IPROMO course, 10.7.2014

The role of watershed management for protecting mountain environment and promoting mountain farming

Proposed programme

Instructor: Thomas Hofer, Team Leader (Watershed Management and Mountains),
Coordinator Mountain Partnership Secretariat
FAO Rome

09.00 - 09.30	Module 1: introduction
09.30 – 10.15	Module 2: characteristics of mountain environment
10.15 – 10.45	Module 3: characteristics of mountain farming
10.45 – 11.00	Coffee break
11.00 – 12.15	Module 4: impact of unsustainable practices in mountain environments
12.15 – 12.45	Module 5: watershed management - terminology and key principles
12.45 – 14.15	Lunch
14.15 – 15.15	Module 6: putting the pieces together – a case study from Pakistan
15.15 – 16.00	Module 7: image interpretation
16.00 – 16.15	Coffee break
16.15 – 17.00	Module 8: the context of climate change
17.00 – 17.30	Module 9: final discussion and conclusions

Module 1: introduction





The assumption for today

Watershed management is a very appropriate approach to protect mountain environments and promote mountain farming

Course programme 10.7.2014

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The FAO: mandate



Food and Agriculture
Organization of the
United Nations

for a world without hunge,



FAO's mandate is to raise levels of **nutrition**, improve **agricultural productivity**, better the lives of **rural populations** and contribute to the **growth of the world economy**.

FAO offices: a worldwide network









FAO mountain and watershed team

Topics:

Watershed management

Mountain development

Forests and water

Types of work:

Normative activities

Field projects

International processes

Forestry Department; Inter-departmental collaboration

Mountain Partnership

Module 2: characteristics of mountain environment



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Mountain environment: globally important services



Module 3: characteristics of mountain farming



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Module 5: watershed management: terminology and key principles

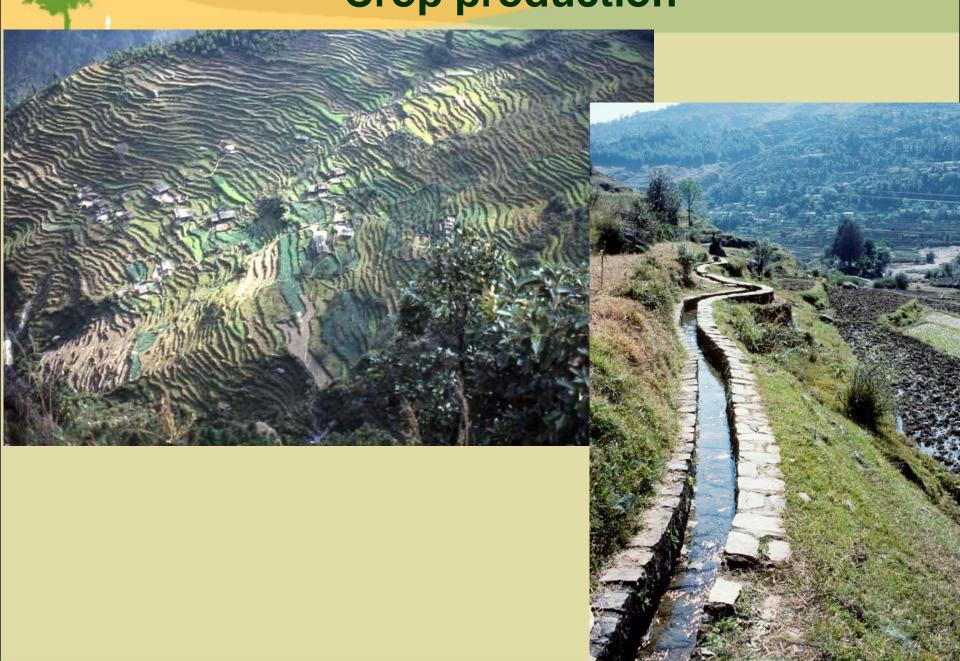
Module 6: putting the pieces together

Module 7: image interpretation

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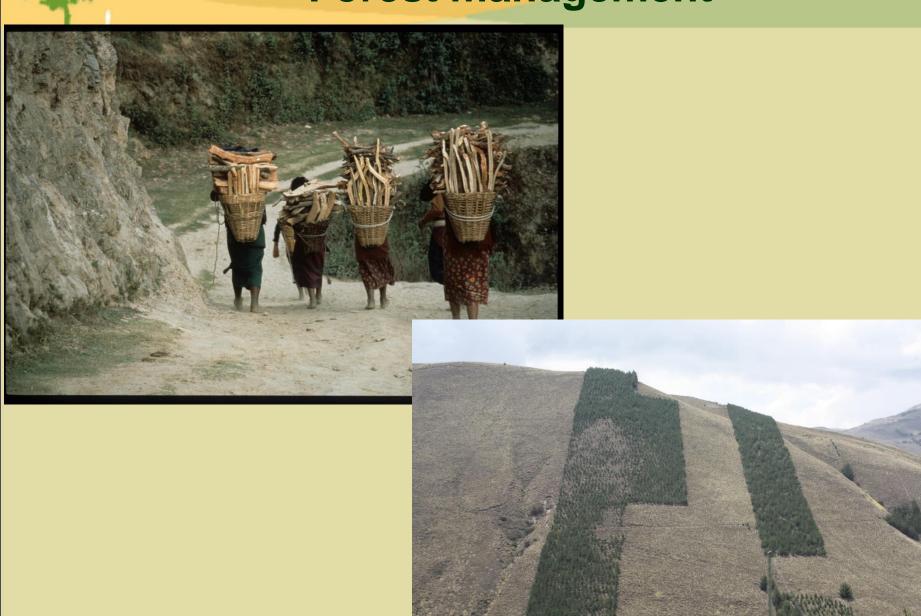
Crop production



