



Best SLM practices from the Regional Projects in a book and videos: Documented, evaluated and shared using the WOCHAT method

World Overview of Conservation Approaches and Technologies

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Sustainable Land Management (SLM)

...plenty of good practices
in projects and by
innovative land users ...
but...

... not available and used
for reducing LD and
improving well-being

→ Need for KM and DS





- joint knowledge management (KM) and decision support system (DSS) (→ for all SLM projects)
- standard reporting & impact assessment of SLM / LD
- informed decision making for up-scaling SLM

WOCAT's Mission



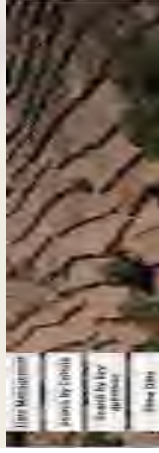
WOCAT supports innovation and decision-making in Sustainable Land Management by:



1) global network



2) standardized tools and methods



3) global knowledge base



4) capacity building

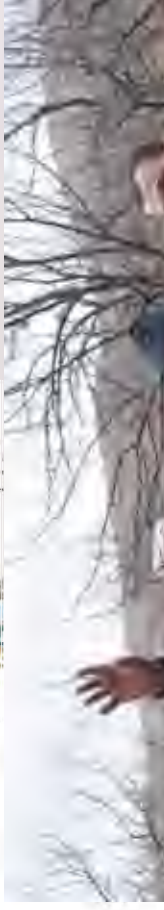
Goal 1: International network



- SLM specialists
- Over 60 institutions worldwide (incl. Ministries, Universities, NGOs, International Centres, UN-Organisations (FAO/UNDP), GEF, World Bank, ADB, Development agencies, etc.)
- Coordination: Global Management (CDE, FAO, ISRIC)
 - New institutional set-up: formalized consortium, NGO

Documenting SLM knowledge at field level

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World Overview of Conservation Approaches and Technologies

PART 1: GENERAL INFORMATION

1.1 Controlling SLM specialist(s)

Main contributor: Chapter / Module

Date collection date: 2008-26-15

List the names of other contributing specialists who assisted in filling out this questionnaire:

Name	Country	Institution

Please mention the institutions, projects, etc. referred to in the questionnaire to the use and dissemination of this information by WOCAT.

7/ Date: 2011-04-09

1.2 Brief identification of SLM Technology

Country	Ministry

Technology code: 1000-200

1.2.1 Common name of SLM Technology:

Registration number for other pages:

3.2.2 Local or other name(s) (with language):

Question
technology

Documentation
and w
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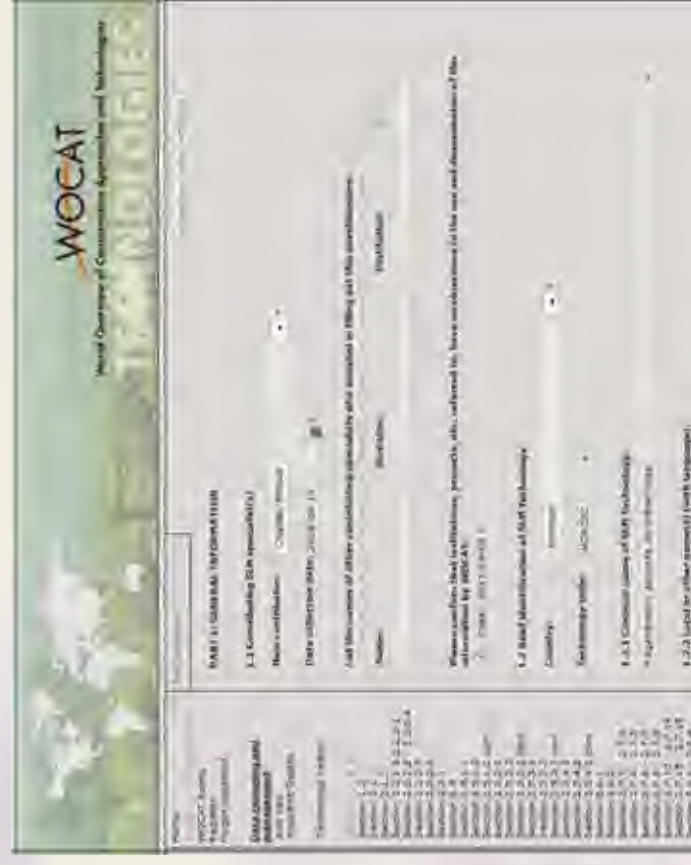
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Computer data entry form

