Starting Points for DRR in Youth & Work

Y&W and DRR

Youth and Work already contributes to:

- Capacity development: AVET, TIVET, Business training, economic development/agribusiness, access to land and capital (MFIs), access to education/knowledge → Individual, social, economic capacity.
- Social cohesion: creating SHGs, communal land, building relationships, equipping youth → social capacity
- Resilient agriculture: PIP, AVET → improved nutrition + sustainable farming
- Economic independence: access to land and capital → economic capacity + development of livelihoods.

➔ **DRR does not need to be difficult! But focused approach helps to streamline it more.**

Business and DRR:

- How can small and new businesses reduce risk to their venture?
    - Form co-ops to reduce risk to the individual
    - Savings, keepings assets as collateral, correct storage of goods to survive the disaster
- What are risks that occur when starting a business?
- How can business contribute to lower disaster risk?

Hazard Assessment in Y&W

Can be done (also) in the youth SHG:

- ensures inclusion of youth, gives voice to youth
- Raised awareness among youth of local hazards and their characteristics

Helps to narrow down what you build resilient farming systems for and helps target programming further. E.g.:

- Training youth on drought resistant crops, sustainable use of soil
- Should training on preparedness and response be included?

Soil degradation

What is it:

Soil degradation is the change in soil health status resulting in diminished capacity of the ecosystem to provide goods and services. It is the decline in productive capacity of the soil as a result of changes in its biological, chemical, physical, and hydrological properties and/or erosion.

Soil erosion is the loss of topsoil and nutrients, the removal of soil by water, wind, or mass movement. Most visible effect of soil degradation but does not cover all of it.

Land degradation: wider scope then soil erosion or degradation. "Covers all negative changes in the capacity of the ecosystem to provide goods and services". Reduction in the capacity of the land to provide ecosystem goods and services

Types of soil degradation

Many different types of and processes in degradation:

Degradation of soil biological properties - Reduction in numbers and activity of beneficial soil organisms - Increase in numbers of activity of harmful soil organisms	**Degradation of soil chemical properties:** - Decline in number and availability of soil nutrients. Through leaching or removing of harvested products. - Chemical imbalances and toxicities. E.g., wrong types and quantities of fertilizer or pesticides - Salinization. Poor irrigation or grazing practices - Chemical pollution
Degradation of soil physical properties - Surface crusting and compaction. E.g., animal hooves, farm machinery, impact of raindrops - Loss of topsoil structure. E.g., through excessive tillage and loss of soil organic matter - Sub-soil compaction: E.g., ploughing to a constant depth	**Degradation of soil hydrological properties:** - Waterlogging. Through poor irrigation techniques, loos of deep-rooted vegetation, reduced soil permeability - Soil salination

Soil erosion:

- Soil erosion by water. Intense rainfall leads to surface runoff.
  - Splash erosion: raindrops fall onto bare soil surface; the impact can break up surface soil aggregates and splash particles into the air
  - Sheet erosion: Water runoff: water picks up particles released by splash erosion and the capacity to detach particles form soil surface.
  - Runoff becomes concentrated into channels, rills, and gully erosion
- Soil erosion by wind. In areas with strong wind. Removal and re-deposition of soil particles by wind and the abrasive effects of moving particles as they are transported.
  - When soil is left bare of vegetation and topsoil has been reduced to a fine tilth because of cultivation
  - In overgrazed grassland areas that have lost their protective vegetative cover
  - In woodland after cutting of trees and shrubs, losing ground cover
- Gravitational erosion

Soils that have lost organic matter and had their structural stability degraded through excessive tillage are more vulnerable to water erosion. Surface and subsoil compaction reduces the amount of rainfall that can infiltrate into the soil, increasing surface runoff.

Soil pollution:

- Inorganic pollutants in the soil. E.g., through overuse of chemical, residues of plastic mulches
- Pollutions and toxicities of organic matter following planting of certain crops. E.g., tobacco, eucalyptus
- Emissions of toxic chemicals. E.g., industrial smoke

Causes

There are many different causes and processes responsible for soil degradation. They can be summed up as:

- Poor land management
- Poor agricultural practices
- Rain, wind, mass movement

Consequences:

- Loss of soil productivity + resources
- Reduced land fertility
- Decline in water quality and quantity due to sedimentation
- Natural disaster
- Desertification
- Direct link between soil degradation and food security

- Decreased yield/crop production
- Increased production costs
- Economic loss

"There are several approaches to measuring rates of soil erosion.

1. The most direct method is to make actual measurements on slopes over a period of at least several years and use these values as representative of what is happening over a wider area and longer time span. This approach is rarely used, however, because data from individual slopes and drainage basins are very difficult to obtain.
2. A second approach is to use data obtained from resurveying reservoirs to calculate the change in the reservoirs' storage capacity of water; the depletion of storage capacity is equivalent to the volume of sediment eroded from upstream soils.
3. A third approach is to use an equation to calculate rates of sediment eroded from a particular site. One of the most common is the Universal Soil Loss Equation. This equation uses data on rainfall, runoff, the size and shape of the slope, the soil cover, and erosion control practices to predict the amount of soil moved from its original position."

– pg. 308 From Natural Hazards book.

How to combat soil degradation and build climate resilient agriculture

Resilient agriculture: the ability of agricultural systems exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner.

There is an array of possible strategies to combat soil degradation and ensure resilient and productivity agriculture. The right strategies depend on

- the causes of soil degradation
- the type of soil degradation
- the local context (weather patterns, climate, hazards etc.)

