



# **BALANCING FOOD SECURITY AND ENVIRONMENTAL CONSERVATION IN NORTHERN MOUNTAINOUS REGION (NMR) OF VIETNAM**

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# Landscape overview

**Bare hill**

**Slopping land**

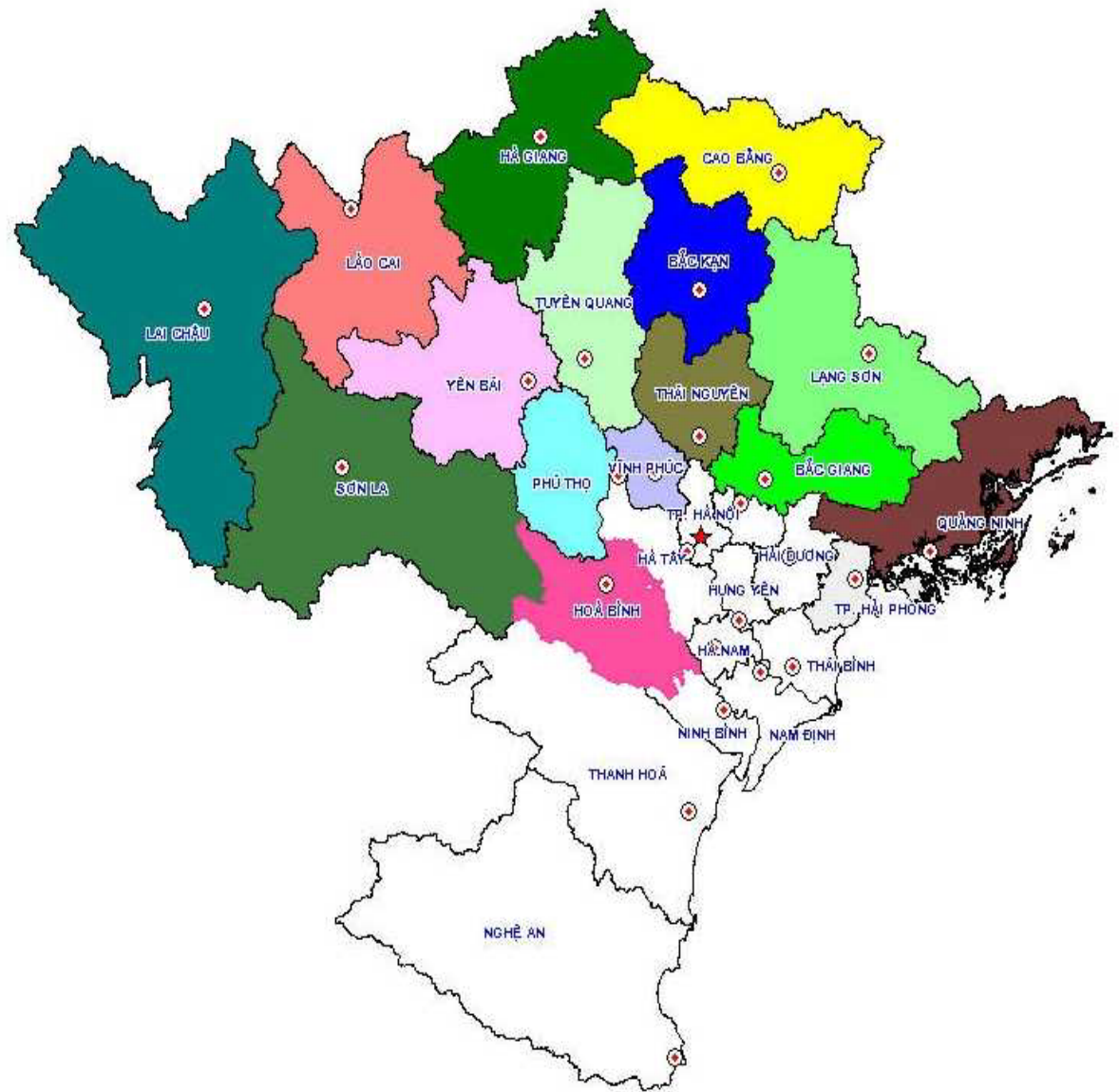
**One season crop**

**Habitats land**

**Two season crop**

# Background of Northern Mountainous Region

- There are 15 provinces with 102,000 km<sup>2</sup> and 12.23 million citizens belonging to 30 ethnic groups
- Almost all 80 % of land area has 25<sup>o</sup> of the steepness and only 3.6% of flat level
- Serious soil erosion and rapidly decreased crop yields
- Shifting cultivation with a shortened fallow period
- living standards is low and unstable.