High value products

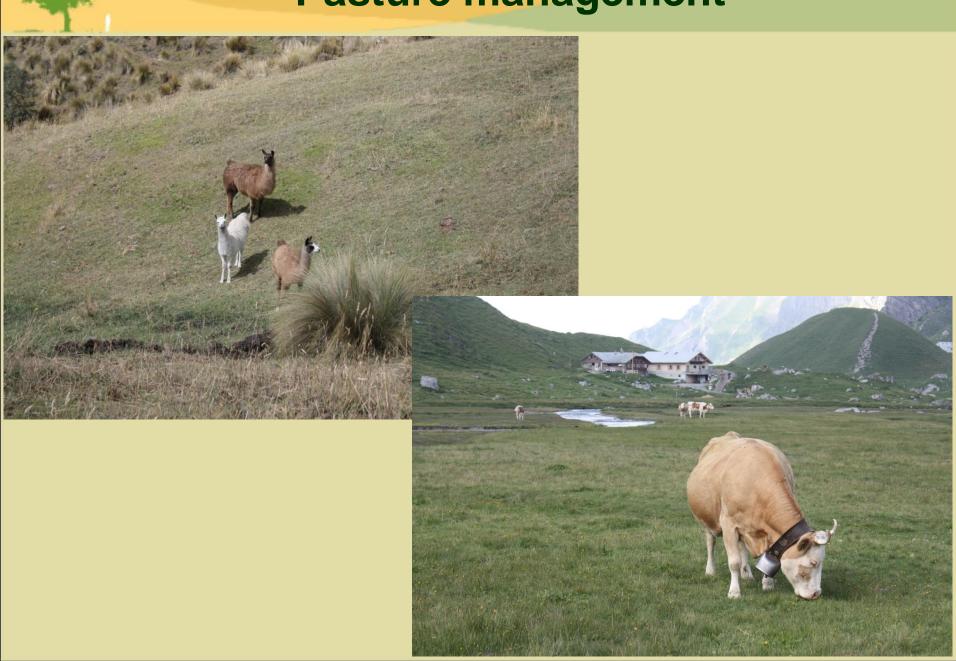


Forest management





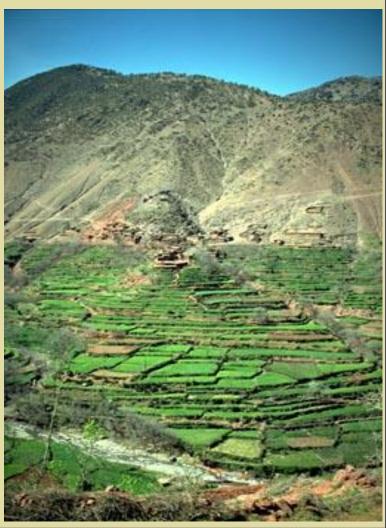
Pasture management





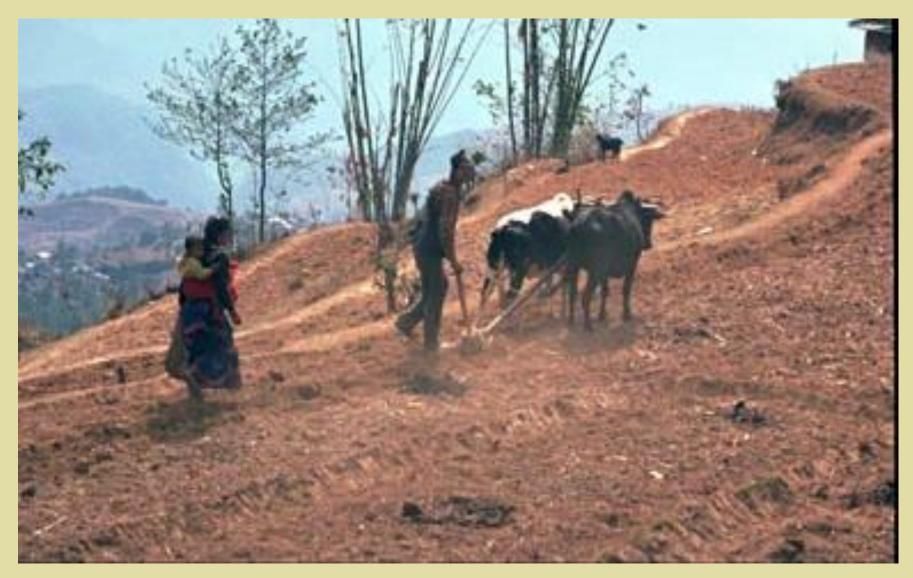
Integrated, diversified system





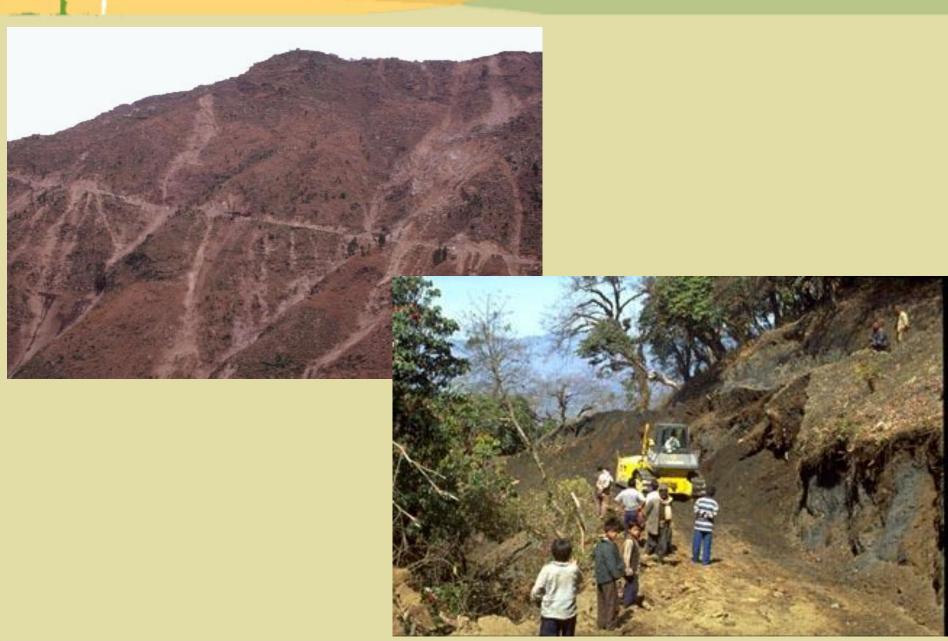


Low impact farming





Difficult access



Module 4: impact of unadapted practices in mountain environments



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Module 5: watershed management: terminology and key principles



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Watershed / catchment (II)



Watershed / catchment (I)

- A watershed is the geographical are drained by a water course. The concept applies to units ranging from a farm crossed by a creek (a micro-watershed) to large river or lake basins.
- A catchment is the area drained by a river or body of water and is also called catchment basin.



Reading a watershed landscape



Characteristics of watersheds

- Mosaic of landuse systems;
- Altitudinal gradient, slopes;
- Upstream-downstream linkages;
- Different exposure;
- Nature-human interactions;
- Hierarchy of water courses;
- etc.



Watershed services

- Freshwater, flow regulation;
- Forests (timber, fuelwood);
- NR for local livelihoods;
- Energy;
- Biodiversity;
- Fertilization of lowlands;
- High quality products;
- Minerals, mining;
- Recreation;
- etc.





Watershed management