global knowledge base

- 470 SLM technologies 235 approaches from 50 countries
- In Google Earth...
- degradation and SLM maps from over 20 countries
- Data search and query system ... for analysis, reporting

All online, open source, in different languages



where the land is **greener**

case studies and analysis of soil and water conservation initiatives worldwide



WOCAT Overview book:
where the land is **greener**
Setting new standards:

- Global selection of case studies:
 - 42 Technologies &
 - 28 Approaches
- Standardized presentation
- Analysis
- Policy implications



Sustainable Land Management in Practice

Guidelines and Best Practices
for Sub-Saharan Africa

FIELD APPLICATION

2011

Prepared by WOCAT
Coordinated by the FAO of the UN
A Terrafrica Partnership Publication

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Guidelines for Sub-Saharan Africa Principles for SLM 47 Best practices

NEPAD

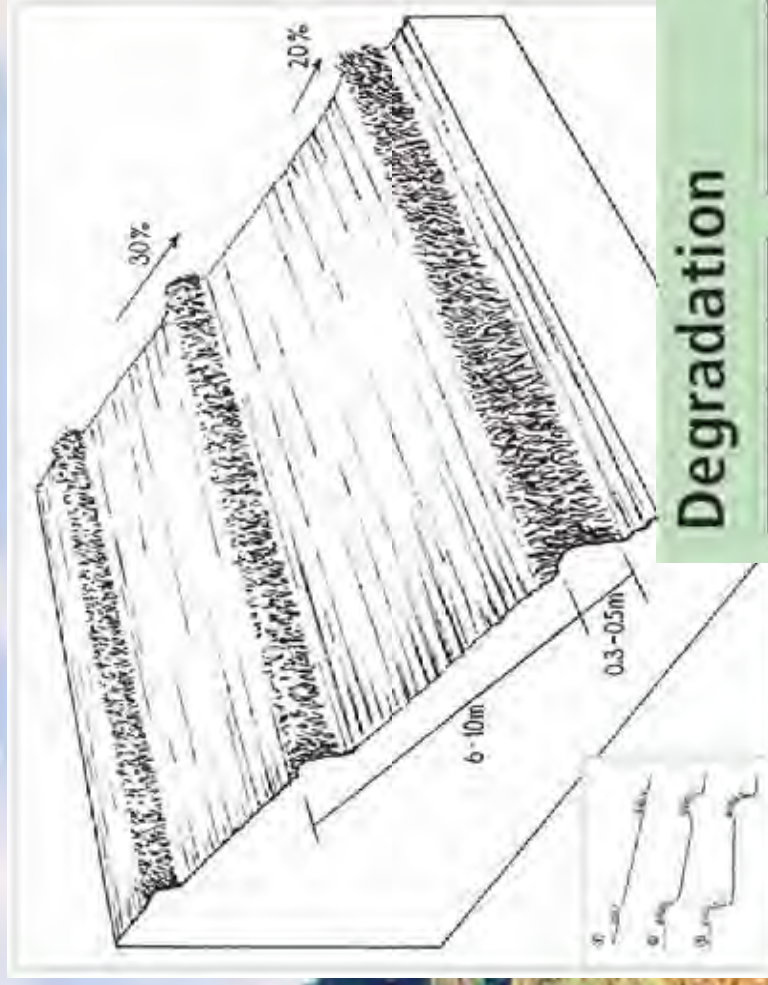
FAO

WOCAT

Funded by World Bank and
Swiss Development Cooperation

SLM Technologies

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Natural vegeta

Philippines

Within individual cropland contour and left unploughed barriers of naturally establis

