# Course programme 10.7.2016

## Key elements of sustainable mountain development

- M 1: introduction
- M 2: characteristics and diversities of mountain ecosystems
- M 3: importance of mountain ecosystems
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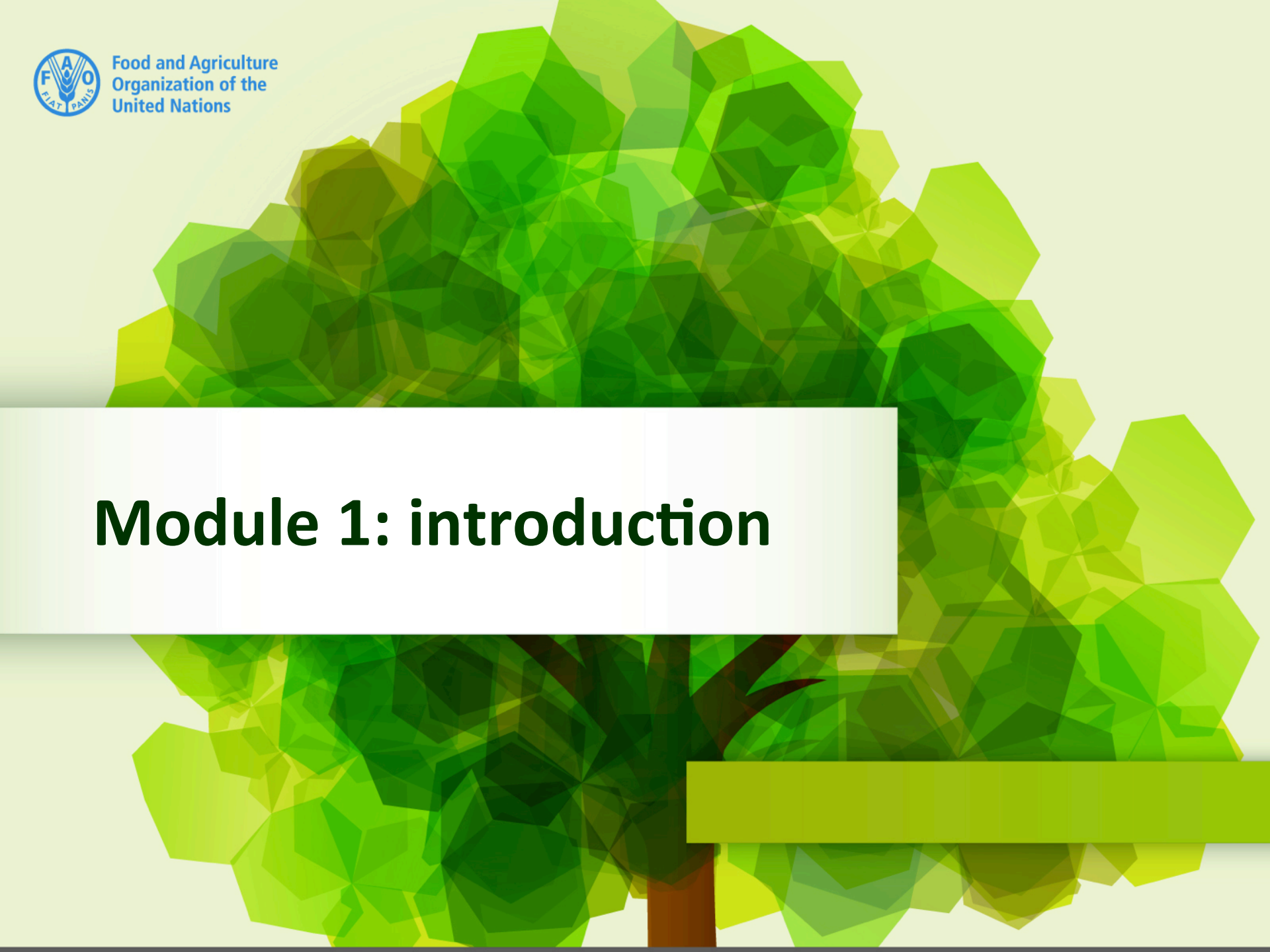
- M 9: conclusions


Food and Agriculture
Organization of the
United Nations
Module 1: introduction

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# The mandate of FAO

Food and Agriculture Organization of the United Nations

*for a world without hunger*

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

## 5 regional offices


## 13 sub-regional offices


## approx. 140 national offices


## 5 liaison offices

# FAO Water and Mountains 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

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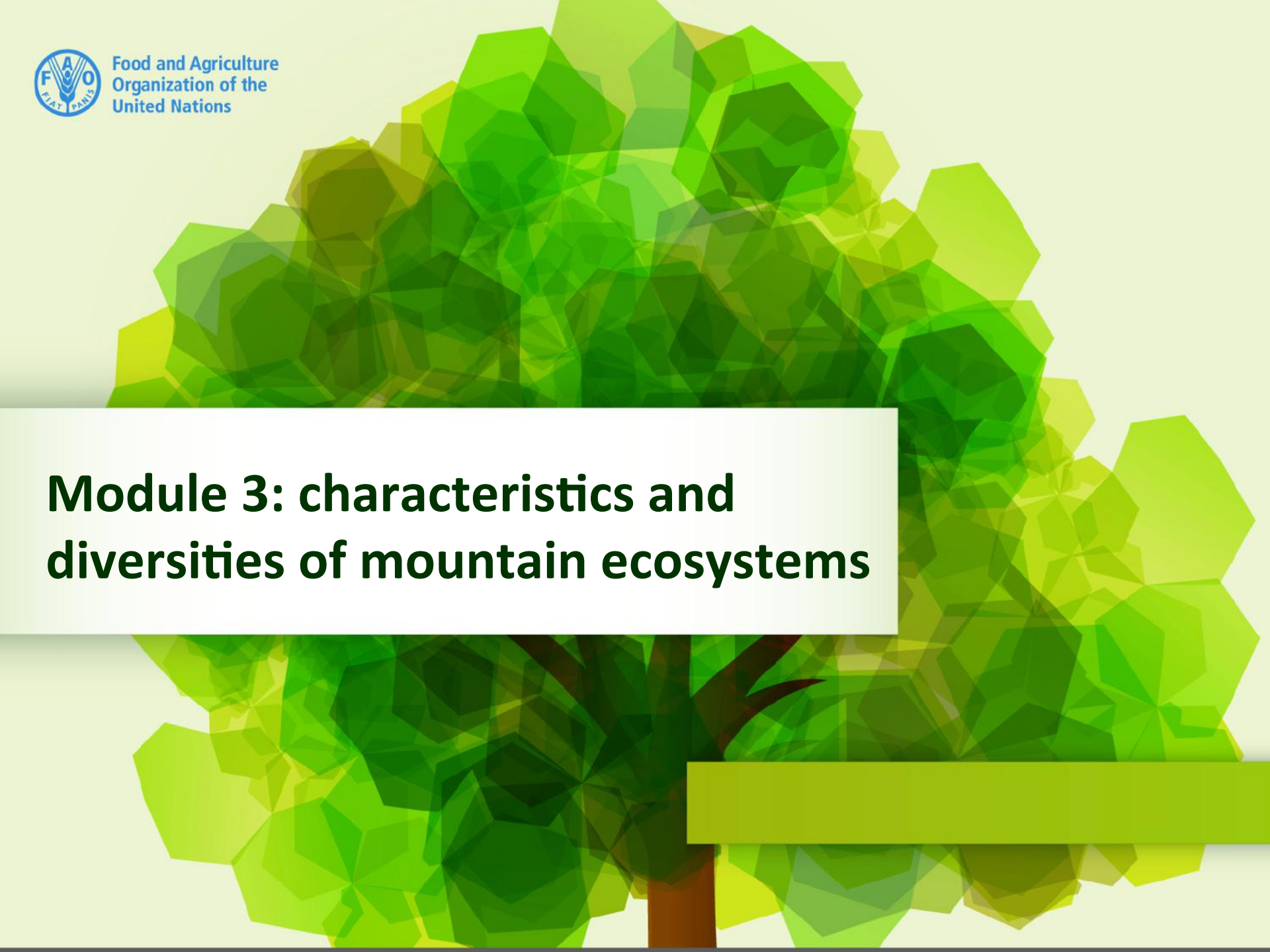
Food and Agriculture
Organization of the
United Nations
Module 3: characteristics and
diversities of mountain ecosystems