Some ideas

- Agroforestry
- Rainwater Harvesting
- Land reclamation: improve quality of the soil
- Water management
  - Terracing
  - Drip irrigation: prevents waste and excessive irrigation
  - Reduce run off and improve rainwater infiltration
  - Recycle irrigation water if possible
  - Irrigate early in the day and not on windy days
  - Reduce water usage where possible
- Use of potential greenhouse like structure?
- Windbreaks: planting trees or shrubs to provide shelter from the wind to protected soil from erosion
- Zai Pitts
- Soil and water conservation channels: trap water and soil during rain fall
  - Reduces soil erosion and increases water retention
  - Reduces, prevents, and restores land degradation
- Crop diversification
- Intercropping: improve yields by having plants complement and support each other

Methods that are mentioned and suggested frequently:

- Conservation agriculture
  - *Minimum tillage:* soil disturbance kept low, ensuring no bare soil is exposed.
    - Prevents fertile soil to be washed away during heavy rain
    - Increases productivity
    - Maintains soil structure and texture; increases water retention and fertility
    - Maintains minerals and prevent drying: stop erosion and prevent water loss.

    - Manage topsoil to create permanent organic soil cover: allowing for growth of organisms
- *Crop rotation*
- *Soil coverage*: green manure, cover crops, mulching
    - Capture and retain rainwater, reduce evaporation, prevent soil erosion, prevents soil to be washed away during heavy rains
    - Protects soil from being dried out
    - Good planting measurements allow the crop to grow a natural canopy

Overview ideas material for climate smart and resilient agriculture

"Where people and their land are safer - A Compendium of Good Practices in Disaster Risk Reduction"

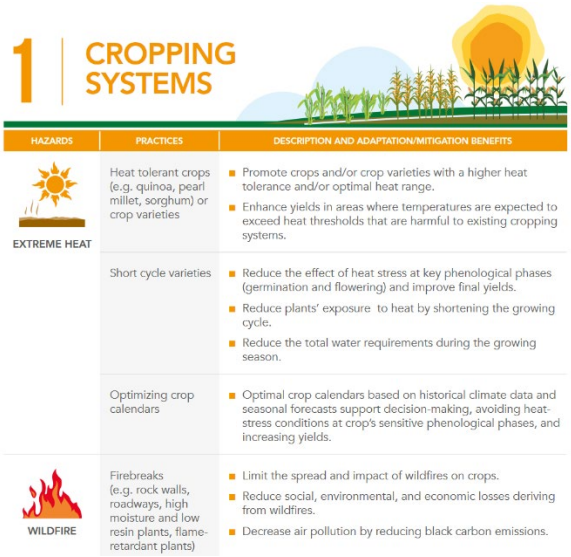
WOCAT document on detailed technologies and farming approaches for resilient farming. All together 44 of them. Structured in "Prevent and Reduce", "Reduce", and "Deal with".

Introduces detailed approaches, their purpose, budget, impacts and more for each technology.

Found under: *Where people and their land are safer - A Compendium of Good Practices in Disaster Risk Reduction*
https://www.wocat.net/library/media/122/

"Climate resilient practices"

FAO document on possible practices to adapt to and mitigate different hazards in agriculture. Ideas for AVET depending on local issues. Overview of ideas in different settings/to different hazards can be found in the FAO document *Climate resilient practices. Typology and guiding material for climate risk screening* under https://www.fao.org/3/cb3991en/cb3991en.pdf



Assessment of soil degradation

How to assess which type of degradation takes place?

The following document from the FAO provides hands-on practical ideas on how to assess the state of the soil. The gathered information can inform what to do about the degradation, determine the best agricultural practices.

https://www.fao.org/fileadmin/templates/nr/kagera/Documents/LADA_manuals/part2_d.pdf

Observation of land, hazards, and soil can also help: E.g., see if its rain drops or the rushing water leads to degradation?

Landscape approach:

There are issues and hazards that cannot be solved solely on a local level but have to take a broader regional perspective. Integrating different stakeholders and a broader geographical area.

Examples:

- dammed river or extraction of water upriver impacts people down river
- large scale logging of trees on slopes may lead to landslides
- when a whole ecosystem or watershed is degrading and at danger.

In these cases, you have to work across the landscape with various stakeholders.

Work across landscape

- Need to work with whole community and wider area for truly sustainable agricultural practices
- What actors are present?
- Who are the stakeholders?
- What interest do they have?
- Analysis of power and actors?

How can programming itself be made more resilient?

- Monitoring and evaluation
- Involvement of relevant actors in the area/community
- Developing a clear and structured plan (includes time frame, who is involved, assigned tasks)
- Include a step where information is collected using participatory tools + involvement of community. Ensuring a full analysis of situation before program is implemented. Can the program have an impact? Is the impact positive/negative? Will it develop resilience? Better sustainable farming practices?

Self-Help Groups

- Use SHG for preparedness training, social cohesion
- Raise awareness for contingency plan
- SHG focusing on understanding and receiving micro-finances (good alternative when there is a loss in crop production)

- Trigger intrinsic motivation + come up with own solutions for soil degradation
- Split up SHG's depending on age (different farming tasks assigned to different age groups)

Evidence based: indicators for DRR impact and collection methods

Climate smart action in DRR? → consider impact of climate and climate change on programming and make programming itself resilient and beneficiaries, too

System change at count level → advocacy