# **CONSTRAINTS AND DEVELOPMENT POTENTIALS**

# Destruction of upper watershed forests



# Severe soil erosion & land degradation



**Scared & scattered flat  
lands (terraces & valleys)  
*low rate of Agr.lands***



**Sloping lands: 85%**  
**(over 22° slope: 62%)**

***Large area of bare hills/lands***





Poor soil quality



# Calamities

Severe soil erosion  
& land degradation



# Unsustainable practices

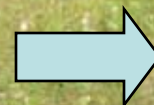


# LOW AND FAST DECREASED YIELD OF UPLAND RICE

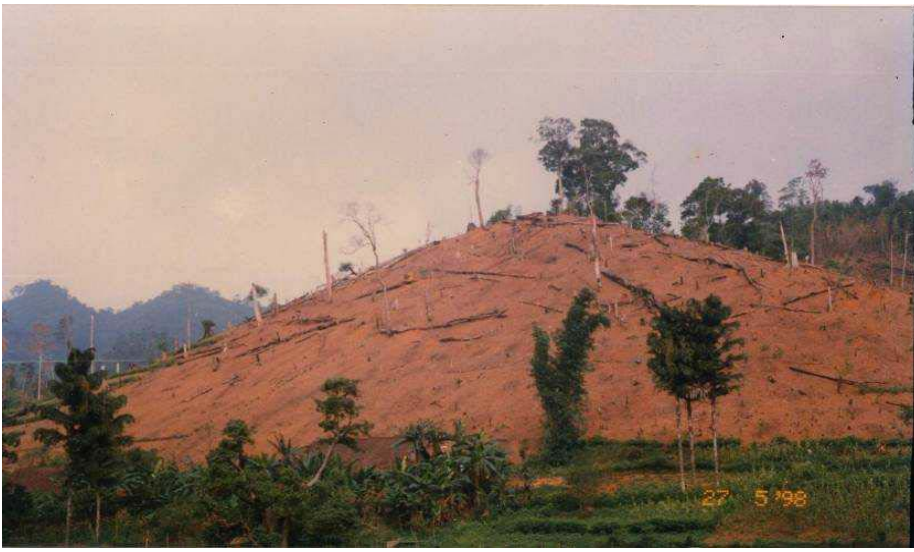
## Case study of Mu Cang Chai

Household	Upland rice yield (T/ha)	
	Year 1	Year 3
1	1.2	0.80
2	1.0	0.75
3	1.1	0.80
4	1.0	0.80
5	1.2	0.75
Average	1.1	0.78

**Unsustainable cultivation  
– Low and fast decreased  
crop yield**



# Conflict between crop, animal and forest production



Unhappy buffalo

# PROBLEMS

- **Land degradation**
- **Unstable and low crops yield**
- **Unstable production systems**
- **Eroded physical natural resources**
- **Reduced biodiversity and forest coverage**

# POTENTIALS



**Rich in land resources**



**Rich in forest resources**



**Rich in cash crop genetic resources**



**Rich in energy resources**



**Rich in animal husbandry options**

# MAIN CONCERNS

- **Poverty**
- **Food insecurity**
- **Low income**
- **Environmental degradation**