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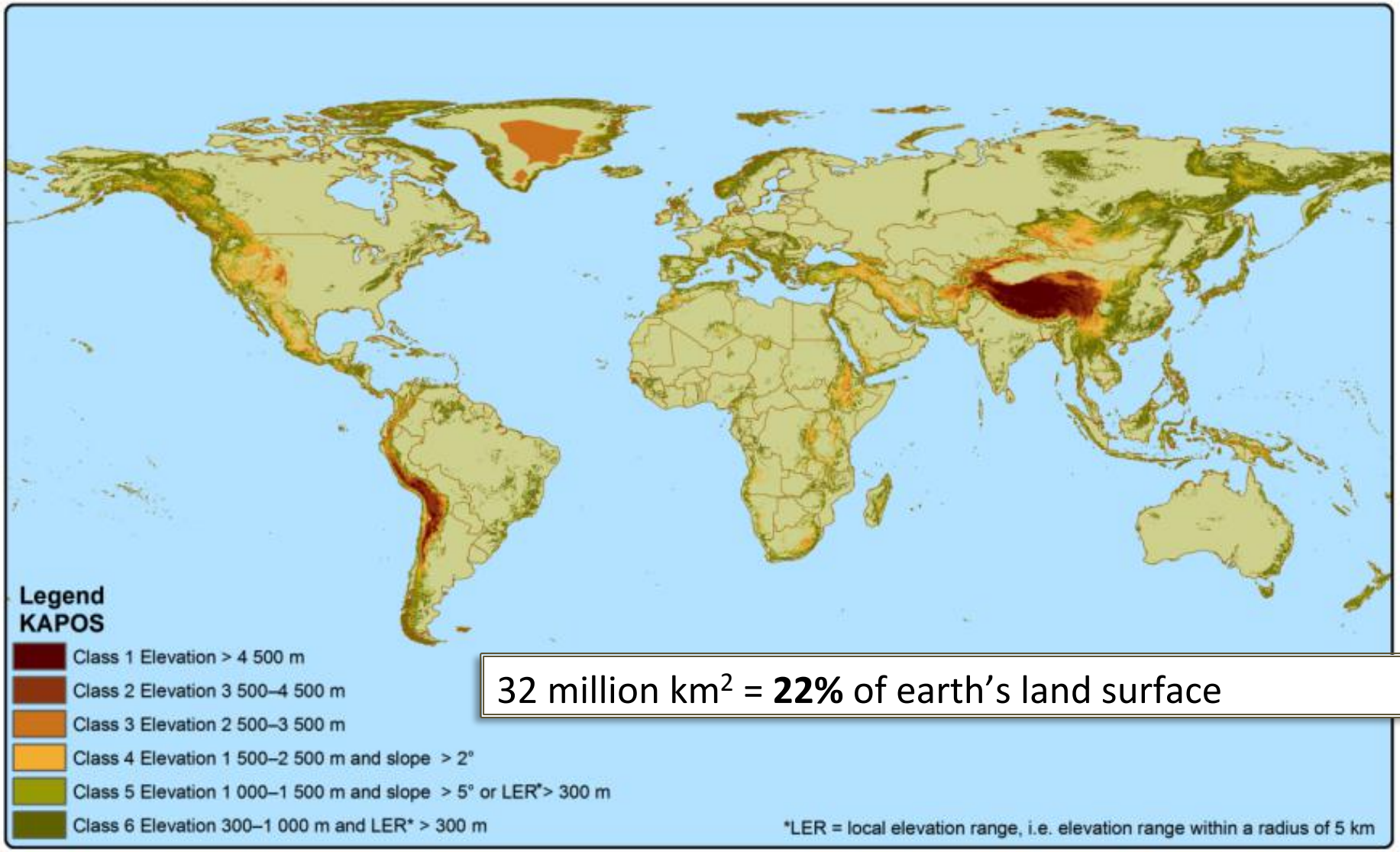
# Mountain area (I)

