Any effort to improve the resilience of the land will reduce the vulnerability of the people.
Part 1

1. Setting the scene – the problem, concepts and policy
   How SLM contributes to DRR
   Synergies between SLM and DRR

2. Analysis of Disaster Risk Reduction practices
   44 Technologies and Approaches from around the globe

3. Conclusions and Policy Points
Presentation of 30 DRR practices from around the globe

• represent proven showcases of successful DRR interventions of the Swiss NGO DRR Platform

• focus on some of the most important DRR issues

• address different types of hazards and disasters

• cover a wide range of land-based/land-related DRR practices

• cover different continents, countries and contexts

→ Making use of the standardised tools and methods for the documentation and evaluation of good practices developed by WOCAT
WOCAT standardised documentation

Drainage fascines (Honduras)

The fascine, a traditional water control technique in Honduras, is typically used to divert excess water from sloping land to prevent soil erosion. Fascines are bundles of vegetation and small branches that are wrapped together to create a natural barrier. This method is particularly effective in areas with high rainfall and steep slopes. By creating a barrier of vegetation, fascines help to slow down water flow, reducing soil erosion and maintaining soil stability. Fascines are also relatively inexpensive and can be easily constructed using locally available materials.

Technical drawing

- **Technical specifications**
  - System: Drainage fascines
  - Function: Divert excess water
  - Drainage system: Natural vegetation barriers
  - Length: 3-6 meters
  - Height: 1-2 meters

- **Location**
  - **Location**: Honduras
  - **Description**: Drainage fascines are commonly used in rural areas to control water flow and prevent soil erosion.

- **Materials used**
  - Natural vegetation (grass, herbs, etc.)
  - Small branches
  - Soil

- **Installation process**
  - **Preparation of the site**: Clearing the area, removing debris, and ensuring the area is level.
  - **Construction**: Bundles of vegetation and branches are tied together to form a barrier, and then inserted into the ground along the desired route.
  - **Maintenance**: Regular monitoring and maintenance to ensure the fascines remain effective.

- **Implementation and maintenance activities, inputs and costs**

  - **Costs**
    - **Labour**: $50 per hour
    - **Supplies**: $10 per unit

  - **Efficiency**
    - **Profitability**: 90%
    - **Return on investment**: 2 years

  - **Environmental benefits**
    - Reduced soil erosion
    - Improved water quality

  - **Community involvement**
    - Local farmers and community members are involved in the construction and maintenance of the fascines.

  - **Sustainability**
    - The use of natural materials reduces the need for expensive imported materials.

  - **Challenges**
    - Access to the site
    - Seasonal variation in vegetation growth

- **Further information**
  - WOCAT database
  - Local experts

For more information, please refer to the WOCAT database or contact local experts in Honduras.
### 2. Analysis of Disaster Risk Reduction practices

Classification of Technologies and Approaches through the DRR lens using the Risk Staircase Model

<table>
<thead>
<tr>
<th>Disaster Risk Management</th>
<th>Avoid new Risk</th>
<th>Prevent Impact</th>
<th>Mitigate Impact</th>
<th>Prepare and Respond</th>
<th>Transfer and Share</th>
<th>Deal with Risk</th>
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#### Table 1: Classification of the Technologies and Approaches through the DRR lens

<table>
<thead>
<tr>
<th>Technology/Approach</th>
<th>Prevent Risk</th>
<th>Reduce Risk</th>
<th>Transfer Risk</th>
<th>Deal with Risk</th>
<th>Mitigate Risk</th>
<th>Avoid new Risk</th>
<th>Prevent Impact</th>
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#### Footnotes
- Classification is based on the Risk Staircase Model, which categorizes approaches based on their effectiveness in reducing disaster risk.
- The table provides a detailed breakdown of technologies and approaches, including their potential impact and application within the disaster risk management framework.
2. Analysis of Disaster Risk Reduction practices

Classification of Technologies through the SLM lens

**Land-based**
1. Reforestation / vegetation cover improvement
2. Cross-flow barriers incl. microcatchments
3. Cross-flow drainage and redirection incl. macrocatchments and floodwater harvesting

**Land-and water-based**
4. Productive infrastructure

**Land-related**
5. Adapted infrastructure
6. Adapted seeds/ crops
7. Food/ fodder reserves

…. and others
Box 2: SLM Technology and SLM Approach

An SLM Technology is a physical practice on the land that controls land degradation, enhances productivity, and/or other ecosystem services. A Technology consists of one or more measures, namely agronomic, vegetative, structural, and management measures (WOCAT 2017).