# HOW TO BALANCE FOOD PRODUCTION AND ENVIRONMENTAL CONSERVATION

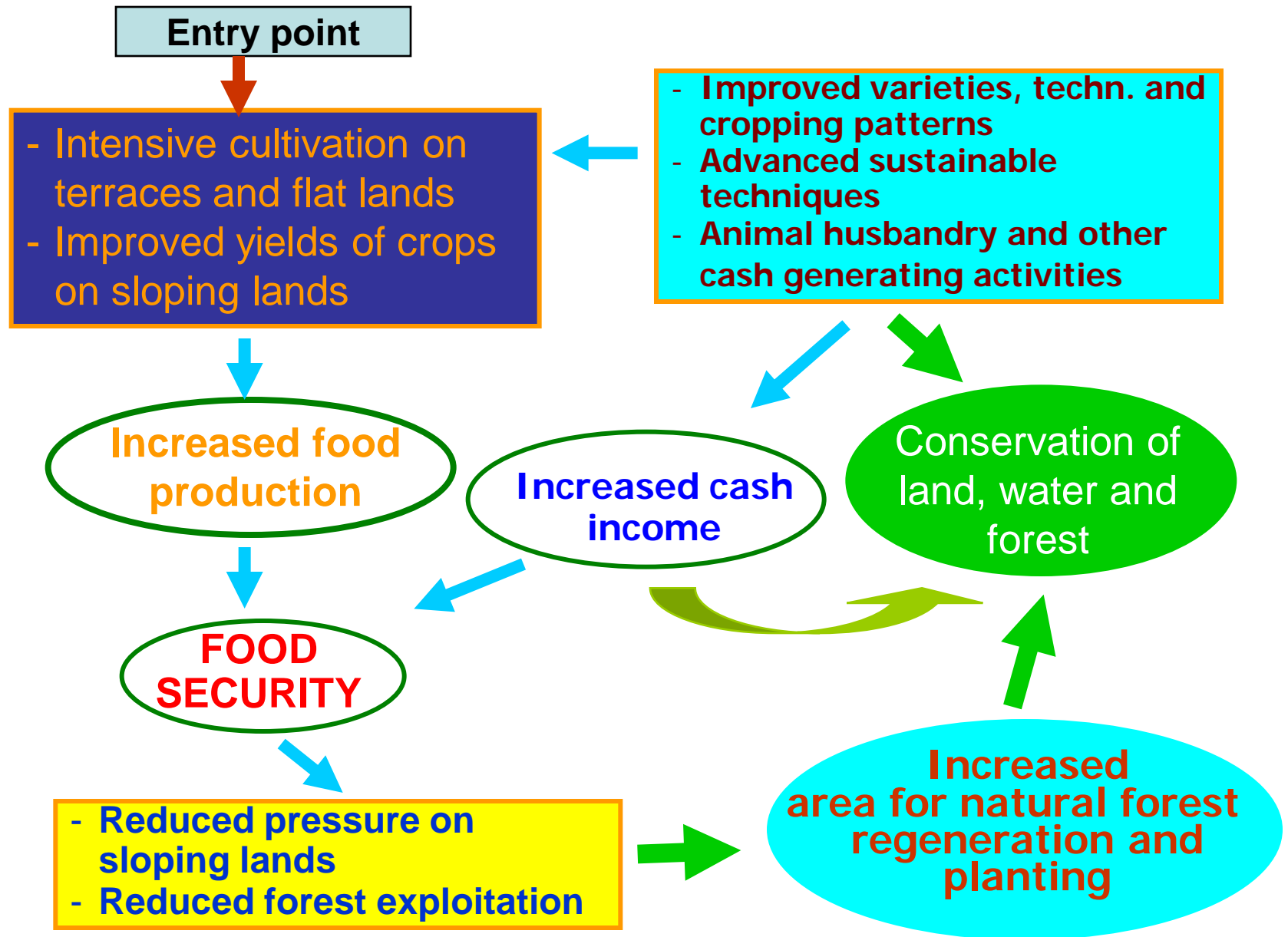
Concurrently

- Increased food production
- Improved natural resources conservation

**In the conditions of:**

- Growing population and
- Unpredicted climate changes

# APPROACHES & MEASURES



# ACTIVITIES

- Rice intensification;
- Cropping systems improvement;
- Slopping lands conservation;



# Paddy rice variety improvements

- Duration : Spring 125 days; Summer 105 days
- Yield: Spring 6.5 tons/ha; Summer 5.3 tons/ha
- Good gain quality
- Widely adapted



High yielding and high quality Variety: HT1



# Upland rice variety improvement



**Testing of upland rice collection by  
IRRI-IFAD- NOMAFSI Upland Project:**  
*High yield, quality, resistance, tolerance, short duration*



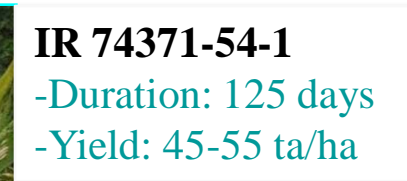
# Upland rice variety improvement



LUNYU  
46

**Variety Luyin 46**

-Duration: 115 days  
-Yield: 50 ta/ha



**IR 74371-54-1**

-Duration: 125 days  
-Yield: 45-55 ta/ha



IR74371-5-1-3-3



IR74371-54-1-1

**Variety IR 74371**

-Duration: 110 days  
-Yield: 55 ta/ha



TẬP ĐOÀN  
LÚA CÁN

LÚA NẾP

DR4  
NẾP

**Variety DR4**

Duration: 95-105 days  
Yield: 45 ta/ha

# Regeneration, conservation and development several specialty rice varieties



Successfully regenerated Nep Tu Le, Nep Nang Huong, Te Huong Chiem of Yen Bai Prov; Nep Rau, te Gia Dui, Te Khau Mang of Hà Giang; Te Shen Cu của Lao Cai





# Rice crop managements

Identify water saving technologies for rice paddies

**NOMAFSI-IRRI-IFAD**



# Rice crop managements

## FERTILIZER EXPERIMENTS

Best fertilizer dose:  
8 FYM tons, 80 N,  
90P2O5, 60 K2O



# Rice crop managements



## PLANTING DENSITY EXPERIMENTS

Best rice density:  
33-35 hills/m<sup>2</sup>



## IMPROVED CROPPING SYSTEMS

1. Spring legume+ summer rice season,
2. Drought spring rice+ summer rice season,
3. Spring vegetable season + summer rice season,
4. Spring vegetable season + short duration of summer rice + Winter vegetable.



