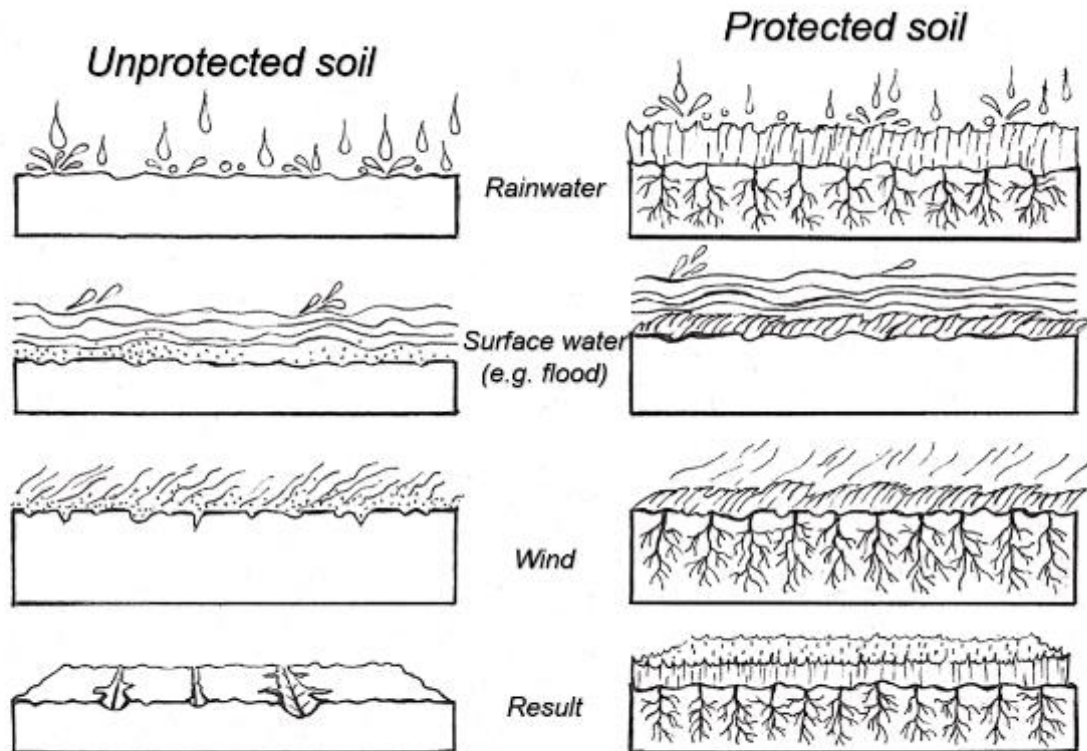
1. Stabilization of soil, nutrient cycling and soil formation
→ Prevention of soil erosion, mudflows, landslides

2. Absorption of excessive water, water retention and water regulation
→ Prevention of flooding and shore washout

3. Preservation of soil moisture, water retention and water regulation
→ Prevention of drought in periods of less rainfall