- Watershed management is any human action aimed at ensuring a sustainable use of watershed resources;
- promotes more efficient use of natural resources and improved livelihood situation;
- applies by definition a landscape approach;
- contributes to food security.



Evolving concept of watershed management

Prior to 1950: recognition of the problem

• 1950-1980: enthusiasm phase

• 1980-1995: expansion phase

• 1995-2000: controversial phase

2001- reflection and consolidation

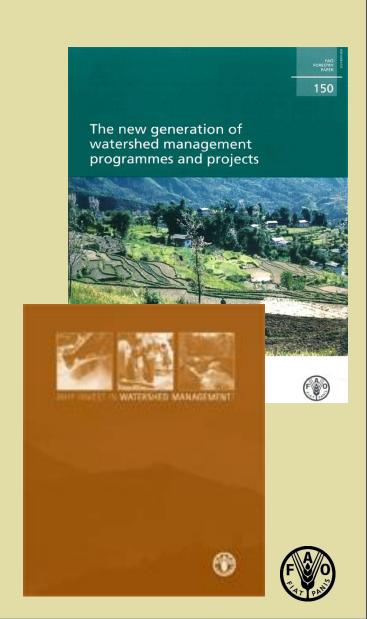
phase

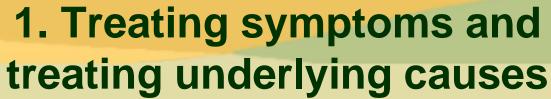




FAO-promoted WM review

- Stock-taking
- Review of FAO projects
- Regional workshops (Aleppo, Megève, Arequipa, Kathmandu, Nairobi)
- Global conference (Sardinia)
- Proceedings and case studies
- Analysis and synthesis



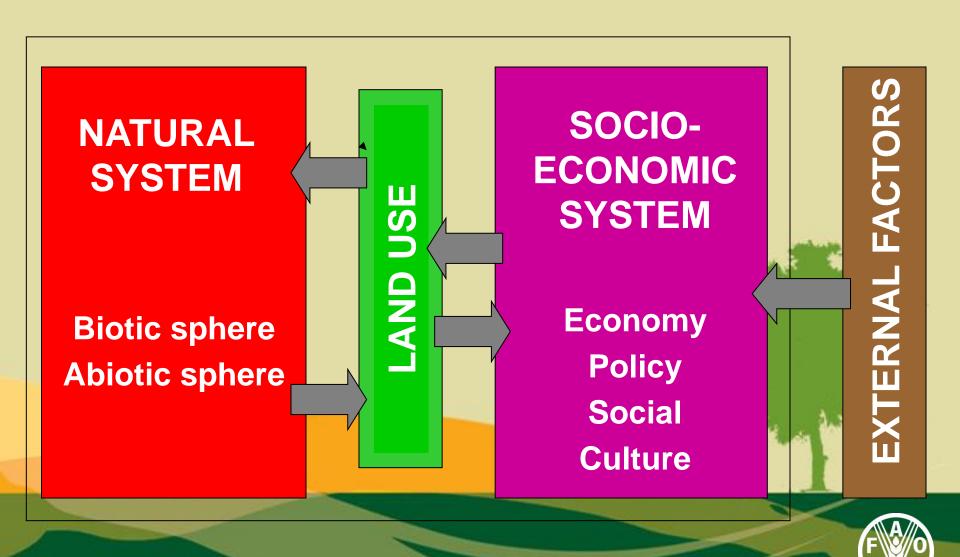




2. Scientific evidence



3. Integrated approach





4. Holistic planning and implementation





5. Institutional arrangements





6. Bottom up and top down







7. Gender balance in decision making







8. Payment for ecosystem services (PES)





10. Monitoring & evaluation

Past practice	Desirable practice
Focus on on-site and short term effects	Also consider off-site effects
"Quick and dirty" assessments	Continuing action-research
Project performance	Problem solving



11. Project design

Past practice	Desirable practice
Rigid	Open, flexible, adaptive
Short-term (5-10 years)	Long-term (open-ended)

