



The Sponge Village of Atego

A Primer for Agroecosystem Restoration

Natalie Topa and Warren Brush
September 16, 2021



*This presentation is made possible by the generous support of the American people through the United States Agency for International Development (USAID).
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Before we begin...

Select your language!

Click on the globe “interpretation” at the bottom of you Zoom window and select your language.



Post your questions in the Q&A box at the bottom of your screen (do not include your questions in the chat box).





SCALE | Strengthening Capacity in Agriculture, Livelihoods and Environment



USAID Bureau for Humanitarian Assistance (BHA)-funded, led by Mercy Corps in partnership with Save the Children



Agriculture, NRM, off/non-farm livelihoods





Capacity strengthening, knowledge sharing and learning for BHA-funded food security programs



Connecting with others to bring out best practices, resources and learnings



Presenters

-  **Natalie Topa:** Global Advisor for Regenerative Resilience and Circular Bioeconomy, Danish Refugee Council
-  **Warren Brush:** Global Resilience Design Consultant, Educator, Lecturer and Implementer

The background features a green-to-white gradient on the left side, transitioning into a solid green on the right. Several large, white, semi-transparent leaf-like shapes are scattered across the left side. A white rectangular box is centered on the right side of the image.

BACKGROUND

Land Degradation and Climate Change

Floods and Droughts

Floods and droughts result mostly from the degradation of the sustaining ecology which has lost its function as a system.



Poor Land Use Practices

Poor land use practices contribute greatly to the release of carbon into the atmosphere



Slow, Spread, Sink and Save

A degraded landscape behaves like concrete, reducing infiltration while increasing speeds of water flow. Through design, we slow the water and nutrient flows down so they can support plant and animal growth



History of Global Regenerative Movements



Agroforestry project in Tanzania - https://training.trees.org/en/comunity_detail/31

- Permaculture
- Indigenous Rights and Social Justice
- Agroecology
- Agroforestry
- Soil Food Web
- Rainwater Harvesting
- Holistic Grazing
- FMNR
- Biointensive Farming
- Ecosystem Restoration
- Circular BioEconomy
- Seed and Biodiversity Sovereignty



Permagarden

Technical Manual *Second edition*



TOPS and SCALE
Support to Regenerative Movements in the Humanitarian and Development Contexts



Resilience Design in Smallholder Farming Systems

A Practical Approach to Strengthening Farmer Resilience to Shocks and Stresses





DRC staff, government officials and agency partners participating in the training are assessing the earthworks created in a previous Resilience Design training under the DANIDA funded Northern Uganda Resilience Initiative (NURI).

Geology, Hydrology, Biology

Geology

Geology includes the opportunities and constraints found in the landform and the soil building processes.

Hydrology

A healthy hydrological system mitigates droughts and floods and is an essential component for growth of all life

Biology

Growing and protecting trees, plants, animals, fish and soil microbes is essential for resilience

Integration Through Design

Soils, Water and Biodiversity work together to ensure ecological services can support life processes

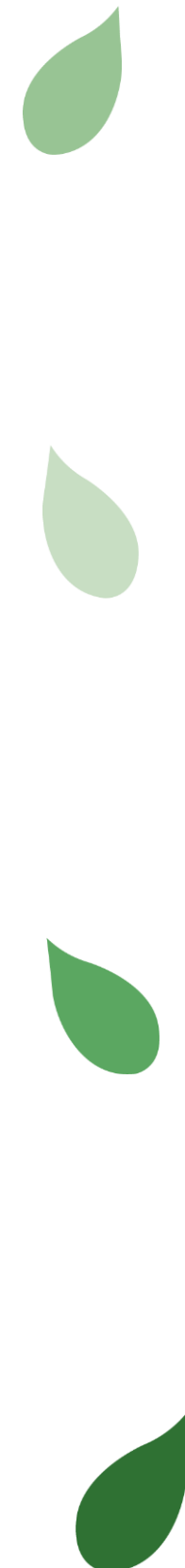
A Primer Designed to

Inspire system-based thinking
and applied design on an
ecological foundation.

Build and demonstrate nature-
positive solutions as the basis of
community resilience to
multiple shocks and stresses.

Demonstrate tangible and short
term impacts in brittle and
fragile contexts.

Bring science, ecology and
design in to the humanitarian,
recovery, displacement and
development contexts.





DRC's Global Regenerative and Circular Approach

Applied design in humanitarian and recovery spaces, reducing risks and supporting long-term self-reliance and stability.