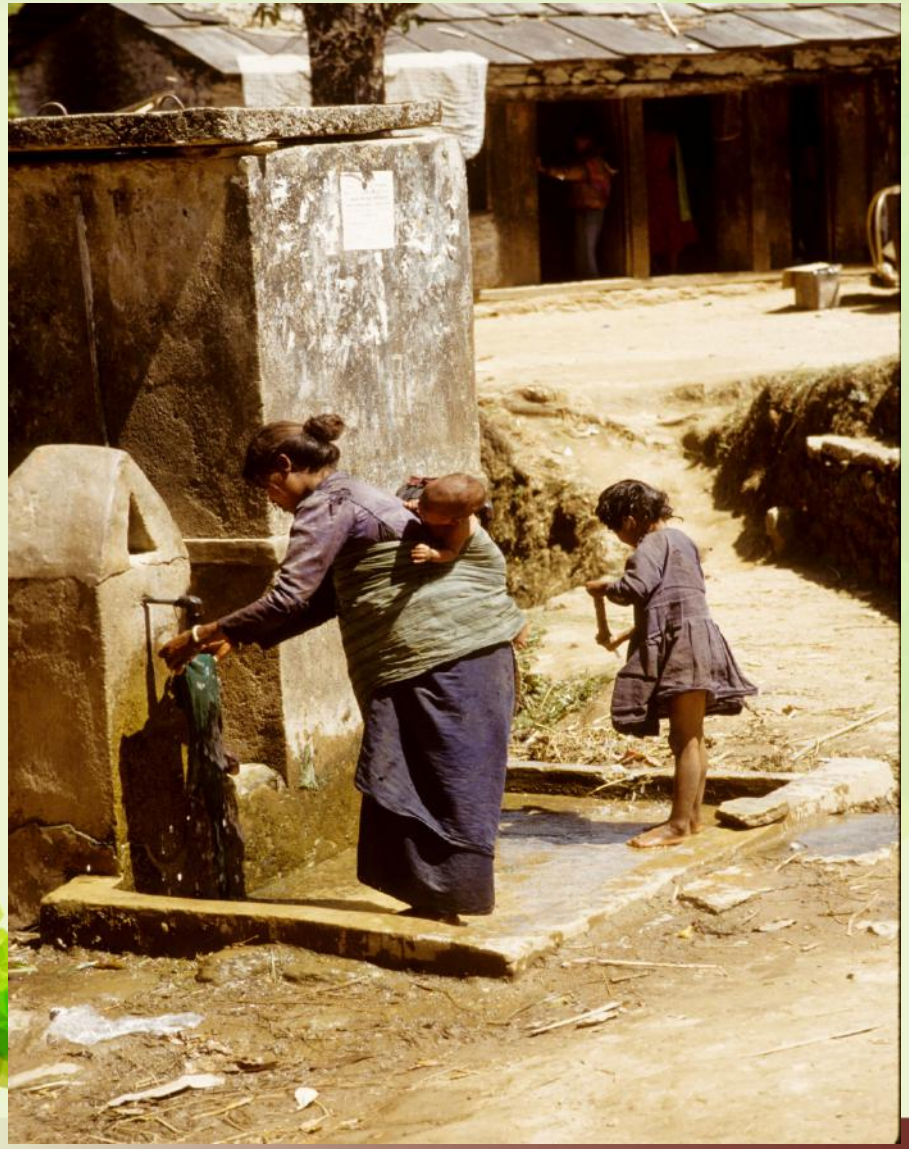
22% of earth's land surface

# Mountain Area (II)



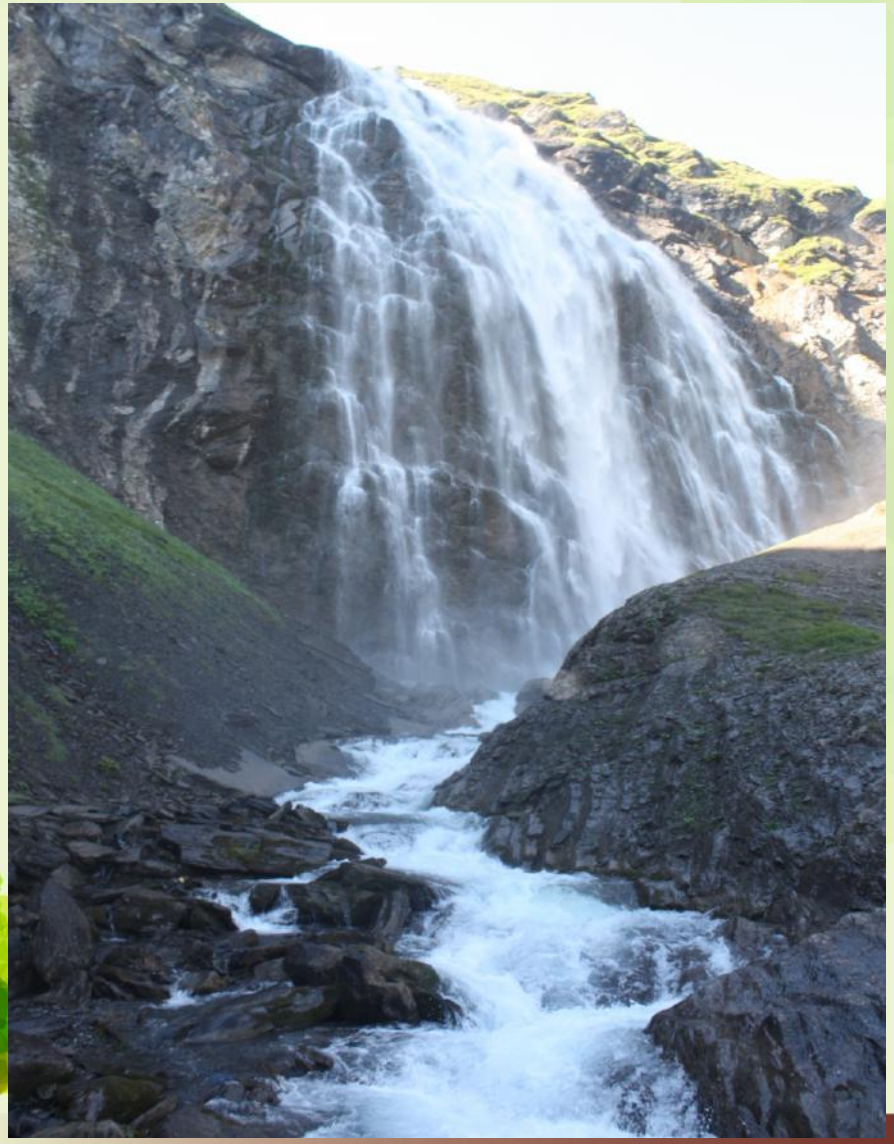

32 million km$^2$ = **22%** of earth's land surface

# Mountain people



915 million people = 13% of global population, 70% in rural areas

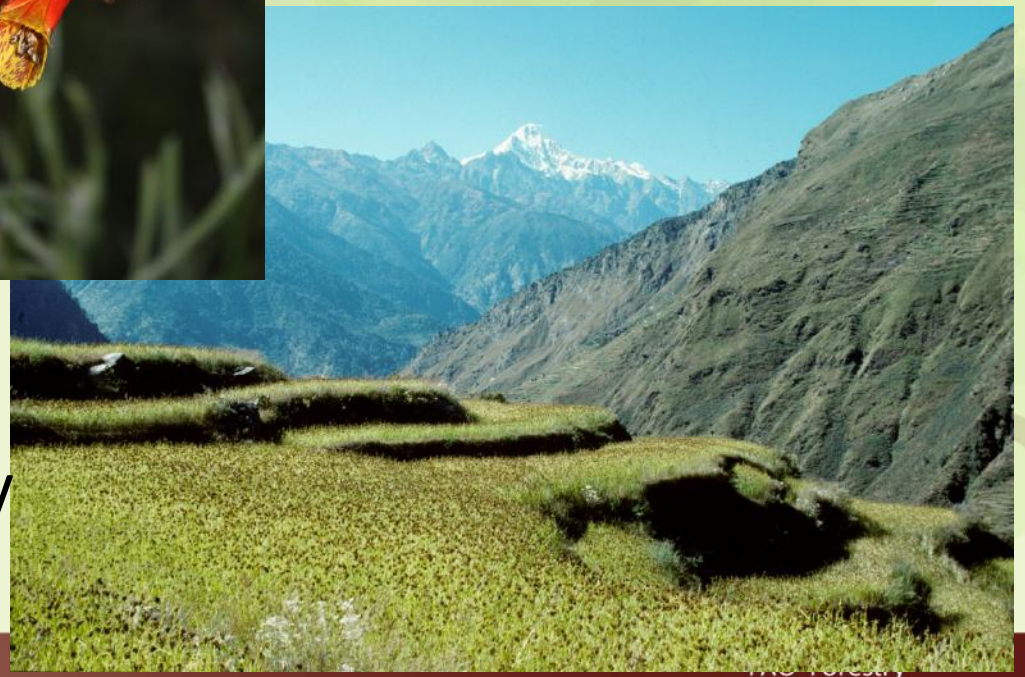
# Water



60-80% of freshwater

# Biodiversity

25% of terrestrial biodiversity

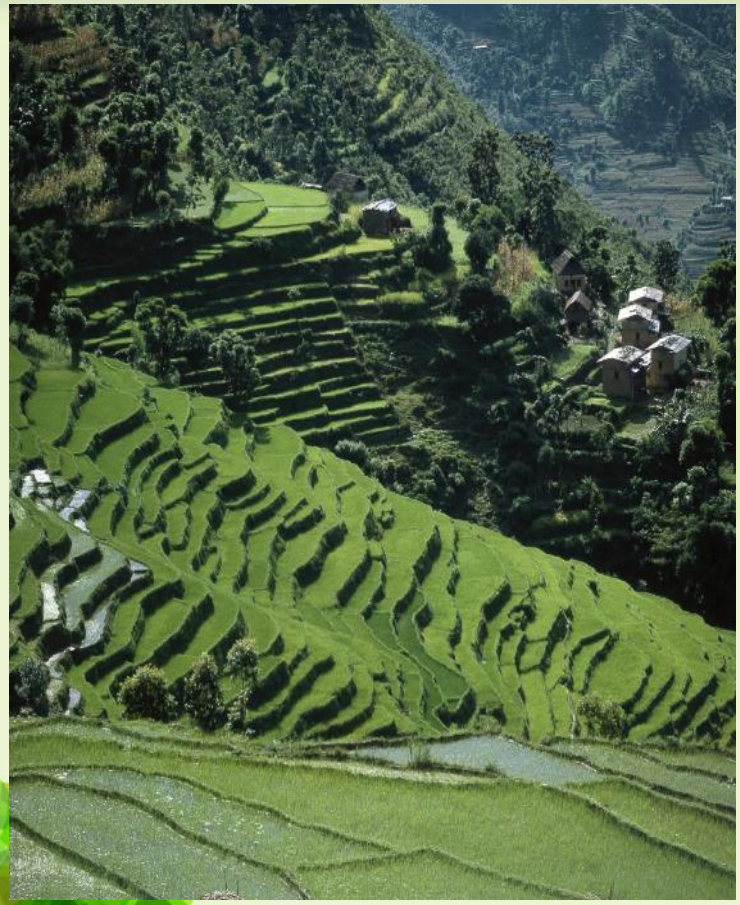


25 of 34 of the earth's biodiversity hotspots

# Forests

23% of the world's forests

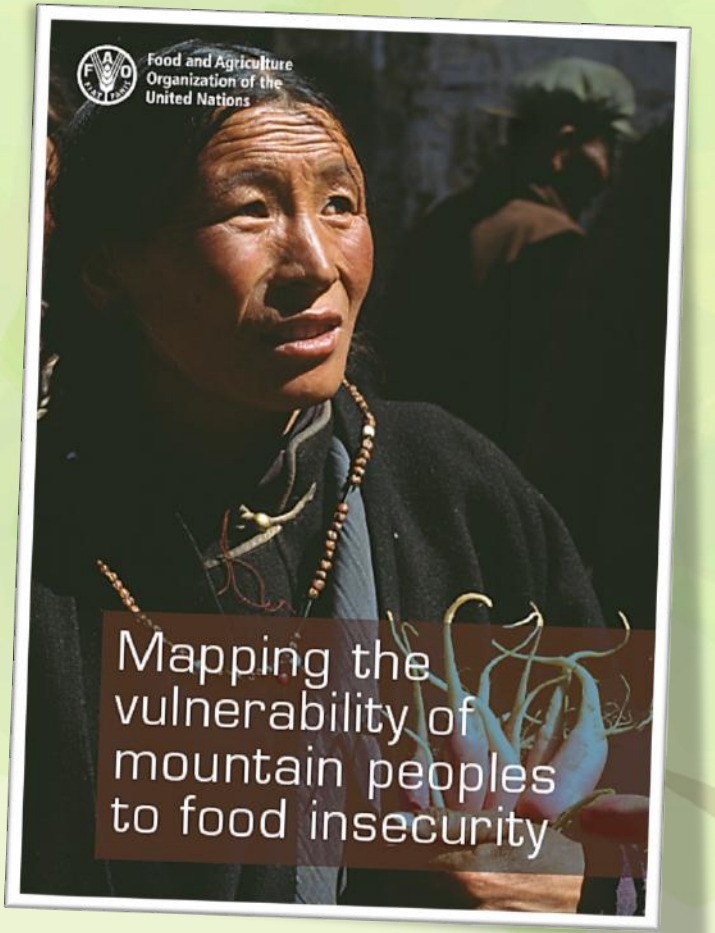
# Mountains offer global solutions (I)



# Mountains offer global solutions (II)

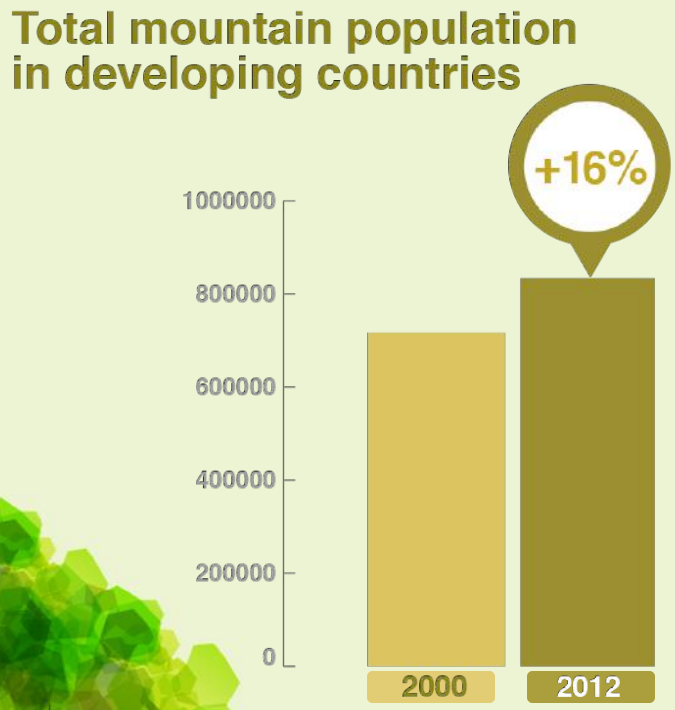
# The hunger challenge (I)