PILOT



ORIENTATION



CONSOLIDATION



EXPANSION

2014-2016

2017-2022

2023-2028





Module 6: puting the pieces together



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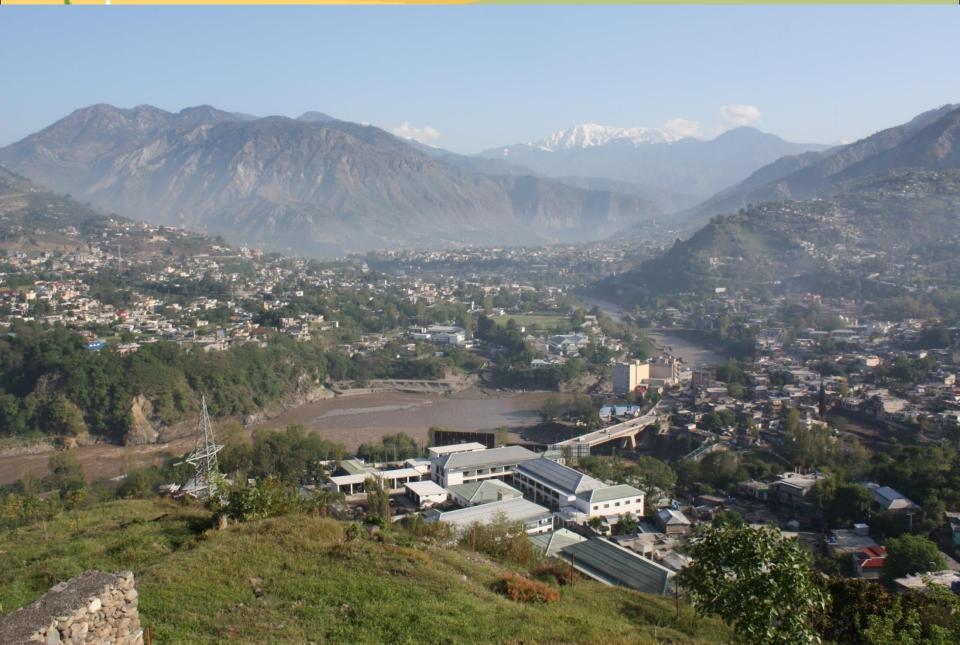
Module 6: putting the pieces together

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The Pakistan earthquake of 8.10.2005 (I)



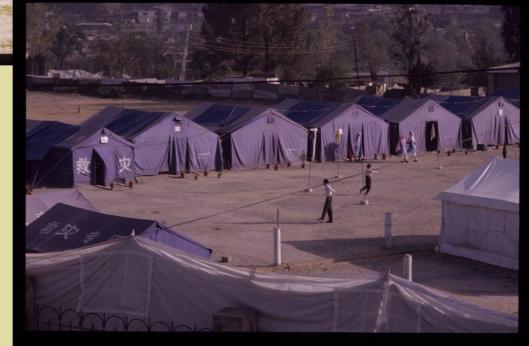


The Pakistan earthquake of 8.10.2005 (II)



3 to 4 million people were affected

The estimated death toll exceeds 80,000



The Pakistan earthquake of 8.10.2005 (III)



Landslides and thousands of landslips affected 10 percent of

..... the arable land, forests and range-lands



FAO-SIDA Project

Objective: to support the Earthquake Reconstruction and Rehabilitation Authority (ERRA) to implement the livelihood rehabilitation strategy in 9 earthquake affected districts in two regions (KPK and PAK)

Slogan: "building back better"

Budget: USD 6,570,000

Duration: Jan 2007 – Jun 2011

Output 3: NRM and livelihood improvement through integrated watershed management in 17 sites

Institutional setup

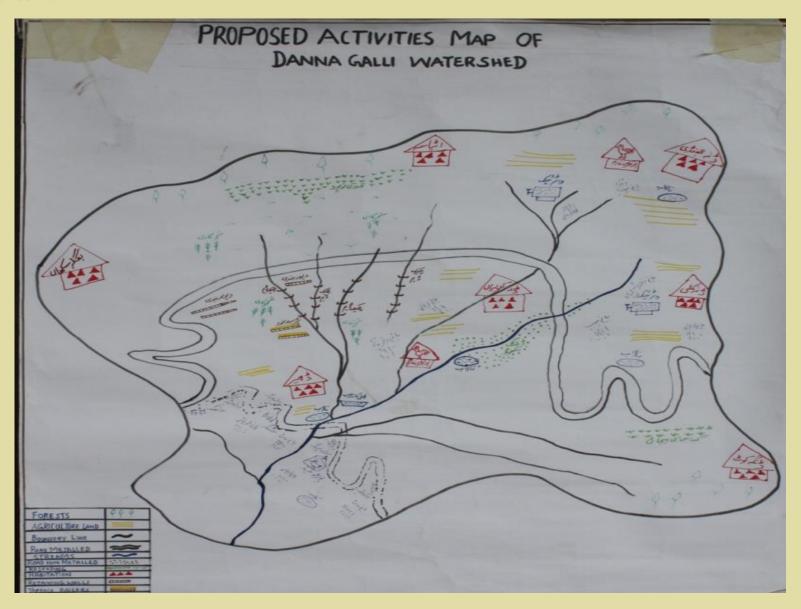
- ERRA;
- PERRA and SERRA;
- DRUs;
- DFOs and other Line Agencies;
- ICIMOD;
- FAO (FOM, AGA, TCE, SO-I, FAOR).