An SLM Approach defines the ways and means used to implement one or more SLM Technologies. It includes technical and material support, involvement and roles of different stakeholders, etc. An Approach can refer to a project/programme or to activities initiated by land users themselves (WOCAT 2017).
**Multi-purpose Technologies**

- over 40% of the Technologies have 3-4 purposes

- reducing disaster risk and adapting to climate change are obviously the main purposes

- creating beneficial economic impact: Technologies contribute to improved livelihoods – and therewith increased resilience

- addressing land degradation, mainly caused by unsustainable land management and further enhanced through the exposure of the land to hazards is at the core of the land-based Technologies

- creating beneficial social impact as well as improving production: both again contribute to strengthened livelihoods of households and communities
On- and off-site impacts

On-site: in the area/ on the plot where the Technology is applied

Socio-economic benefits:
- increased production
- increased farm income
- improved drinking water availability and quality
- income diversity

Socio-cultural benefits:
- increased food security
- improved drinking water availability

Ecological benefits:
- reducing runoff
- draining excess water
- reducing flooding, droughts, and landslides

Off-site: in adjacent areas/ neighbours’ lands or further downstream. →
not easy to prove whether, and to what extent, a Technology/ Technologies upstream have had a positive impact downstream

- improving water availability
- providing reliable and stable stream flows in the dry season
- reducing flooding,
- reducing damage in neighbours’ fields and damage to infrastructure

→ major function: improve water infiltration, reduce or control water flows and reduce siltation.
Main policy points

Solutions for repeated small-scale disaster events
Simple SLM measures can help to substantially reduce the impacts of repeated small-scale disaster events. At the same time they often address several natural hazards simultaneously, making them an efficient and cost-effective risk reduction measure. This needs to be better recognised – and articulated – by the DRR community and is a justification for forging better links with those who specialise in SLM.

Resilient land for resilient people
Sustainably managed land conserves ecosystem functions and makes the land more resilient to natural hazards as well as gradual changes, thereby reducing people’s vulnerability and enhancing their resilience. Promoting the scaling-up of SLM activities from single plots to the landscape/watershed level will lead to increasingly resilient land and thus more resilient households and communities under DRR interventions.

Productive protection
SLM produces ecological benefits which help to protect people and their land from hazards and their impacts – while at the same time being productive through related socio-economic benefits. The danger is that the poorest people on the most degraded land can become locked into a vicious cycle of poverty, degradation and disasters. SLM, with its emphasis on the land’s health and productivity helps break this cycle and makes it intrinsically attractive to land users who stand to benefit directly. This is another argument for bringing more SLM into DRR initiatives.

Investing in land and land users for sustained risk prevention and reduction
Conserving and protecting land through SLM helps to maintain its capacity and functions to cope with hazards and therewith prevent and reduce disaster risk. Restoring degraded land through SLM restores its capacity and functions to cope with hazards and therewith reduces disaster risk. Simultaneously through involving land users in the processes of risk assessment and planning interventions linked to SLM, their capacity is built up – and they become aware of what resilience really means. This is crucial to ensuring sustainability.

Considering land when assessing risks and building back better
The role and potential of land for DRR should be taken into consideration when carrying out risk assessments as well as when ‘building back’ after a disaster has hit: by identifying unsustainable practices that have led to land degradation and increased exposure and replacing these with Sustainable Land Management practices that reduce exposure and vulnerability. SLM has a crucial role to play in helping the poorest rebuild lives and livelihoods after disasters.
Examples and experiences from Uganda - Tearfund

Soil and water conservation channels (Uganda)

**LOCATION**

A soil and water conservation channel or "infiltration ditch" is an excavated trench along the contour, with a slightly higher channel at regular intervals, that traps water and soil washed downhill during a downpour.

**DESCRIPTION**

The technology is applied in already existing degraded terrains, which are individually owned. An average farm area is twice half an acre less than 2.2 ha. A typical soil type is exposed to water flow in the terrace. In the upper part of the terrace, the trench which prevents lateral flow water along the trench. The channels are set at an incline against the flow of water along the contour. This creates a slight friction which reduces the velocity of water running down the slope during a downpour and traps the water and soil that is being washed downhill, reducing soil erosion and increasing water retention. Areas which are prone to degradation by erosion are identified and later, the farmers are trained regarding the benefits of this technology, how to lay out the channels by use of the "A-frame", how to construct the channels, and how to maintain them by periodic de-bulk ing and clearing clogged areas and shovels on the banks. The "A-frame" is a A-shaped structure made from wooden poles or thin metal poles that can be easily constructed and used to prevent soil erosion of water flow towards the channels.

**CLASSIFICATION OF THE TECHNOLOGY**

- Main purpose: Improve production
- Mitigate present, water-related land degradation
- Conserve ecosystem
- Protect area from significant erosion
- Combination with other soil conservation techniques

**APPLICATION OF THE TECHNOLOGY**

- Water conservation
- Soil conservation
- Erosion control
- Reduction of water flow
- Conservation of water

**EASE AND MAINTENANCE: ACTIVITIES, INPUTS AND COSTS**

**Calculation of inputs and costs**

- **Infrastructure costs**
  - Per ha
  - Per ha (average)
  - Average cost for field size: $55
- **Labour costs**
  - Average wages cost of hired labour per day: USD 2.50

**TECHNICAL DRAWING**

LONGITUDINAL VIEW OF THE SOIL AND WATER CONSERVATION CHANNEL

CROSS SECTIONAL VIEW OF THE SOIL AND WATER CONSERVATION CHANNEL

**ESTABLISHMENT AND MAINTENANCE: ACTIVITIES, INPUTS AND COSTS**

**Most important factors affecting the costs**

- The costs have been calculated based on depth of soil of 50 – 60 cm. When the depth of the soil is shallow, the costs of creating the underlying sub-surface layer is reduced, which is often not necessary.
- The costs also vary depending on the type of soil and the level of soil erosion.
Farming God’s Way (Uganda)

**Description**
Farming God’s Way is a method of farming which aims to preserve soil structure through minimum tillage, mulching with grass or plant stolons and use of organic manure for improved crop yields.