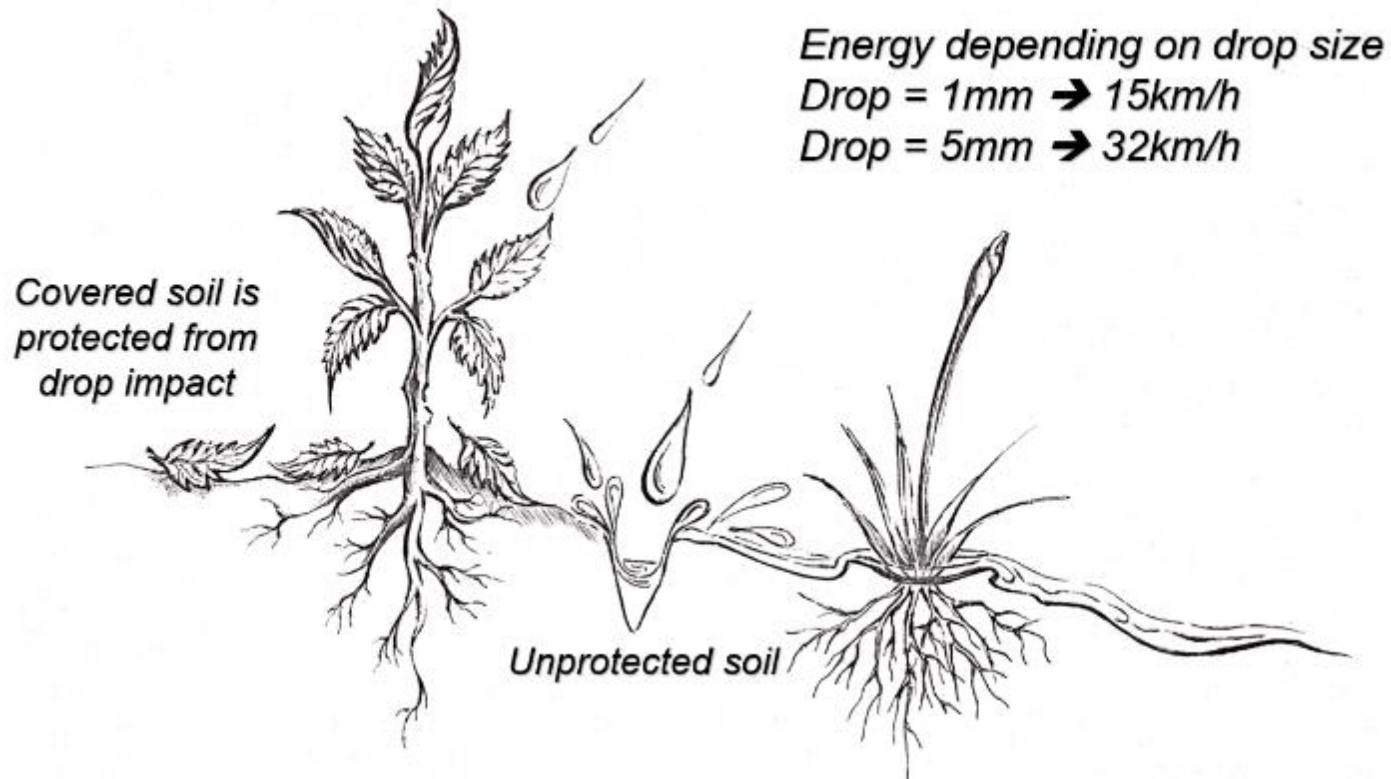


Vegetation cover reduces the risk of natural disasters





Raindrop impact damage





Loss of nutrients

Loss of nutrients more occurs in soil where is lack of vegetation





Sustainable Forest Management

To reduce climate threats and the impact of disasters:

- **Plant trees** on non-forested areas
- Cut **only** as much as it grows
- Conserve forest **biodiversity**





Sustainable Land Use Practices

Methods to prevent soil erosion

Tree planting

Bush laying

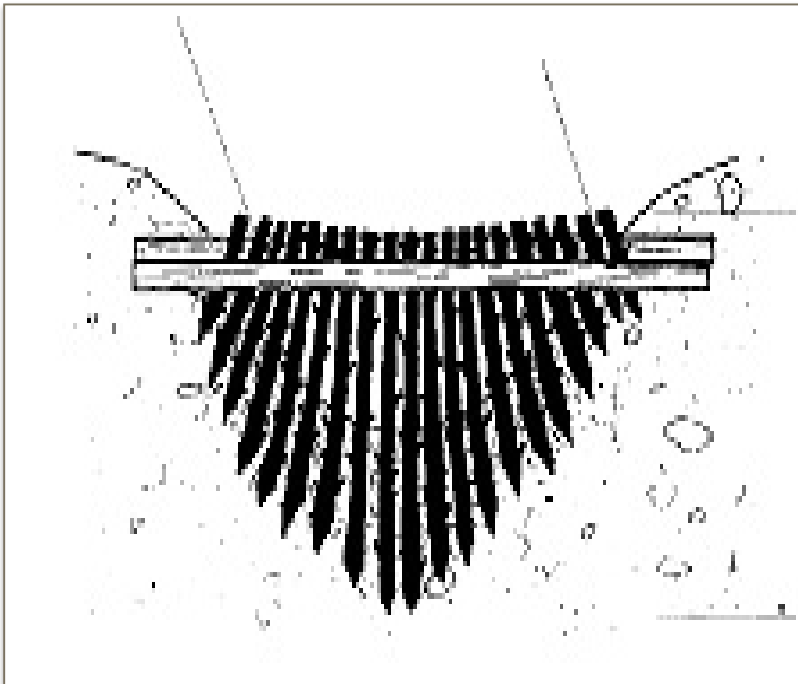
Living fence

Additional irrigation with the use of plastic bottles

Covering trees with plastic material for protection from livestock



Bioengineering Technics: Live Palisades





Bioengineering Technics: Brush Layering





Bioengineering Technics

Protection of trees with the help of used plastic bottles





Thank you for your attention!





As a federal enterprise, GIZ supports the German Government in achieving its objectives in the field of international cooperation for sustainable development.

Published by

Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH

Registered offices, Bonn and Eschborn, Germany

Regional Programme for Sustainable and Climate Sensitive
Land Use for Economic Development in Central Asia

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Photo credits

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