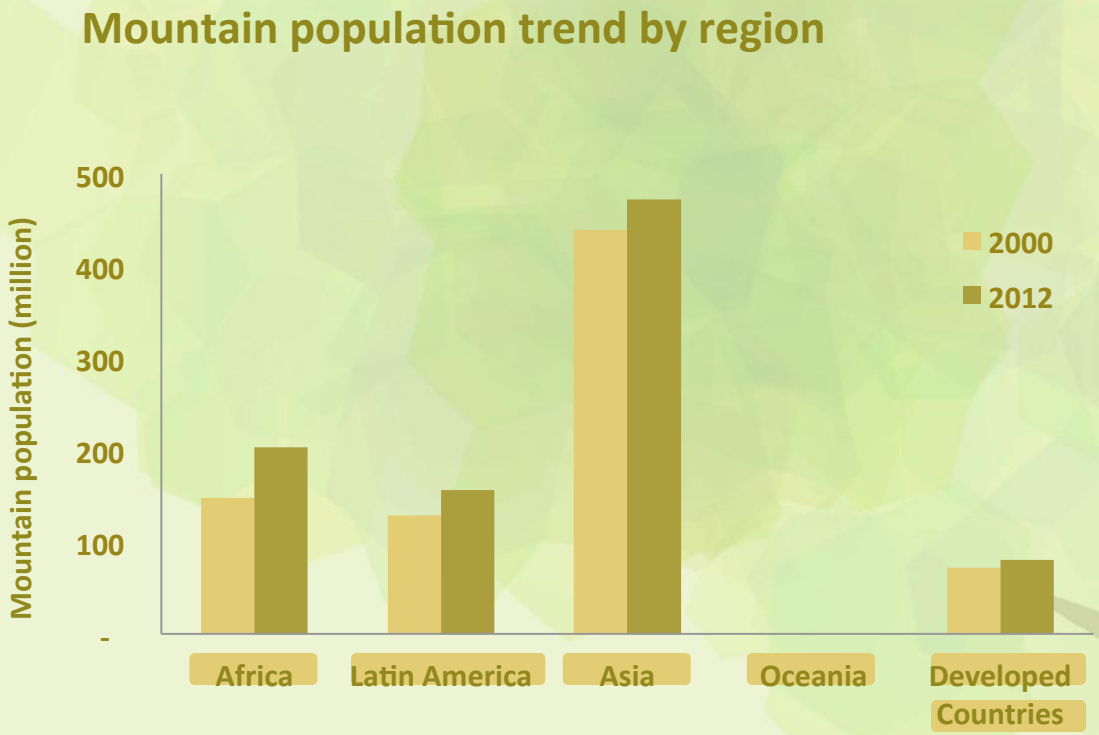
- Measuring the **vulnerability** of mountain people (update)
- Understand **trends** (2000-2012)
- Inform **policy makers** and support **advocacy** campaigns
- Form basis for further **research**
- **Promote investments in mountains**



# The hunger challenge (II)

Mountain population: **16% increase** from 2000 to 2012



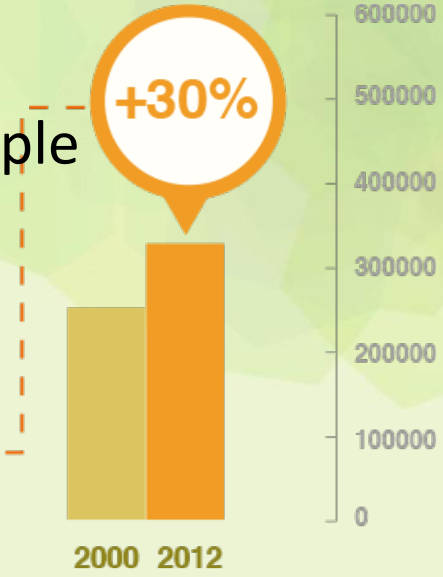



# The hunger challenge (III)

Number of mountain people vulnerable to food insecurity:

- **2000**: 253 million = **35% mountain population**
  ***rural**: 209 million = 38%*
- **2012**: 329 million **= 39% mountain population**
  ***rural**: 274 million = 45%*

Since 2000
the number of people
vulnerable
to food insecurity
in the mountains
has **increased**



# The hunger challenge (IV)

Defines as vulnerable:

- **Rural population** living in areas with **< 1370 kcal/person/day**
  **(beans, cassava, maize, potatoes, rice and wheat)**
  and **< 14 gr proteins/person/day**
  **(meet: beef, sheep goat, pig, chicken; milk: cow, sheep, goat; eggs)**

- **Urban population** living **below the national poverty lines** (**23.6%** according to WB for 2012)

# The hunger challenge (V)

The number of food insecure people in the mountains is unacceptably high:

- Rural and urban mountain areas: 1 in3
- **Rural mountain areas: 1 in 2**
- Global average: 1 in 8 *(SOFI 2012, FAO)*

# The climate challenge (I)

# The climate challenge (II)

# The climate challenge (III)

# The water challenge (I)

# The water challenge (II)

At least one third of the world's biggest cities

Jakarta **Singapore** Rio de Janeiro Bogotá

**New York** Cape Town **Madrid**

draw a significant portion of their drinking-water from forested watersheds





# The water challenge (III)

# Global importance of mountains

- 22% of the earth land surface
- 915 million people
- 60 - 80% of global freshwater
- 25% of terrestrial biodiversity
- 23% of the forests
- Gene pool of crops

- The hunger challenge
- The climate challenge
- The water challenge

Food and Agriculture Organization of the United Nations

# Module 4: characteristics of mountain farming

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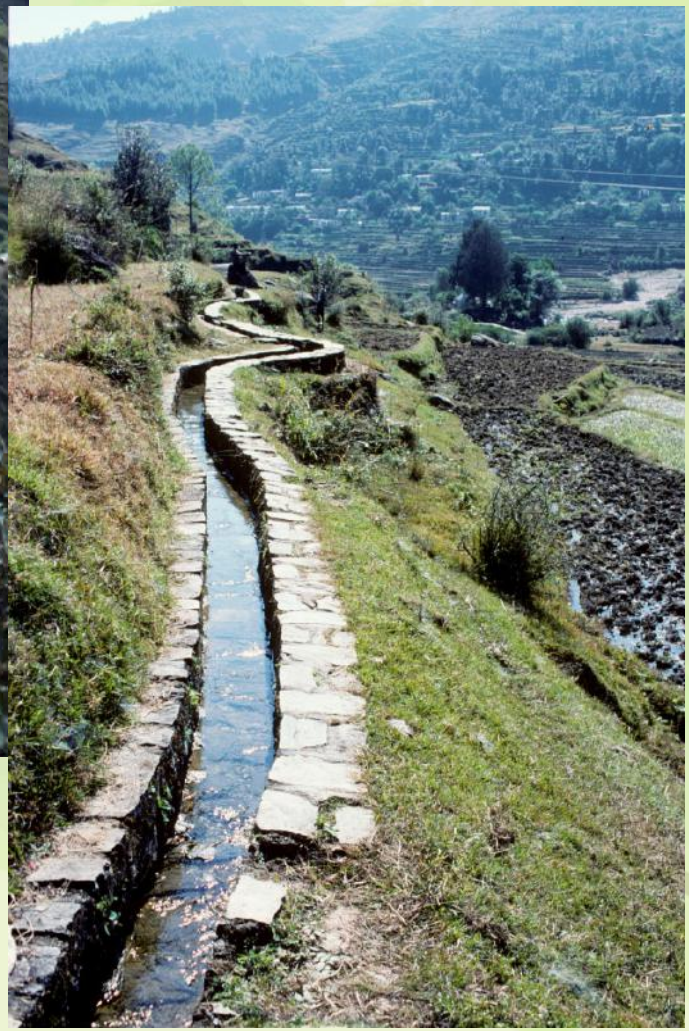
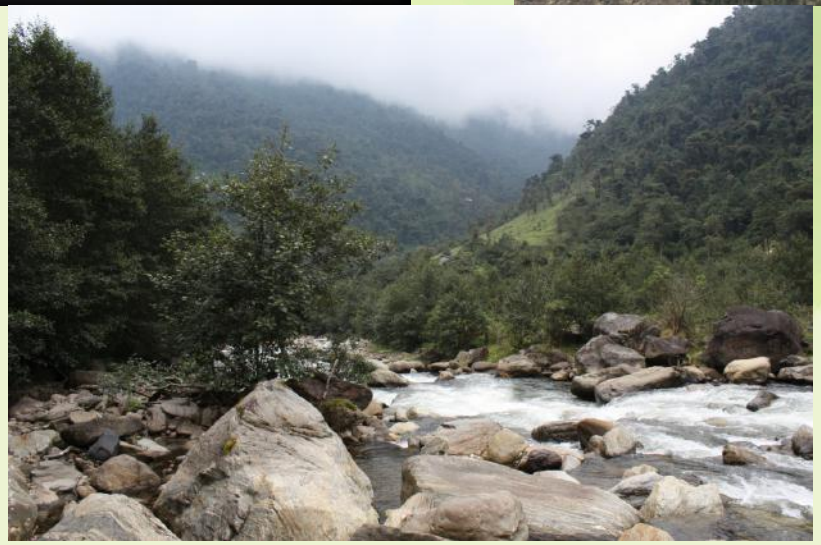


# Forest management (add picture with natural forest)



- Specific needs of mountain farming
- Potential of mountain farming
- Subsidies
- Compensation of Ecosystem Services


# Module 5: watershed management – a key approach to sustainable mountain development

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# Watershed (I)

# Watershed (II)

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.