Global and regional strategies prioritizing nature-positive solutions and design. Leading in local regenerative and circular solutions for climate action.

Resilience to land degradation-migration nexus as holistic and inclusive of ecological, social and economic realities through sector integration.

Regenerative and circular concepts applied to camps, settlements, DRC compounds, urban environments, infrastructure, energy security, markets and WASH.



DANIDA-Funded NURI PROJECT 2019-2022

Northern Uganda Resilience Initiative (NURI) support to 120,000 farmers, 2000 community groups and private sector (part of UPSIDE).

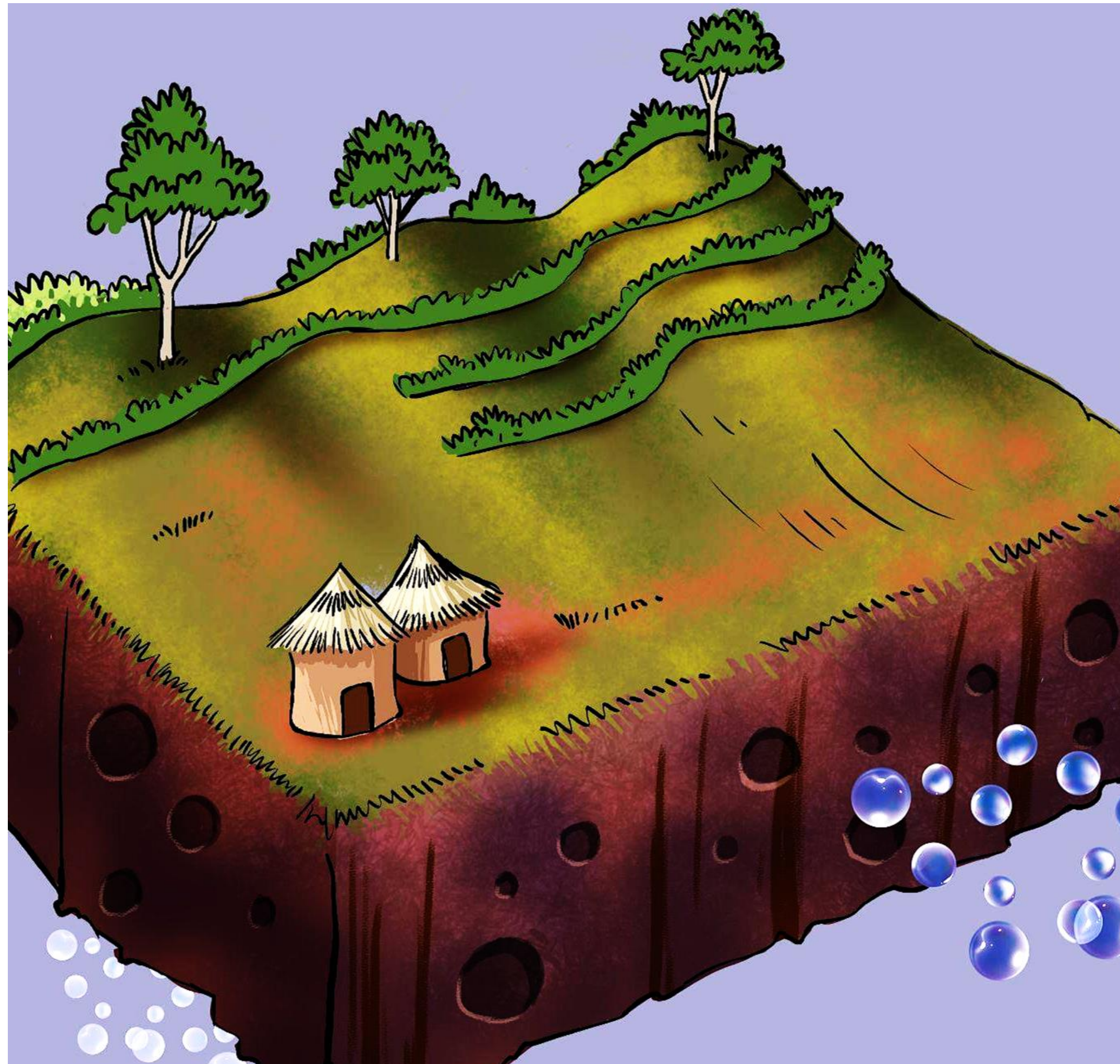
Support to 13 refugee hosting districts of through Climate Smart Agriculture (CSA) (Afard), Water Resource Management (WRM) (DRC) and Rural Infrastructure (RI) (DRC) .