Degradation

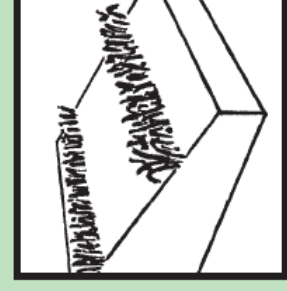


water erosion:
loss of topsoil,
gully

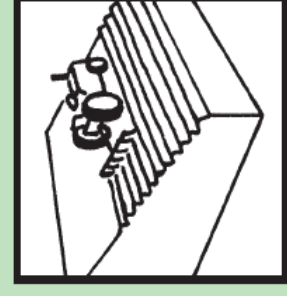


chemical:
fertility decline

SWC measures



vegetative:
narrow grass
barriers

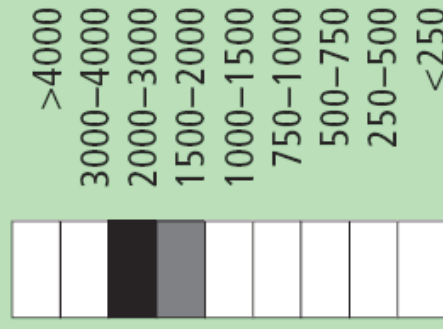


agronomic:
contour plough,
mulching (supp.)

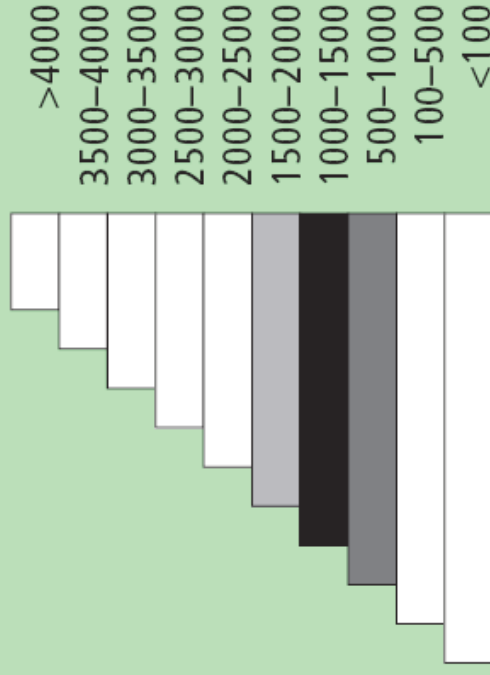
Natural and human environment

Natural environment

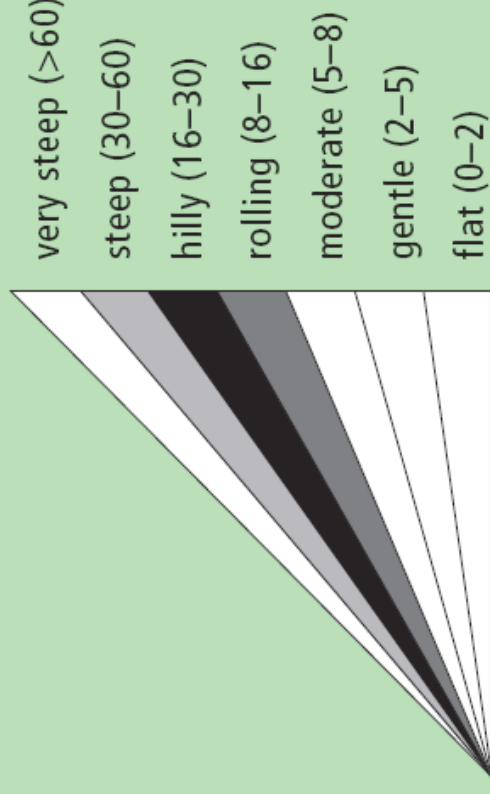
Average annual rainfall (mm)



Altitude (m a.s.l.)