Watershed management committee

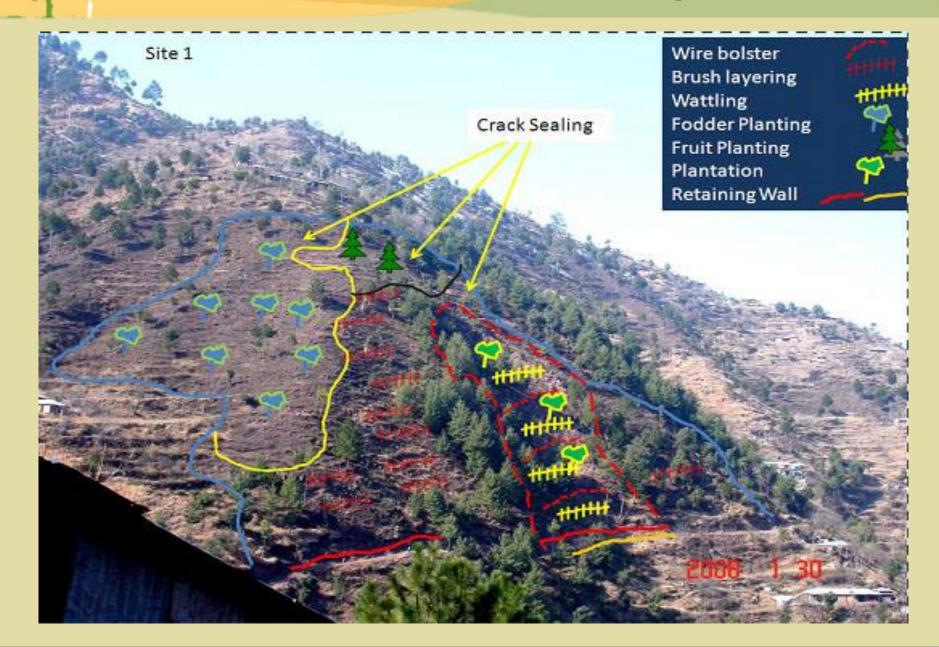




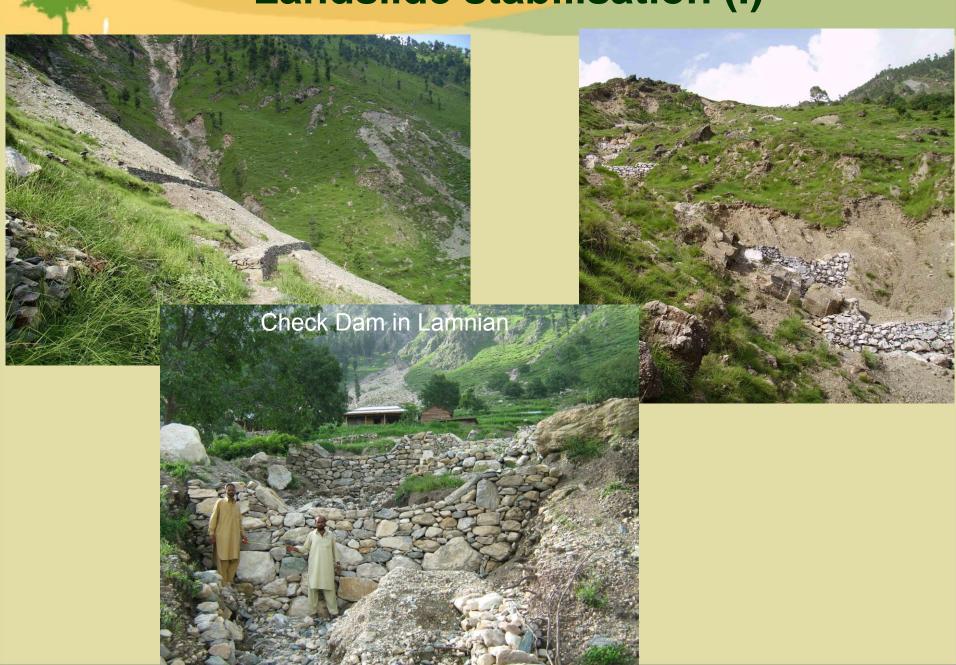
Watershed management plan



Landslide treatment plan



Landslide stabilisation (I)



Landslide stabilisation (II)

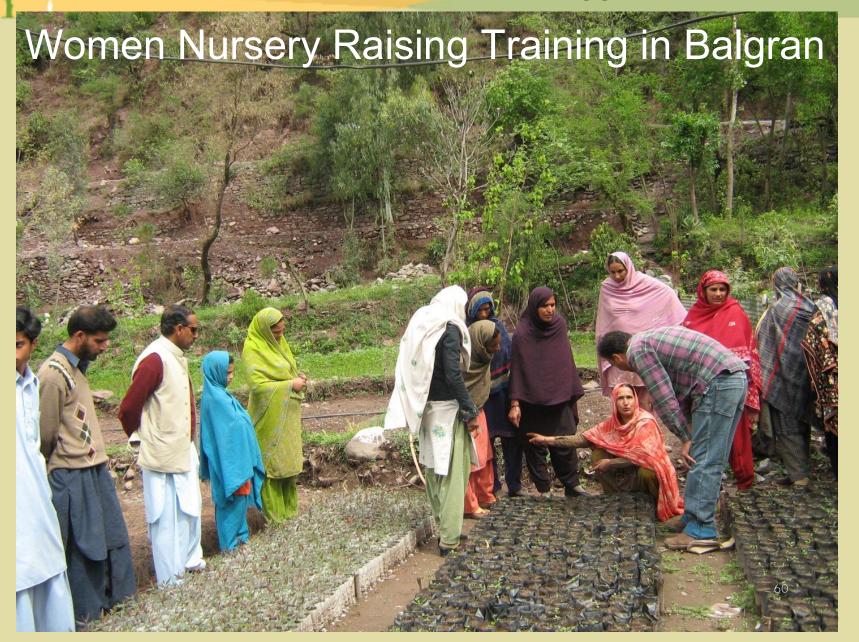








Reforestation (I)