# 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 management

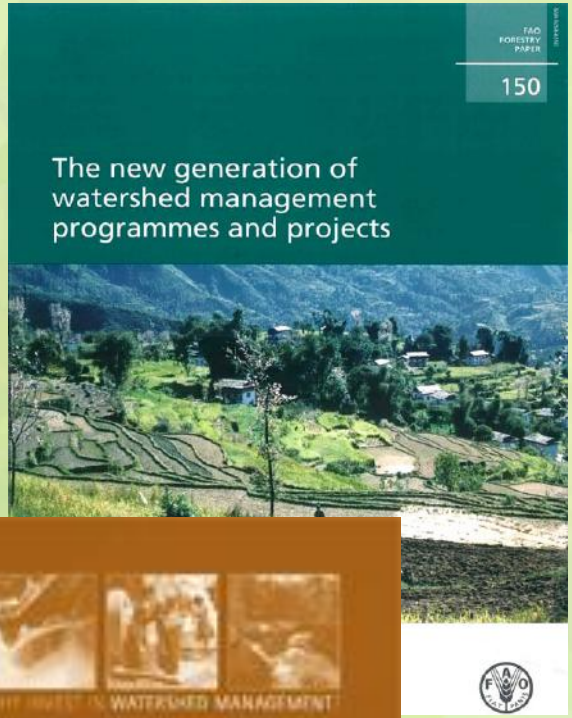
- **Watershed management** is any human action aimed at ensuring a sustainable use of watershed resources;
- ..... promotes more efficient use of natural resources and improved livelihood situation;
- ..... applies by definition a landscape approach;
- ..... contributes to food security.