Focus on sub-catchment level planning with authorities and communities

Construction and rehabilitation of market access roads, establishment of market place infrastructure, support to water resources management.

Demonstrating how design can be applied to rural infrastructure to reduce impacts and harnessing resource flows from floods to food.





Turning landscapes and soils in to long term water storage to feed crops, trees, people and animals.

What is a Sponge Village?

Water is essential for life. It is a necessary part of all life processes in the soils, plants, trees and animals, including humans. A sponge village soaks up the energy and resources flowing through it and stores them for the long-term productivity and resilience of both the land and people.

By using principles of permaculture-based resilience design, an entire village can **plant the rain** to stabilize their hydrology, create recharge of water reserves, and establish long term hydration of soils for biological up lift for food and fodder systems as well as indigenous biodiversity



**TRAINING THROUGH
DEMONSTRATION**

Training Through Demonstration

The training builds on the Resilience Design Framework and is based on the Permaculture Design Principles

Theory and Tooling-Up

We begin with sharing visual examples and the science behind the process of building resilience practically in the ground

Community Engagement

The community engagement process is interactive and draws from the story and wisdom found in that place

Modeling through Demonstration

Working alongside community members, the trainees themselves model, through demonstration, how to build agroecosystems that are productive and replicable



Story of Place

History of Land and People

“What did the land look like and how was life in the time of their great grandparents?”

Life in the Present

We then ask the question, “How is life experienced now for the community?”

Eye Towards the Future

“What do you want for your future and for the futures of your children and grandchildren?”

Honoring Local Wisdom

We listen as wisdom and knowledge are shared about local resources, practices, remedies and traditional strategies for resilience.





Community Resource Walk

Through a well facilitated resource walk through the area, the community can share their local knowledge and everyone can assess what is available for the soil building processes



DESIGN

“Fill and Spill” Circuit

Slow, Spread, Sink and Store

Slow water in its path. System of surface water retention and “green water” for soil moisture and hydrological recharge. ground water infiltration.

Start at the Top

Work with natural flows, patterns and gravity to capture stormwater run on from surrounding catchments as well as run-off escaping from the site.

Flood and Drought Mitigation

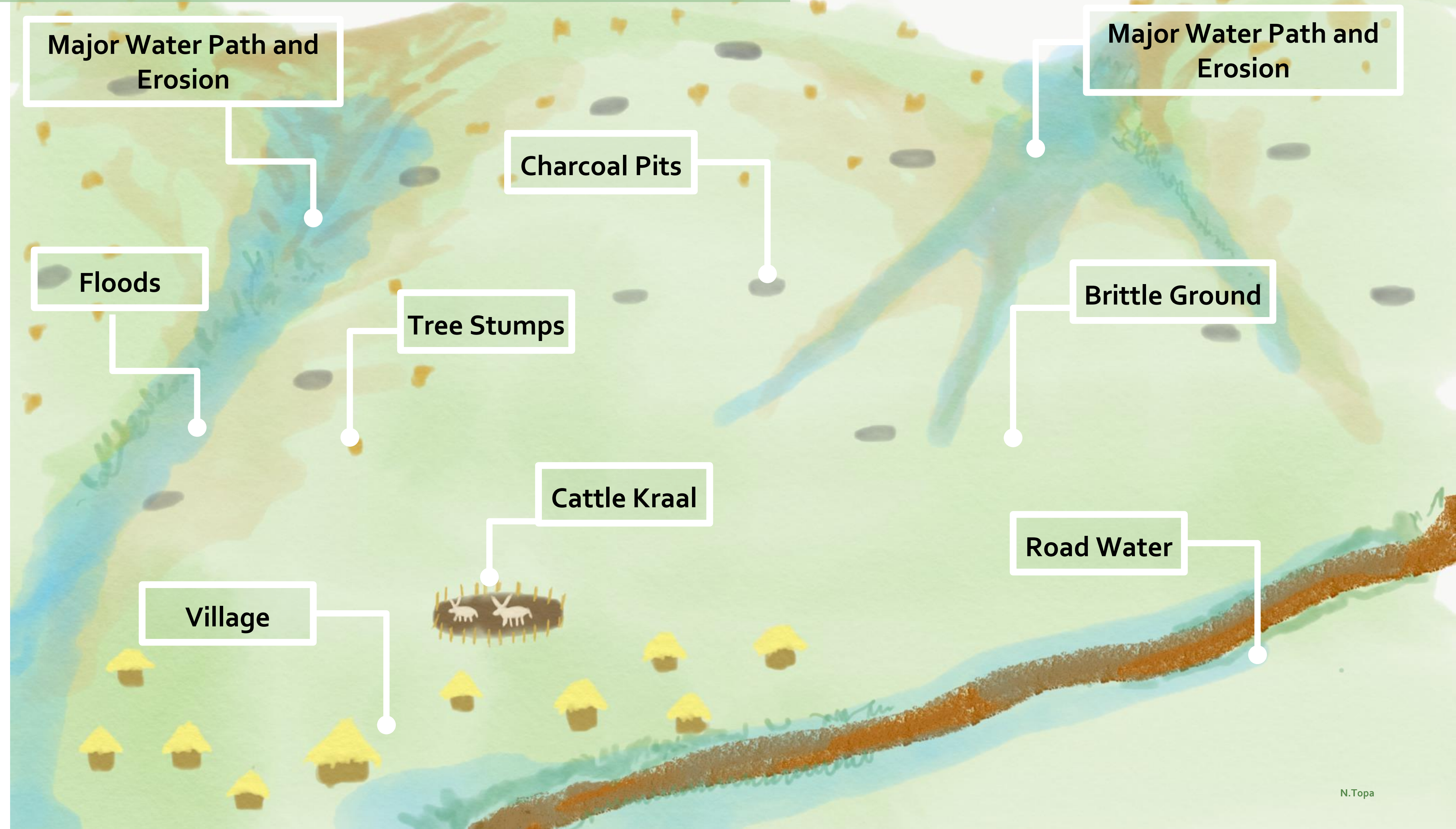
The same interconnected structures can reduce extreme events and protect land from hot, dry and bare conditions causing drought.