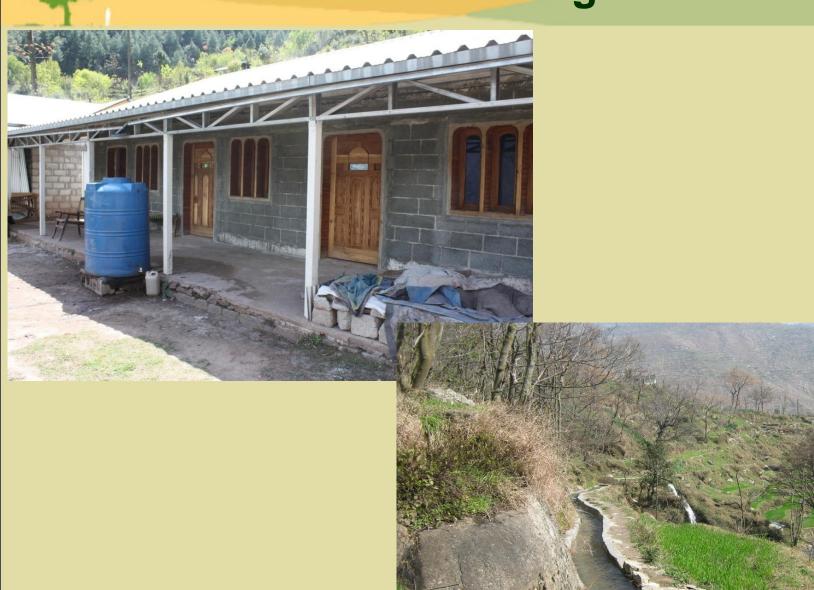




Reforestation (II)



Water management



Agricultural terraces



Livestock improvement





Fish ponds



Kitchen gardens





Capacity development



Integration



Landscape approach



Impacts (I)

- Watershed management committees allowed for participatory planning;
- Communities gained confidence, voice;
- Resilience created: flood 2010;
- Livelihood, nutritional situation improved;
- Replication of pilot interventions, particularly bioengineering;
- Watershed management funds;
- Capacities built.

Impacts (II): institutional innovation





Introduction to watershed management

Outline of the afternoon session

Module 6: disaster risk management and WM

Module 7: climate change and WM

Coffee break

Module 8: WM in practice - example Pakistan

Module 9: conclusions

Structure of the module

- 1. Climate change impacts on watersheds;
- 2. Watershed management's role / approach in cc adaptation;
- 3. Watershed management's role / approach in cc mitigation;
- 4. Conclusions.

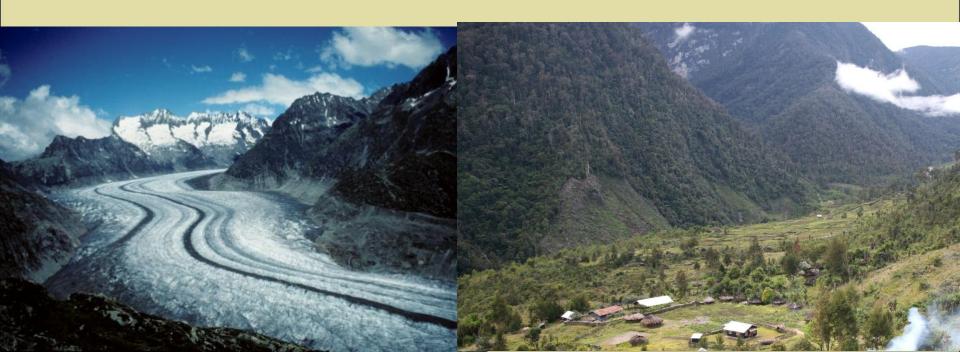
Climate change impacts (I)

- Precipitation and runoff patterns:
 - →floods and water shortages;
 - →soil erosion and landslide;
 - → crop, pasture and forest productivity.



Climate change impacts (II)

- Raising temperatures → melting of glaciers and movement of permafrost;
- Increase in extreme weather events;
- Deforestation of higher lands, steeper slopes and riverbanks.



Watershed management and cc adaptation

Examples of **adaptation activities** in the framework of watershed management:

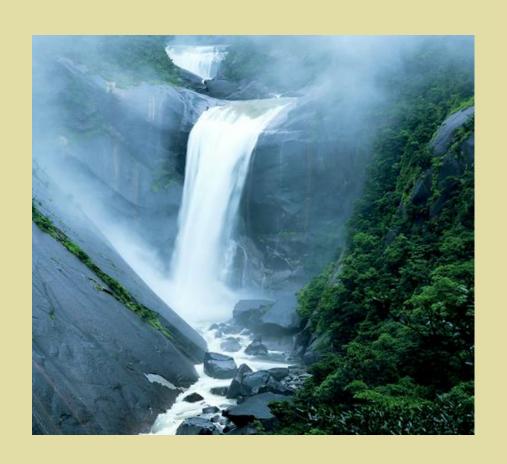
- Adaptive land use planning and management;
- Soil and water conservation;
- Strengthening adaptive capacity of forests and trees;
- Enhancing forests' buffering functions;
- Promote sustainable forest management and utilization;
- Adaptive agriculture practices;
- Conservation agriculture;
- Diversification of livelihoods.





Watershed management and cc adaptation (II)

The concept of integrated watershed management has a strong influence on the adaptive potential of communities.



Watershed management and cc adaptation (III)

To be successful and sustainable, cc adaptation strategies must be:

- comprehensive/integrated;
- built on intersectoral cooperation;
- collaborative;
- be consistent from national to local levels;
- continuously guided by experiences, knowledge and technology transfer, action-research;
- based on relevant decision making, closer to actors



The new generation of watershed management programmes provides a good framework to address these issues.