# 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

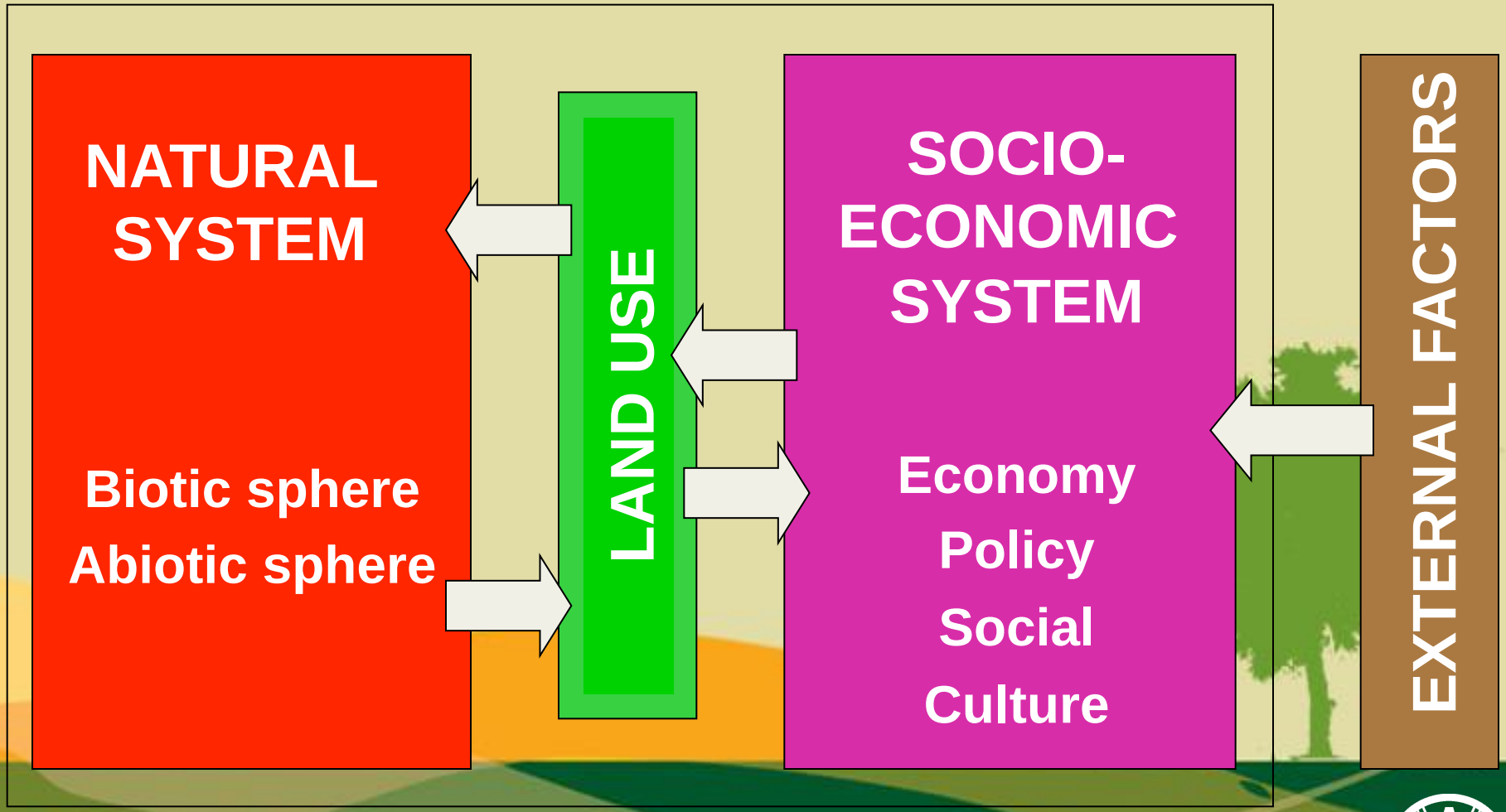
# FAO-promoted WM review

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




# 1. Treating symptoms & treating underlying causes

# 2. Integrated approach

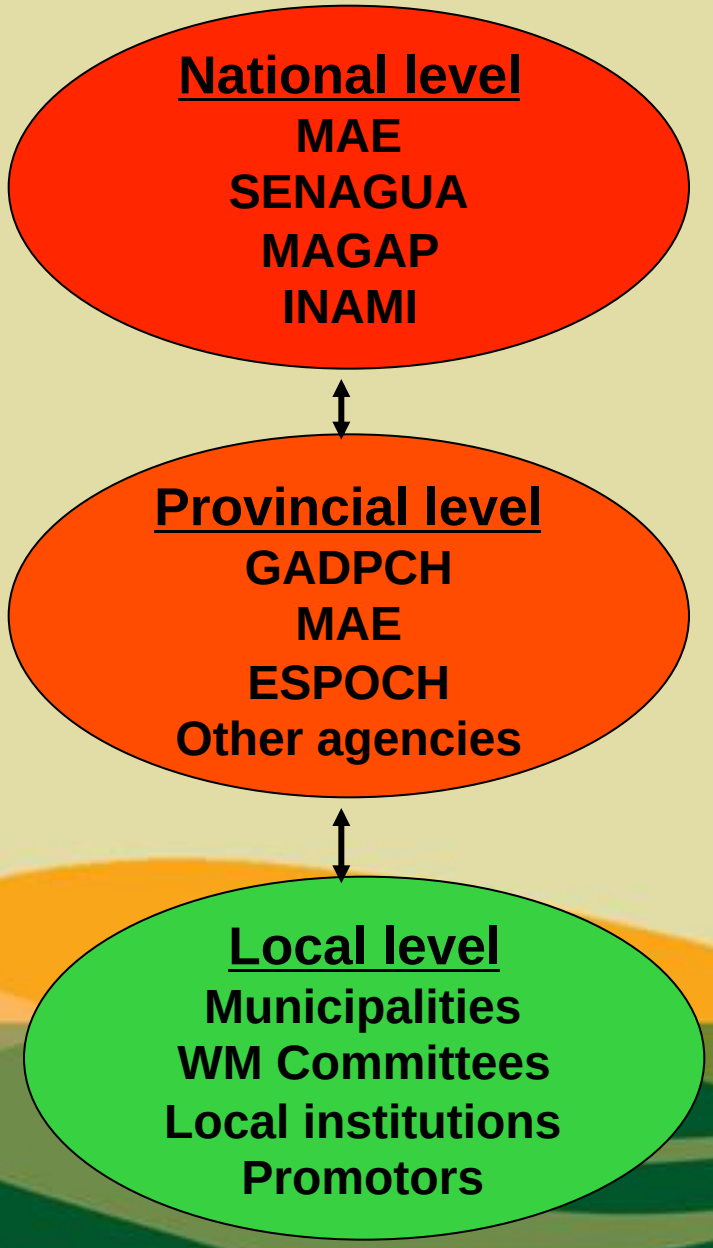


# 3. Holistic planning and implementation

# 4. Participatory approach

# 5. Gender balance in decision making

# 6. Institutional mechanisms



# 7. Natural resources management and production

# 8. Modest investment, rich in ideas

# 9. Capacity development

# 10. Scientific evidence

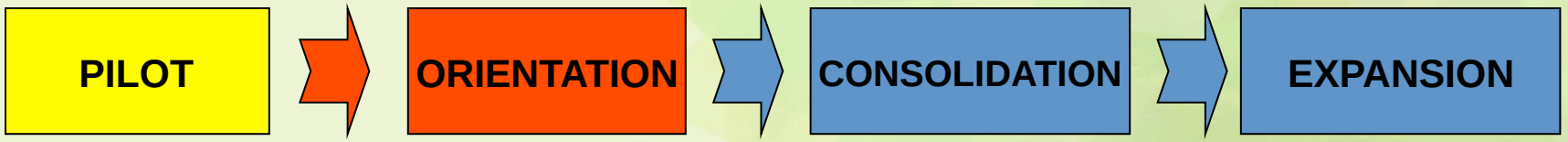
# 11. Innovation

# 12. Compensation for ecosystem services

# 13. Climate change adaptation and mitigation

# 14. Disaster risk management

# 15. A long-term investment




# Conclusions (I)

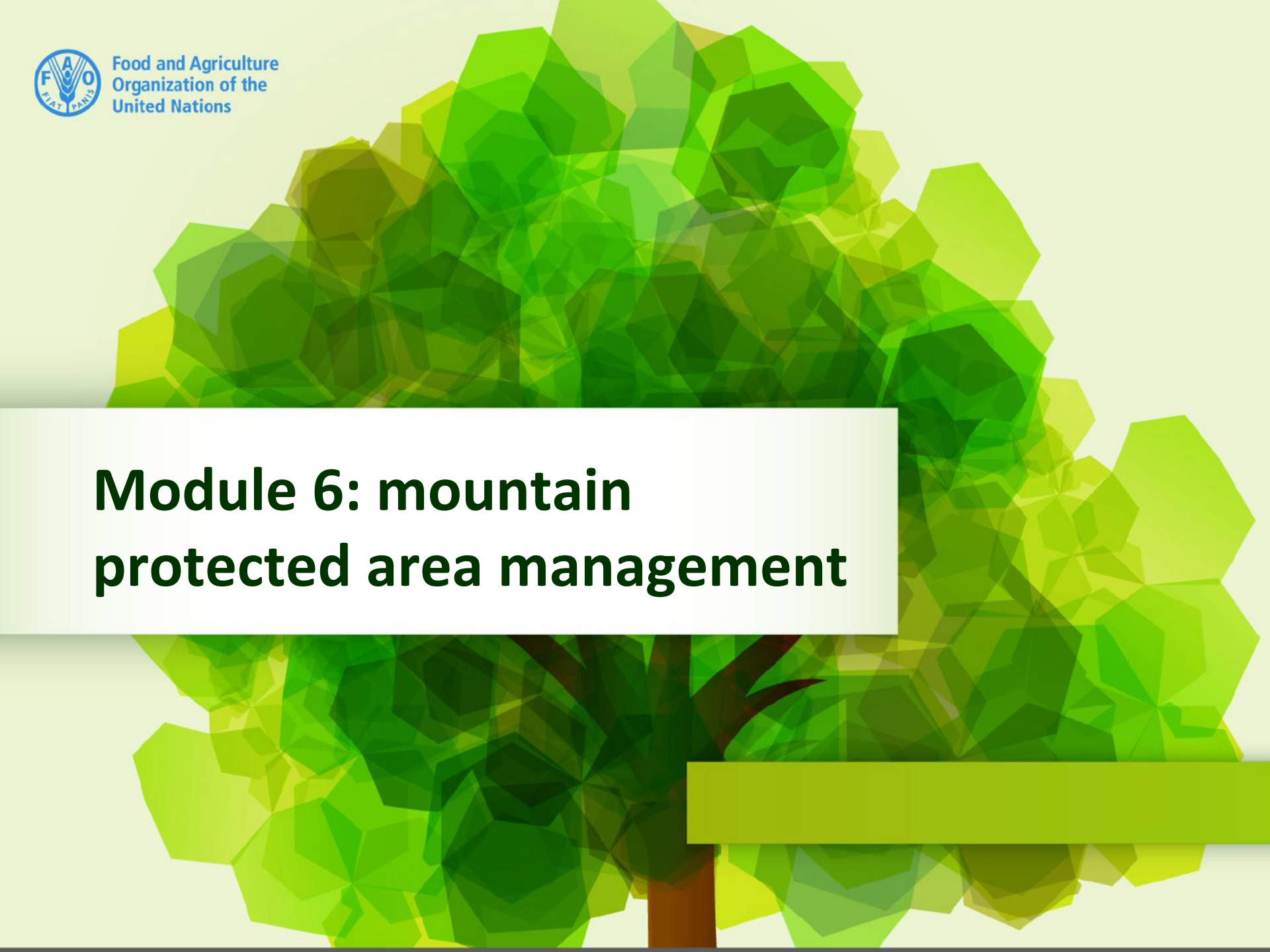
Steps in watershed management projects :

- Studies, base line, understanding the system
- Establishment of watershed management committees
- Establishment of watershed management
- Implementation of prioritised activities
- Capacity development
- Monitoring and evaluation
- Comunication, lessons learned

# Conclusions (II)

Watershed management offers solutions to address global challenges:

- Water;
- Biodiversity;
- Climate change;
- Risk management;
- Food security.




# Module 6: mountain protected area management

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# Definition of protected areas

A clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values.

# IUCN Protected Area Management Categories

- Ia: Strict Nature Reserve
- Ib: Wilderness Area
- II: National Park
- III: Natural Monument or Feature
- IV: Habitat / Species Management Area
- V: Protected Landscape / Seascape
- VI: Protected Area with sustainable use of natural resources

# Mountain protected areas

- Nationally designated protected areas cover 14.3% of the world's mountain areas.

- 2009: mountain protected areas made up 32.5% of the world's total terrestrial protected area coverage.

# UNESCO Biosphere Reserves

- Core Zone
- Buffer Zone
- ….

Many Mountain Biosphere Reserves

# Example: Chimborazo

# Example: Chimborazo GEF Project (I)

Priority actions to strengthen the management and conservation of the National Fauna Reserve of Chimborazo

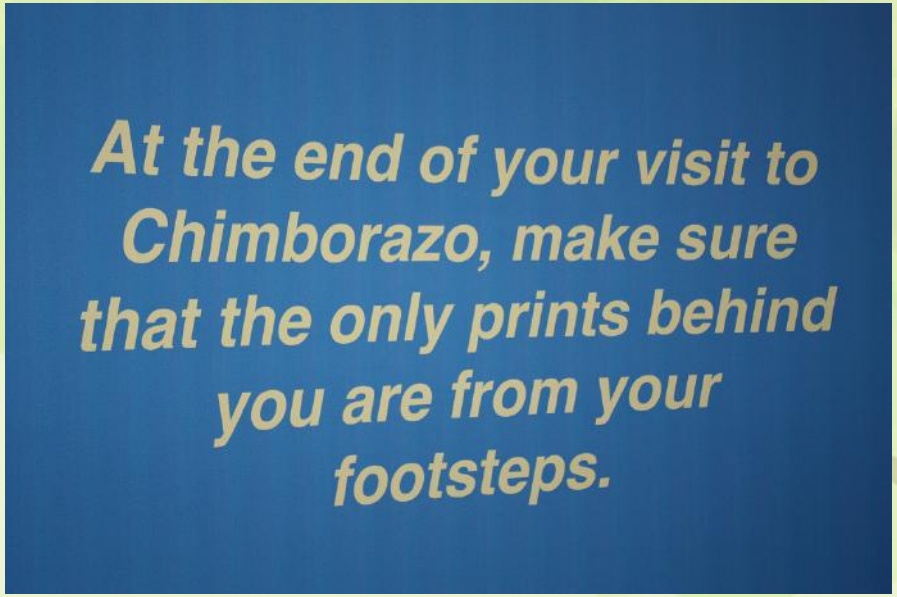
- Study of the Chimborazo reserve and its buffer zone

# Example: Chimborazo GEF Project (II)

- Elaboration & negotiation of a national plan for the management of the Vicuña
- Capacities for the capturing and shearing of the Vicuña