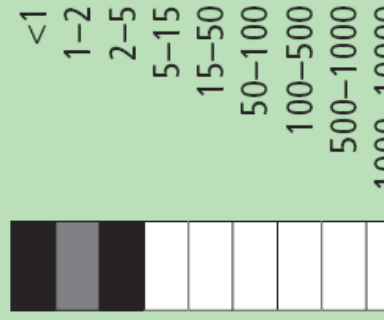


Slope (%)



Human environment

Cropland per household (ha)



Land use rights: mainly individual, partly leased

Land ownership: mainly individual titled, partly individual not titled
Market orientation: mixed (subsistence and commercial)

Level of technical knowledge required: field staff/extension workers
Importance of off-farm income: 10-50% of all income: carpentry, t
farms with intensive agricultural activities (eg vegetable production)

... economics

Establishment inputs and costs per ha

Inputs	Costs (US\$)	% met by land user
Labour (5 person days)	15	100%
Equipment		
- Animal traction (32 hours)	40	100%
- Tools (2): Plough and harrow	25	100%
- Stakes (pegs)	4	100%
TOTAL	84	100%

Benefits compared with costs short-term: long-term:

establishment	I	positive	very positive
maintenance/recurrent		positive	very positive

Impacts (on- / offsite)

Production and socio-economic benefits

+	+	+	fodder production/quality increase (or biomass as mulch)
+	+	+	very low inputs required
+	+		farm income increase
+			crop yield increase

Socio-cultural benefits

+	+	+	improved knowledge SWC/erosion
+	+		community institution strengthening
+	+		national institution strengthening (government line agencies and educational institutions)

Ecological benefits

+	+	+	soil cover improvement
+	+	+	soil loss reduction
+	+	+	soil structure improvement
+			increase in soil moisture
+			increase in soil fertility
+			biodiversity enhancement

Off-site benefits

Strengths and weaknesses

Strengths and → how to sustain/improve

Easy to establish and maintain → Strengthen farmers associations.

Intensify information and education campaign.

Little competition with crops for space, sunlight, moisture and nutrient →
Ensure continued regular trimming of vegetative strips and use of these
as fodder or mulch.

Weaknesses and → how to overcome

Effect on yield and income is not readily felt, since reduced erosion is not
easily translated into increased income or yield → Farmers should have
supplementary sources of income (eg livestock). Education about what
long-term sustainability means.

Reduction of productive area by approx 10% → Optimum fertilization
to offset production loss. Nutrients are conserved under NVS and this will



Zhuanglang loess terraces

China – 庄浪水平梯田

Level bench terraces on the Loess Plateau, converting eroded and degraded sloping land into a series of steps suitable for cultivation.

The Loess Plateau in north-central China is characterised by very deep loess parent material (up to 200 m), that is highly erodible and the source of most of the sediment in the lower reaches of the Yellow River.

The plateau is highly dissected by deep gullied valleys and gorges. The steep slopes, occupying 30–40% of the plateau area, have been heavily degraded by



Ecograz

Australia

An ecologically sound and practical grazing management system, based on rotation and wet season resting.

Open eucalypt woodlands cover approximately 15 million hectares in the semi-arid plains of north-east Australia, and support about a million head of cattle. Keeping these grazing lands productive and healthy demands good management.



left: Fence-line contrast between treatment paddocks with different utilisation rates.

medium utilisation on the left and high utilisation paddock on the right. (CSIRO)

right: The impact of poor grazing land

management: woodlands with a dense cover of '3P grasses' (top), degraded area with

annual grasses, forbs and bare soil after heavy grazing (bottom). (CSIRO)



Furrow-enhanced runoff harvesting for olives

استغلال أمثل الفلاحة لحصاد المياه في بساتين الزيتون - Syria

Runoff harvesting through annually constructed V-shaped microcatchments, enhanced by downslope ploughing.