Overflow Spillway (SPILL)

Bioswale Linking Dams (FILL)

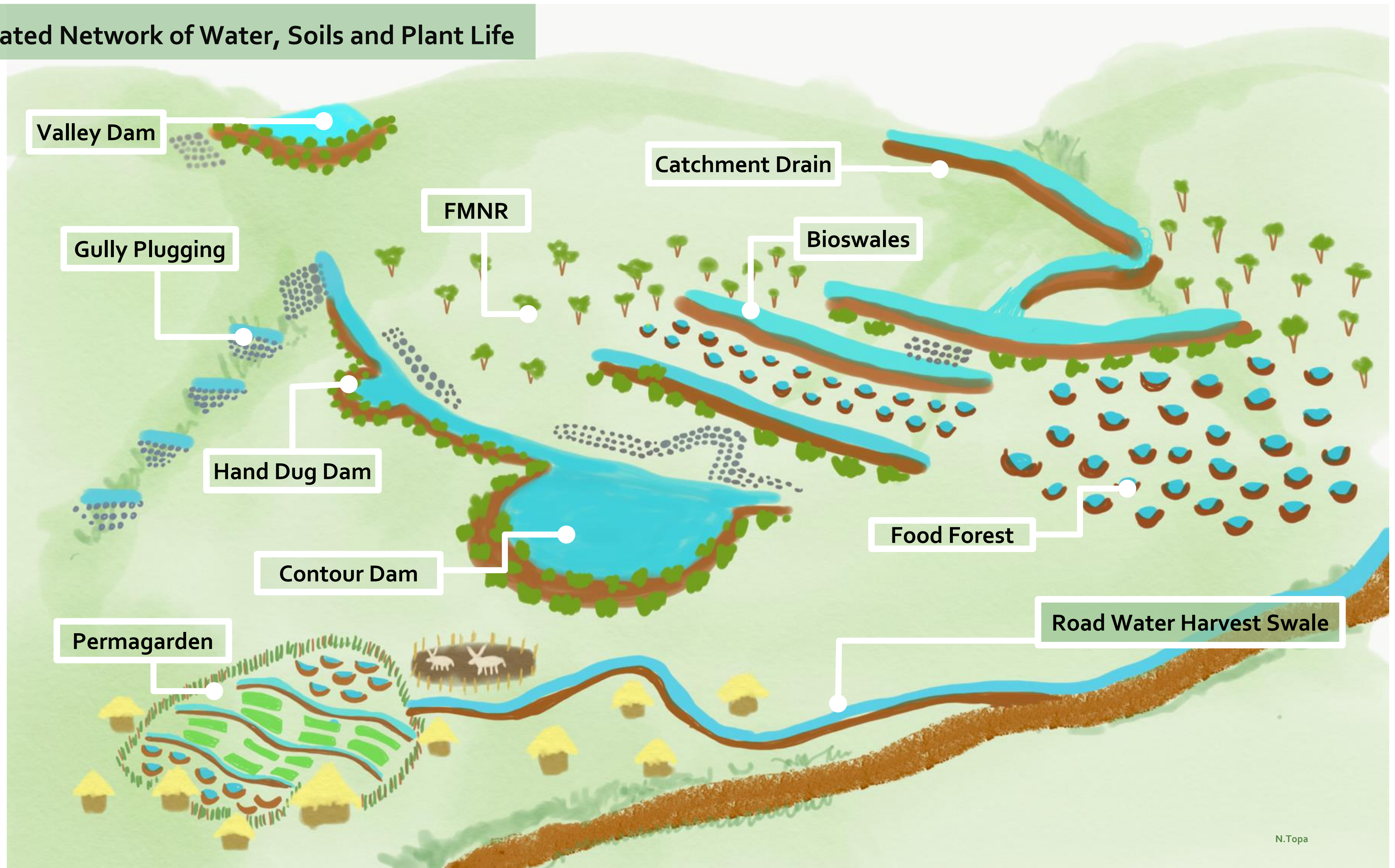
COMMUNITY LED SITE ASSESSMENT AND WALKING TOUR





Sun Path, Wind, Slope, Use Patterns and Available Resources Inform our Design

Integrated Network of Water, Soils and Plant Life



The image features a title card for 'WATER SECURITY'. The background is a solid green color with a gradient from light to dark. Overlaid on the left side are several large, semi-transparent, light green water droplets of various sizes. A white rectangular box is centered on the right side of the image, containing the text 'WATER SECURITY' in a bold, green, sans-serif font.

WATER SECURITY



Fill and Spill Network of infiltration swales and surface retention ponds passively quenching the valley





Contour Dam

Safer Location

Located out of the main flows of a valley in a drier part of the landscape. This location also provides protection from flooding for the village

Paired with Bioswales

Bioswales can extend the catchment area and provide a safe place to locate a spillway for the system

Hydrating Drier Areas

Because they are not located in the valley, they can help to hydrate drier areas of the ridges outside of the valleys

Accessible for Village Use

The location of this dam allows for daily use by the entire village because it is close.

Hand Dug Dam

Accessible for small scale farmers and is constructed through labor intensive construction with locally available materials and tools.