# Example: Chimborazo GEF Project (III)

- Construction of prioritised infrastructure and equipment

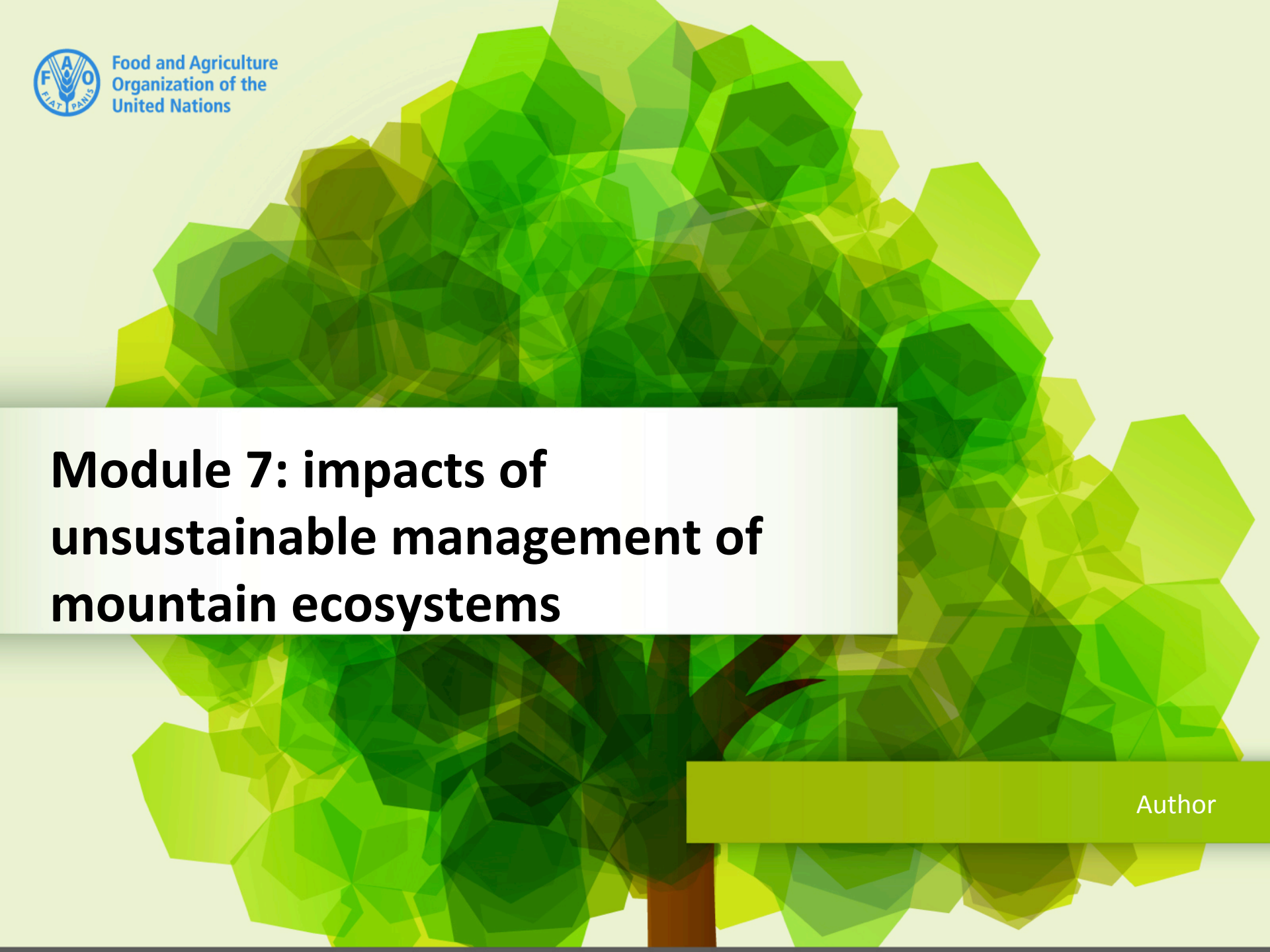
# Example: Chimborazo GEF Project (IV)

- Protection of water sources

# Example: Chimborazo GEF Project (V)

- Development and implementation of co-management plans and reduce pressure on the paramos

# Example: Chimborazo GEF Project (VI)




# Module 7: impacts of unsustainable management of mountain ecosystems

Author

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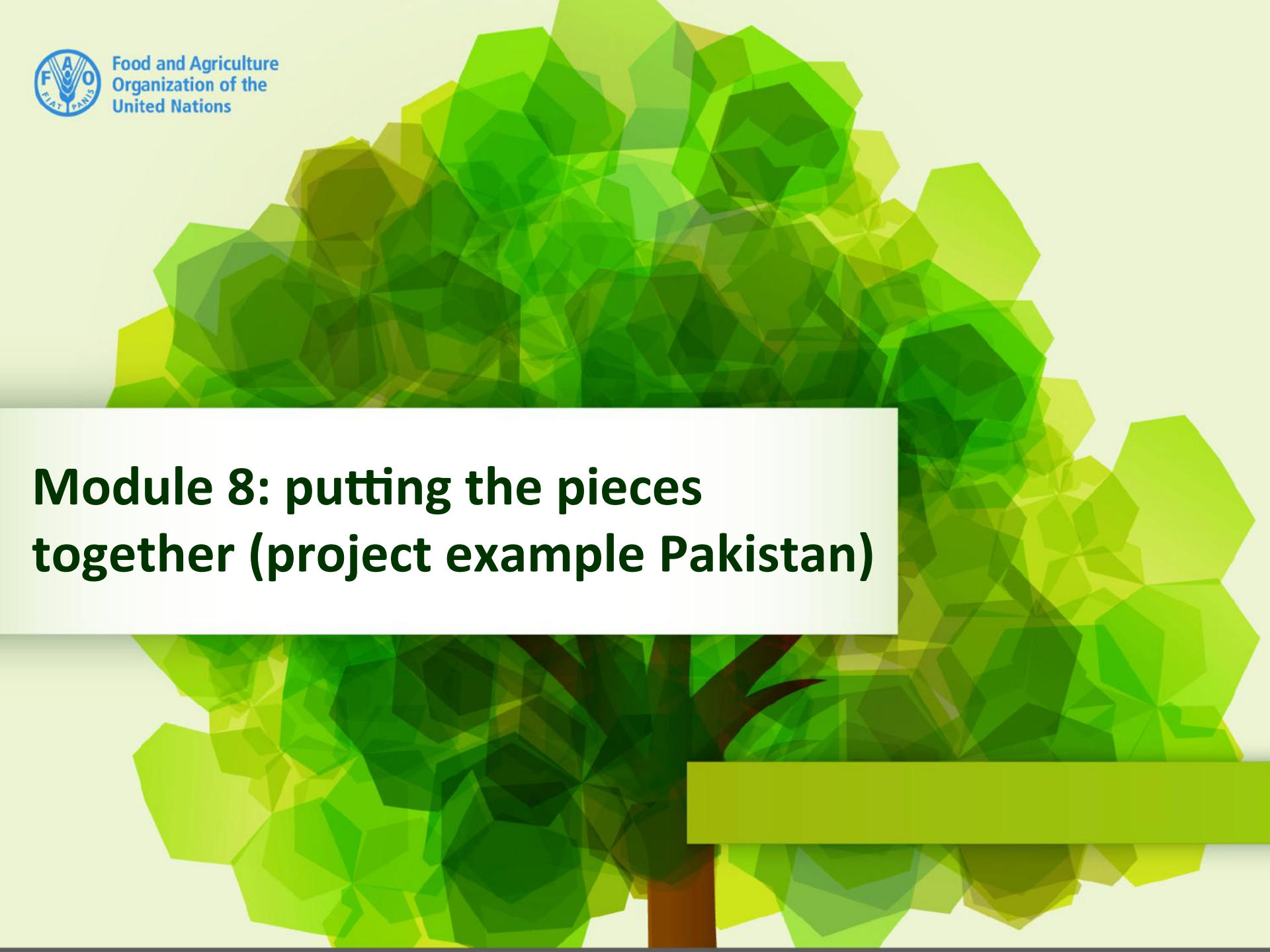


# Module 8: putting the pieces together (project example Pakistan)

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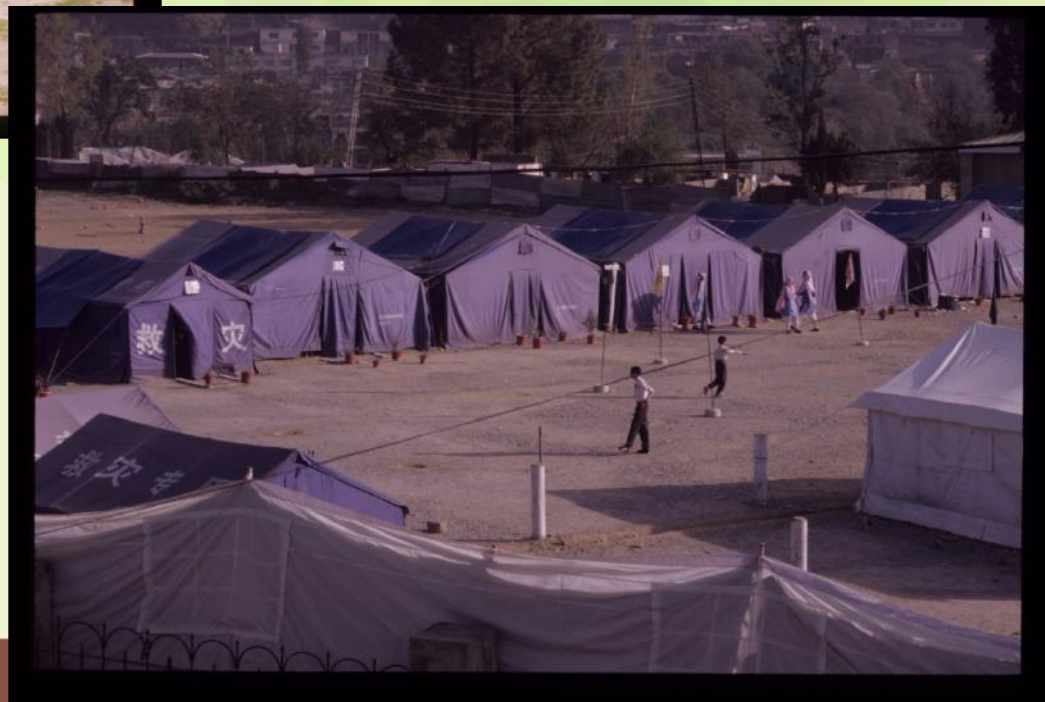
# The Pakistan earthquake of 8.10.2005 (I)

# 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 thou-sands 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"