Watershed management and cc mitigation (I)

Examples of **mitigation activities** in the framework of watershed management:

- Increasing carbon storage and sequestration by forests and trees:



Forest conservation

Preventing degradation

Afforestation/ reforestation

Agroforestry

- Promotion of wood products, substituting steel, concrete, plastics, ...
- Improving agriculture practices and seeds
- Promotion of conservation agriculture.



INTERSECTORAL APPROACH

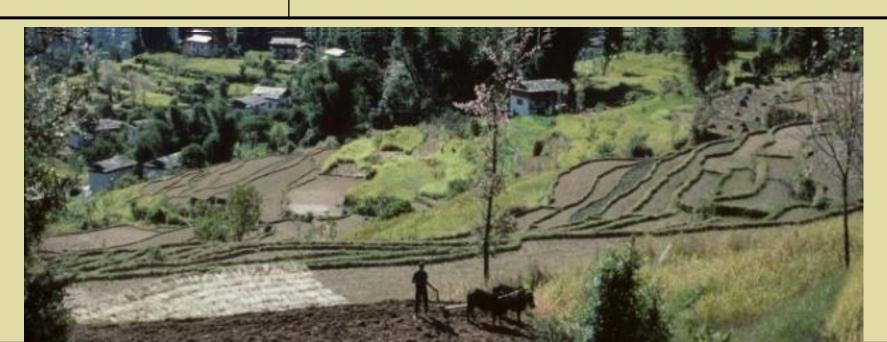
Cancun decisions:

"REDD+ activities should be implemented in the context of sustainable development and reducing poverty, while responding to CC"

"REDD+ activities should be consistent with the objective of environmental integrity and take into account the multiple functions of forests and other ecosystems".

LANDSCAPE APPROACH

REDD+ safeguard n. 7, "Promote and support actions to reduce displacement of emissions".





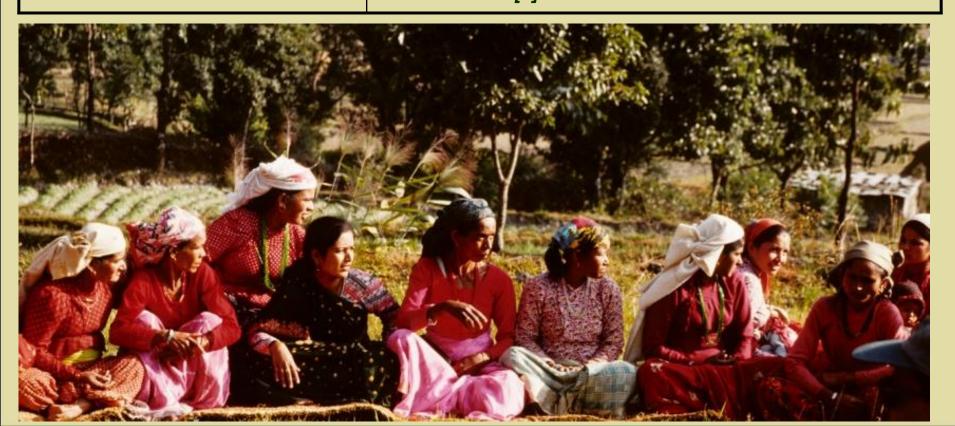
Watershed management and cc mitigation (III)

Example of potential for REDD+

COLLABORATIVE MANAGEMENT

REDD+ safeguard n. 4: "Full and effective participation of relevant stakeholders, in particular indigenous peoples and local communities, must be ensured".

REDD+ safeguard n. 3: "Respect the knowledge and rights of indigenous peoples and members of local communities [..]."





Watershed management and cc mitigation (IV) Example of potential for REDD+

FOCUS ON SCIENTIFIC MONITORING & EVALUATION

COP decisions related to REDD+/MRV:

"Countries are requested to develop a robust and transparent national forest monitoring system [...], and a system for providing information on how the safe guards are being addressed and respected".

EMPHASIS ON ACTION RESEARCH

Knowledge gaps and information needs needed for climate change mitigation and adaptation, as well as for influencing international negotiations



Watershed management and cc mitigation (V)

Landscape approach: multiple contributions to mitigation





Watershed management and cc mitigation (VI)

Mitigation potential vs water consumption

Mitigation/REDD+ potential → Higher in forested watersheds and with afforestation/reforestation potential.

However, forests can only take up carbon if they take up water at the same time



- → negative impacts of reduced runoff in arid zones
- →trade-offs





Conclusions

- Watersheds are an appropriate geographic unit for addressing both, climate change mitigation and adaptation in a comprehensive and participatory manner;
- The paradigms identified in the new generation of watershed management programmes are closely related to the requirements and safeguards of climate change initiatives;
- There is potential for advocating watershed management in international CC negotiations and the design of financial mechanisms;
- WM projects and programmes have a strong potential to contribute to climate change mitigation and adaptation efforts and to benefit from CC related funding. Therefore, cc aspects need to be mainstreamed in WM projects

Module 7: image interpretation



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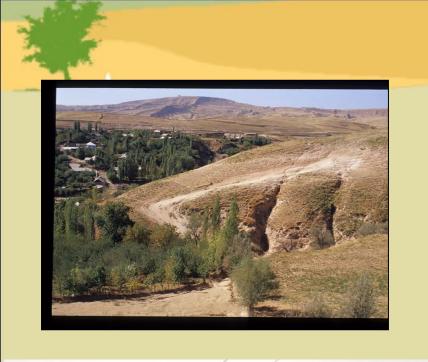
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Impact of climate in mountains

- 1. Climate variability climate change
- 2. Upward movement of permafrost
- 3. Extreme weather events
- 4. Glacier retreat
- 5. Changing water availability
- 6. Higher temperatures
- 7. Health (Malaria)
- 8. Extinction of species
- 9. Extending growing season
- 10. Faster soil formation
- 11.Increasing productivity and yields



Watershed management and cc adaptation

Watershed management has a strong influence on the adaptive potential of mountain ecosystems and communities

- Adaptive land use planning and management;
- Soil and water conservation;
- Strengthening adaptive capacity of forests and trees;
- Enhancing forests' buffering functions;
- Promote sustainable forest management and utilization;
- Adaptive agriculture practices;
- Conservation agriculture;
- Diversification of livelihoods.