The technology is applied in already existing farmlands, which are individually owned and land-users are practicing conventional/traditional farming methods. An average farm size is less than half an acre. It is built on the fact that when God created the first garden, it was a highly productive rainforest which was in need of nothing. The forest was capable of succeeding even in drought years and never slowed or lost its productivity. The trees never lost their leaves or wilt. They keep on producing flowers, fruits and seeds and are able to carry vast numbers and diversity of animal species. God put mechanisms in place which would allow the fauna, flora and soil to co-exist, with high levels of productivity, no environmental degradation, little or no erosion and a high tolerating ability to whatever adverse conditions the farm climate.

Therefore, this technology helps to maintain soil structure and texture increasing its ability for water retention and soil fertility, thus increasing crop yields. The major activities needed to establish the technology include awareness creation and training land-users on the technology, setting up demonstration gardens, identification of contact farmers, supporting them to establish demonstration gardens in the community and follow up support to the implementing farmers. What the land users dislike about this technology is that it involves a lot of measurements and record keeping, which they are not used to, the mulching material is not readily available and the mulch harbors rodents.

**Location**
- Location: Rubaya, Bwindi and Rukungiri, Kasese District, Western Region, Uganda
- No. of Technology sites assessed: 10-100 sites
- Georeference of selected sites:
  - 29.0048, -2.42384
  - 30.02853, -1.23134
  - 30.04263, -1.1891
- Spread of the technology evenly spread over an area
- Date of Implementation: 2015
- Type of Introduction: through land users’ innovation as part of a traditional system (> 50 years)
- through experiments/ research

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Bench Terracing (Uganda)

**Description**
A bench terrace is an artificial horizontal strip dug across a steep landscape, with a rise ranging between 30 and 45 degrees. Bench terraces are constructed in series and help to minimize land degradation by rainwater runoff.

A typical bench terrace takes the shape of a bench with a width of 3 to 5 meters and the height ranging from 1 to 2 meters, depending on the steepness of the slope, and the length is determined by the size of the plot, but typically 20 to 25 meters. The top of the terrace is planted with a grass strip (referred to as a hedge row commonly) elephant grass or sward grass at a spacing of 200mm. The lower part of the terrace is stabilised by planting creeping plants like couch grass to avoid erosion. The technology is applied in already existing degraded farmlands, which are individually owned. An average farm size is less than half an acre. This technology reduces the speed of water running down the slope during a downpour thereby reducing soil erosion and increasing water retention. Areas which are prone to degradation by erosion are identified and later, the farmers are trained on benefits of this technology, how to construct and how to maintain the terraces by planting hedges rows. This technology helps maintain the good top soil, which would have otherwise been washed down the slope into the valley.

Incorporate water retention, provides a safe ground for farm practices. All these ultimately increase crop yields. What the land users dislike about this technology is that it is labour intensive. These labour intensive activities are done individually, on individual pieces of land using simple hand tools (hoes, spades and pick axes).

**Location**
- Location: South Western Region, Uganda
- No. of Technology sites assessed: 10-100 sites
- Georeference of selected sites:
  - 29.0035, -1.4035
  - 29.0048, -1.4038
  - 29.0062, -1.4031
  - 29.0053, -1.4049
  - 29.0041, -1.4033
  - 29.0033, -1.4033
  - 29.0041, -1.4033
  - 29.0033, -1.4033
  - 29.0033, -1.4033
- Spread of the technology evenly spread over an area
- Date of Implementation: 2015
- Type of Introduction: through land users’ innovation as part of a traditional system (> 50 years)
- through experiments/ research
- through projects/ external interventions
Process of documentation (Pain)

- Training from DRR Platform in data capturing and database entry (2 days)
- Pretesting the questionnaire - 38 pages
- Actual field work for data collection – FGD and KII with land users
- Data entry and submission
- Peer Review (1st, 2nd, 3rd, ...)/rejection/re-submission
Benefit from the process

- Better understanding of our own approach and technologies
- Able to define approaches and technologies in a global language
- Developed ability to draw and dimension the technologies
- Learnt how to do cost-benefit-analysis in a very practical way
- Database now a knowledge base for us and whole DRR community
- Global connections to SLM practitioners/peers
Thank you!

Please get a copy

pdf available at
www.drrplatform.org/publications