The Khanasser Valley in northwest Syria is a marginal agricultural area, with

left: Runoff harvesting for olive trees by up-and-down tillage (by tractor) and V-shaped microcatchments (dug by hoe) in a semi-arid area, Khanasser Valley, Aleppo, Syria. (Francis Turkelboom)

right: Runoff is collected in micro-basins around each tree. The V-shaped bunds extend to the left. Stone mulching – as a supportive measure – further enhances moisture conservation by reducing evaporation (see picture in related approach). (Francis Turkelboom)



Terrace approach

China – 庄浪梯田

Highly organised campaign to assist land users in creating terraces: support and planning from national down to local level

Before 1964, the slopes on China's Loess Plateau were cultivated up and down by machinery. Consequently soil and water were lost at high rates, and fertility and yields declined. Accessibility to cultivated land became more and more difficult due to dissection by gullies. The first terraces were established by self-mobilisation of the local land users. However there was no standard design. Furthermore, as the individual plots were very small and scattered all over the village land, ter-

left: Mass mobilisation showing people from several villages helping each other. Initially, farmers were not paid but from the 1980s onwards farmers received cash and other support for their work. (Photo: from 'Terraces in China' Ministry of Agriculture)
right: Construction of terrace risers – following instructions given by a specialist. (Photo: from 'Terraces in China' Ministry of Agriculture)



audio-visual messages from land user to land user



Small-scale reforestation village



SLM technology

documented and presented in standardized WOCAT format



video

SLM approach

WOCAT



Grevillea agroforestry system

Kenya - Mukuma / Mubari

Left: Boundary planning in three areas of the Mount Kenya National Park, showing a variety of ecological and economic benefits and its selection in different agro-ecological zones. (Mwangi) (right)

Multipurpose *Grevillea robusta* trees planted along farm boundaries, on terrace risers and occasionally scattered in cropland.



Ruth Wairimu Nduuru, farmer

More details: <http://www.fair-play.org/about/fair-play-2014-2015>

Downloaded from <http://www.jstor.org/stable/2346191> on Tue, 20 Jun 2016 12:02:05 UTC

Synthesized experiences (global, regional national)

→ Inventories of practices and guidelines:

- **Rainwater Harvesting (2013) - guidelines to good practice**
- Desire for Greener Land (2012)
- SLM in Practice (2011): Guidelines and Best Practices for Sub-Saharan Africa, including 47 case studies (E,F)
- **Good practices, principles, guidelines, policy points** (2009)
- where the land is (2007): Global overview book, with a selection of 70 case studies and policy points (E,F,S)
- National overview books (Ethiopia, China, Nepal, Bangladesh, Mongolia, Senegal, Tunisia, etc.)