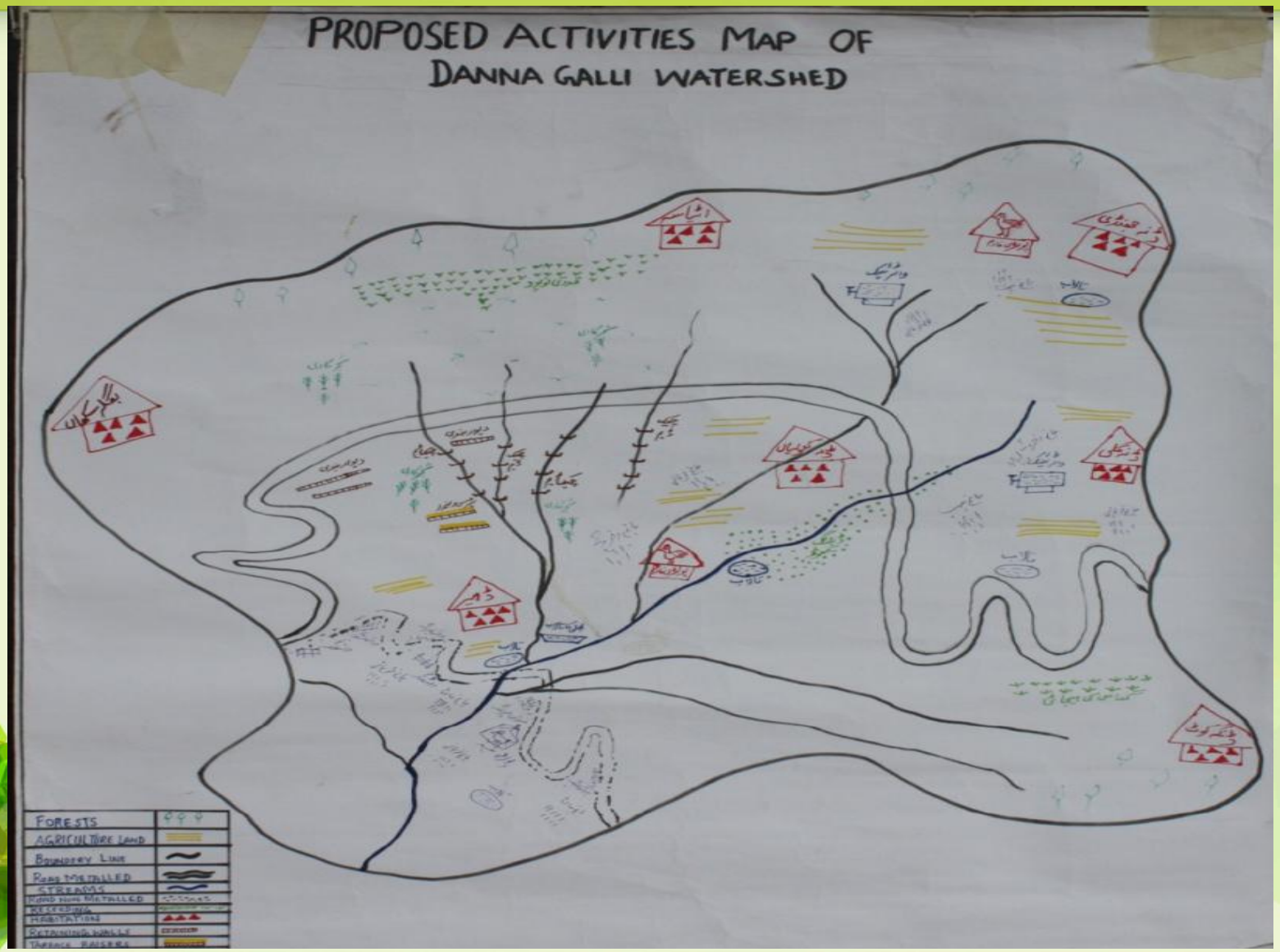
***Output 3***: NRM and livelihood improvement through integrated watershed management in 17 sites

# Institutional setup

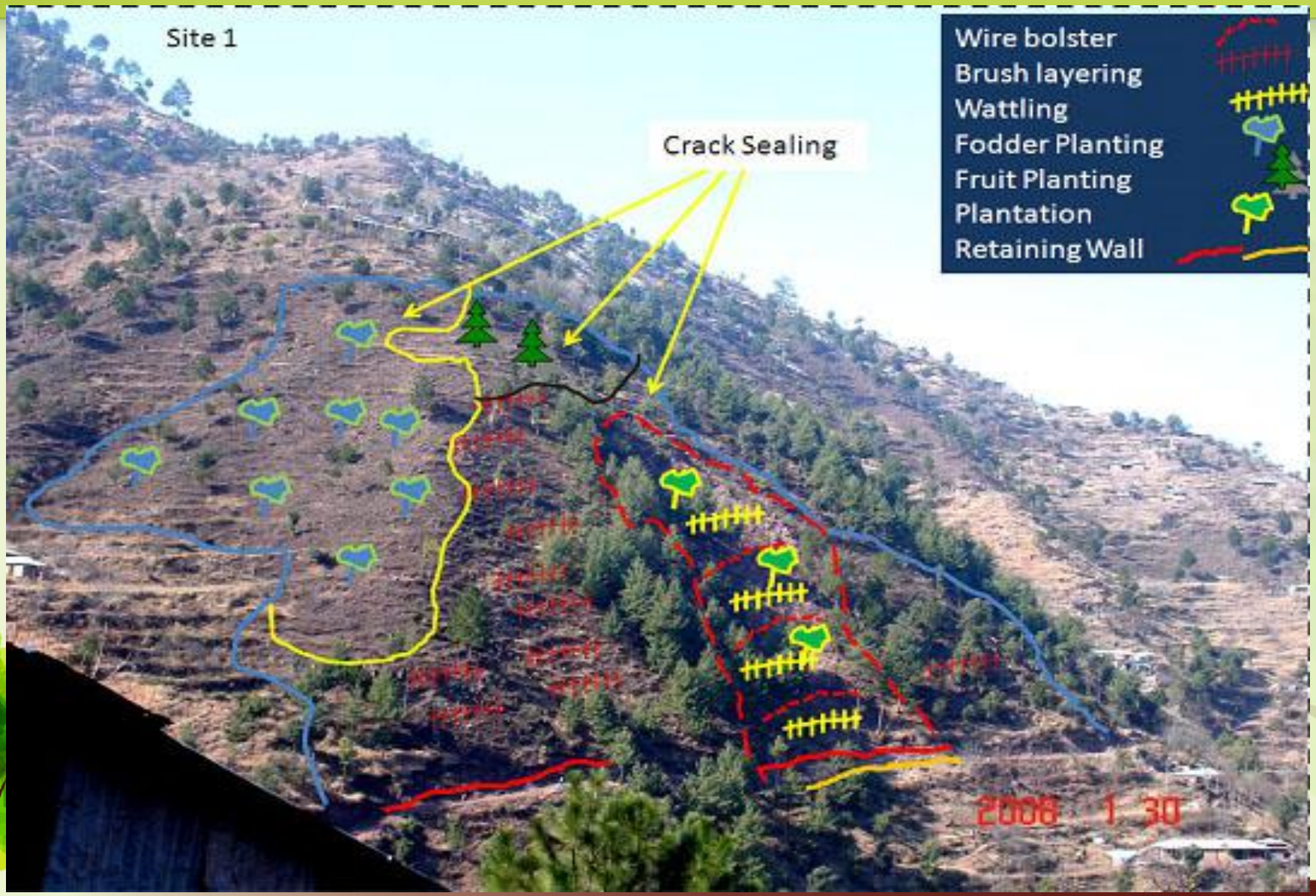
- ERRA;
- PERRA and SERRA;
- DRUs;
- DFOs and other Line Agencies;
- ICIMOD;
- FAO (FOM, AGA, TCE, SO-I, FAOR).

# Watershed management committee

# Watershed management plan



# Landslide treatment plan



# Landslide stabilisation (I)

Check Dam in Lamnian

# Landslide stabilisation (II)


# Reforestation (I)

# Reforestation (II)

# Water management

# Agricultural terraces

# Livestock improvement

# Fish ponds

# Kitchen gardens

# Capacity development

# Integration


# Project impacts

- 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.

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# Conclusions

# Course programme 10.7.2016

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# Conclusions (I)

- 22% of the earth land surface
- 915 million people
- 60 - 80% of global freshwater
- 25% of terrestrial biodiversity
- 23% of the forests
- Gene pool of crops

- The hunger challenge
- The climate challenge
- The water challenge

- Mismatch: importance – challenges – attention
- SDGs: mountains need to be considered

# Conclusions (II)

- ►1992 – Rio Earth Summit – Agenda 21 Chapter 13
- ►2002 – WSSD – Plan of Implementation – para 42
- ►2012 – Rio+20 – The Future We Want – paras 210, 211, 212
- ▸SDG 6 and SDG 15




# Conclusions (III)

## Nobody should be left behind!

- Joint effort of all countries **to meet SDGs**
- Collaboration of **all mountain countries**
- **Targeted investments**
- **Your contribution is important!**

# Conclusions (IV)

# Conclusions (V)

## Integration!


# Conclusions (V)

**I wish you all success with IPROMO 2016!**