Watershed management and cc mitigation (I)

Watershed management has a significant potential for climate change mitigation



Forest conservation

Preventing degradation

Afforestation/ reforestation

Agroforestry

- Increasing carbon storage and sequestration by forests and trees:
- Promotion of wood products, substituting steel, concrete, plastics, ...
- Improving agriculture practices and seeds
- Promotion of conservation agriculture.

Watershed management and cc mitigation (II)

Landscape approach: multiple contributions to mitigation





Conclusions

- Watersheds are an appropriate geographic unit for addressing both, climate change mitigation and adaptation in a comprehensive and participatory manner;
- There is potential for advocating watershed management in international CC negotiations and the design of financial mechanisms;
- WM projects and programmes have a strong potential to contribute to climate change mitigation and adaptation efforts and to benefit from CC related funding. Therefore, cc aspects need to be mainstreamed in WM projects

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The assumption for today

Watershed management is a very appropriate approach to protect mountain environments and promote mountain farming



Conclusions (I)

Watershed management offers solutions for addressing environmental challenges in mountains:

- water
- soil conservation
- biodiversity conservation;
- climate change;
- disaster risk management;
- etc.



Conclusions (II)

Watershed management offers solutions for addressing agriculture and food security challenges in mountains:

- diversification of landuse systems;
- promotion of local products
- diversification of livelihood options;
- food security and nutrition.



Conclusions (III)

Overarching themes and principles:

- landscape approach;
- environment-human relationship;
- holistic planning;
- participatory approaches, partnerships, dialogue;
- institutional arrangements.



History of the "mountain agenda"

▶ 1992 - Rio Earth Summit - Agenda 21 Chapter 13

► 2002 – WSSD – Plan of Implementation – para 42; IYM



► 2012 – Rio+20 – The Future We Want – paras 210, 211, 212



► 2015 and beyond?



Rio Conference and beyond

- 1992: → Chapter 13 of Agenda 21
- Ad hoc inter-agency group
- Inter-governmental consultations
- NGO consultations → MF
- Increasing scientific evidence





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▶ 2015 and beyond?





Beyond the IYM (I)

International processes:

- International Mountain Day 11.12.
- Mountain Partnership
- Mountain Research Initiative
- International Consortium on Landslides
- CBD mountain work programme
- UNSG reports and UNGA Resolutions





Beyond the IYM (II)

Regional cooperation:

- Alpine Convention
- Carpathian Convention
- Balkans
- ICIMOD
- Andean Initiative
- African Champions Committee





Beyond the IYM (III)

Mountain programs:

- Global Mountain Biodiversity Assessment
- SARD-M
- GLOCHAMORE
- Global Mountain Programme (CGIAR)





Beyond the IYM (IV)

Field projects:

Tajikistan Armenia

Nepal Cuba

Pakistan Poland

North Korea Guatemala

Ecuador

etc. Fouta Djallon



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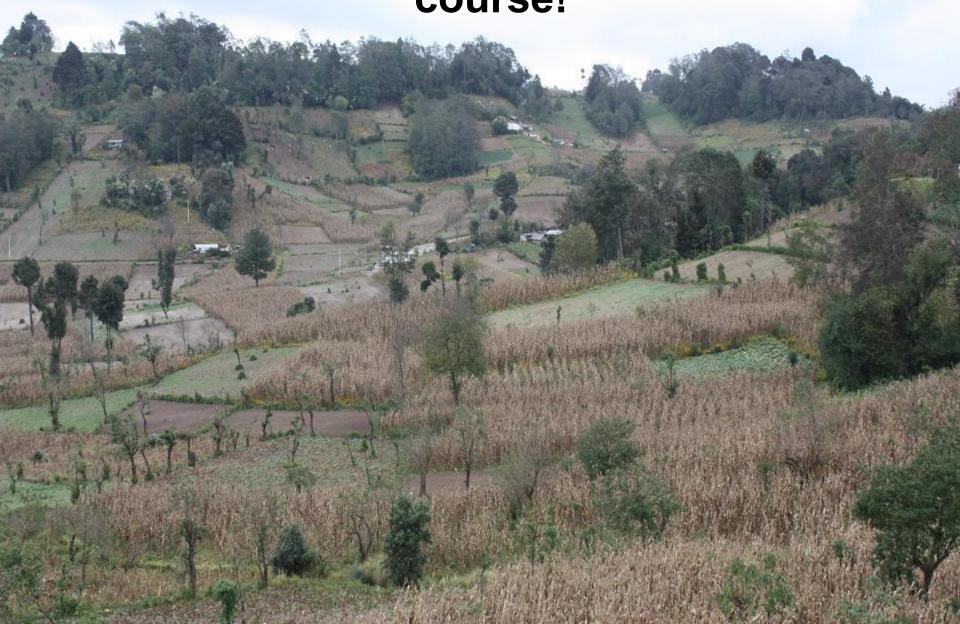
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≥ 2015 and beyond?



Thank you and good luck with the IPROMO course!

















!! Degradation increases the risks !!