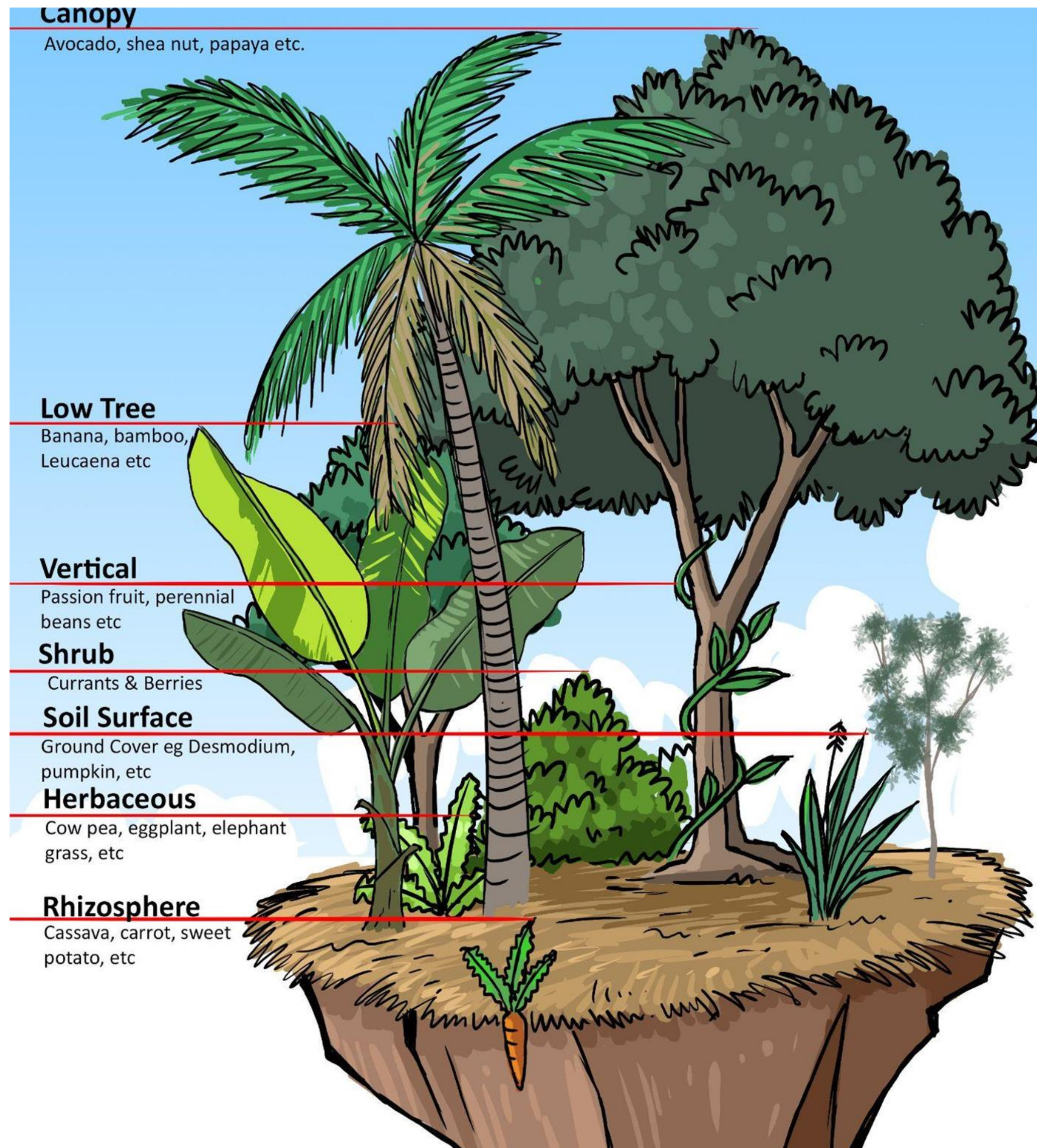
Can be modest in scale for small ruminant watering, supplemental irrigation and furtigant.

Can help small farmers protect crops while diversifying livelihoods streams including fish, ducks, construction, and wetland crops.



The background features a green gradient that transitions from a lighter shade on the left to a darker shade on the right. Overlaid on this gradient are several semi-transparent, light green leaf shapes of various sizes and orientations, creating a natural, organic feel.

FOOD AND BIODIVERSITY SECURITY



Indigenous Food Forestry

Food Forests are diverse, perennial and stable tree systems that integrate species of food, fodder, fiber, fuel, [soil] fertility and “farmaceuticals,” or nutrient dense and medicinal benefits. These are designed to capture and store water and nutrient, and planted intensively to mimic the diverse, cool, shaded and amenable growing conditions found in a natura forest.

Food Forest Establishment

FMNR, Mixed Trees for Soil and Water Stability, Food and Heritage Security and Market



Permaculture Garden

Passive water harvesting structures.

Soil Building and Protection from chemicals and erosion

Diversity

Perennial Stability and Food Forestry

Three-dimensional and vertical

Creation of Microclimate and habitat

Organic – no chemicals or GMO inputs.





Road Water Harvesting

Capture run-on potential through adjacent hardscape and compacted zones including roads, foot paths and household environs

Deliver water from flow to food, reducing accumulation of downstream flood waters.

Can be designed as valve with to control, capture or reduce inflow.

Community Permaculture Garden Fed by Cows and Road Water



Designing an integrated, Permaculture Garden with Trellised Swales, Food Forestry and Double Dug/Filled Beds on contour





Biointensive Bed Preparation and Seed Sovereignty



Garden and beds located below nutrient source (cows) to capture passive flow of manure



Garden beds oriented on contour pattern, parallel to contour bioswales for maximum capture of water and nutrient runoff



Deep bed preparation of 80 cms filled with organic material means seeds can be planted very intensively, becoming their own protective cover crop



Emphasis on indigenous, locally improved and Open Pollinated Varieties (OPV) for long-term climate and economic resilience, human and soil health and seed security and reduced dependence



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THANK YOU!