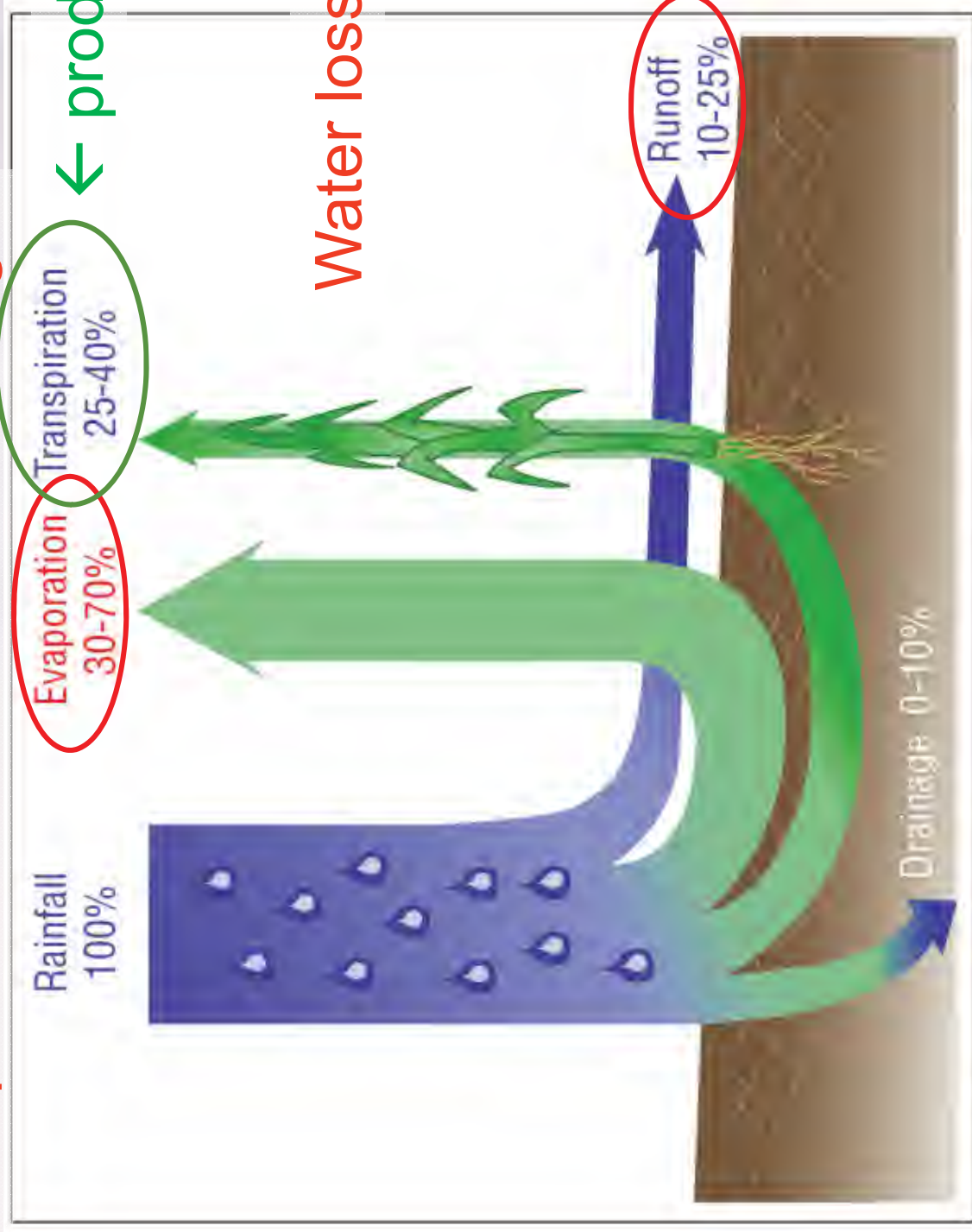
Key question: vulnerability / resilience to climate variability ... extreme events?

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→ WOCAT climate change module

Climate change adaptation	
Resilience to extreme dry conditions	++
Resilience to variable rainfall	+++
Resilience to extreme rain and wind storms	++
Resilience to rising temperatures and evaporation rates	++
Reducing risk of production failure	++

Principles: The human made drought



Water loss in drylands

Figure 3: Productive water (transpiration) and water losses (evaporation and runoff) without water conserving measures in dry lands.



Impacts of LD



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Hanspeter Liniger



and SLM!



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Varzob



Impacts (on- / offsite)

Varzob



When / Where to intervene?



Prevention



Mitigation / „Cure“



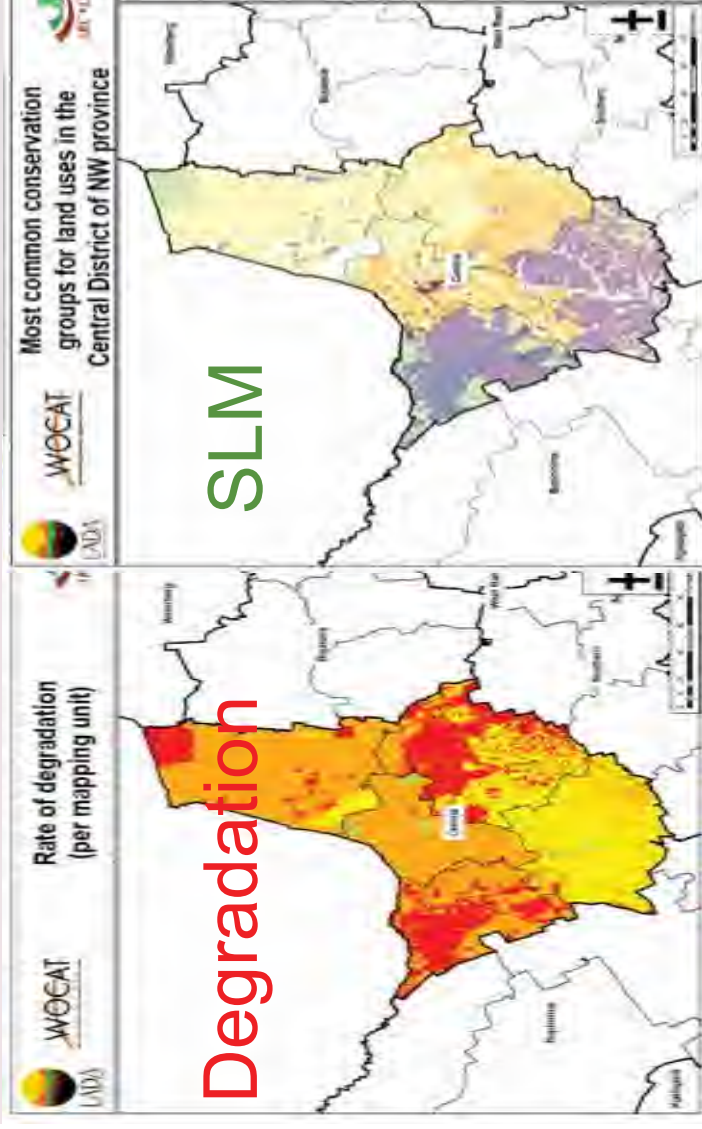
„Rehab“

Mapping: Land Degradation/Conservation & impacts

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DESIRE



Degradation

SLM

→ Where to invest?

→ Hot spots

→ Bright spots

Participatory
Expert Assessment
Supported by documents,
surveys,..



Photos: H.P. Liniger

Decision support: 3 parts (for selection of good practices)

DESIRE WOCCAT



Local and Watershed

Part I – Identification:

Identify existing and potential strategies with a *participatory learning approach* (stakeholder workshop 1)



Part II – Assessment:

Evaluate, document & share strategies with *standardised questionnaires* → *using reporting* → *inventory*



Part III – Selection:

Select the most promising strategies with a *decision support tool* (stakeholder workshop 2)



Livestock Committee at Village Level

Tajikistan – CARITAS Switzerland

Livestock committees were established with the goal to improve livestock health as well as natural resource management in the watersheds where the village pastures were situated. Livestock committees in the Muminabad district are organised at village level and coordinate their activities through the registered livestock association at district level.



left: Practical workshop on rotational grazing in the pasture. (Photo: Sa'dy Odinashoev)



Right: Herd during the hot summer days after drinking water having rest under the tree shade. (Photo: Viviane Bigler)

Left: Herd during the hot summer days coming from the pasture to

Rotational grazing supported by additional water points

Tajikistan - CARITAS

Training, education and research

- Training: over 500 SLM specialists from 40 countries trained in using WOCAT tools and running national initiatives (training of trainers)
- Linking development and research; evaluating SLM and filling knowledge gaps by applied research
- Support for monitoring and assessment of SLM impacts (on-/off-site; socio-economic and environmental)



WOCAT - BMBF - ... partnership



- Standardized KM → Sharing & using SLM Knowledge
- A book and on-line database with
 - case studies → documentation
 - principles for SLM
 - analysis of impacts (on- offsite)
 - cost / benefits, → evaluation



- Videos: giving voice to the land users (of case studies)
- Decision support tools integrating all stakeholders and available knowledge
- Training project partners: documentation & decision support
→ Support to reg./country projects: valuation of experiences
- Become part of the global network and partnership
→ spreading of results nationally and internationally
(with UNCCD and others)



Main aim:

Using project experiences

... to support BMBF + ... projects

→ books, videos, open access database...

→ Training and capacity building