# SUSTAINABLE SLOPING LANDS CULTIVATION



SOIL MULCHING (Maize)



SOIL MULCHING (Rice)

# BENEFITS FROM SOIL MULCHING



- Fully weed control

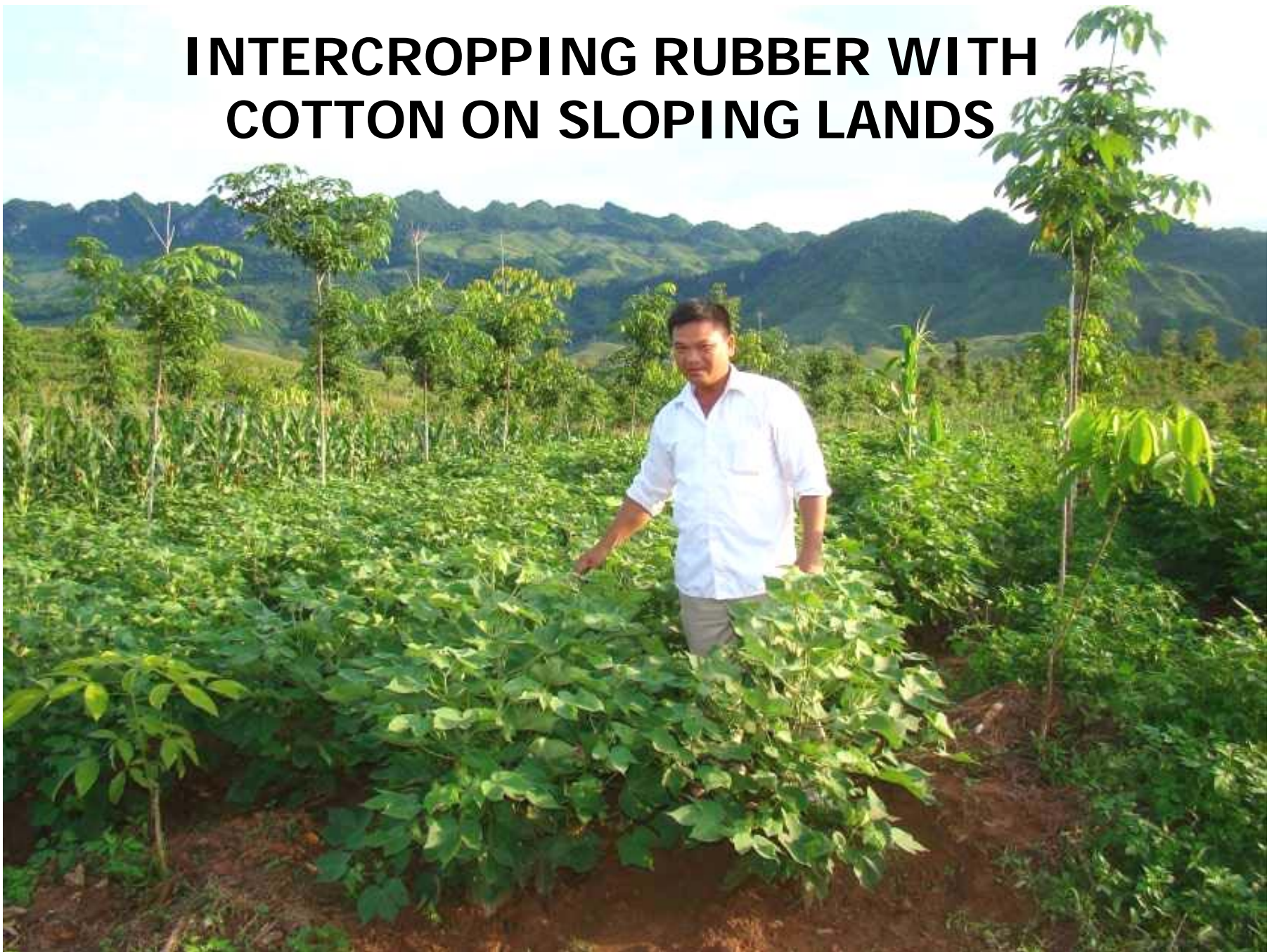
- Reduce soil erosion to 90%
- Maintain soil moisture
- Strengthen soil biology activity
- increase crop yield to 40%



# INTERCROPPING MAIZE WITH LEGUME CROPS FOR INCOME GENERATION AND SOIL CONSERVATION



# INTERCROPPING RUBBER WITH COTTON ON SLOPING LANDS





# MAKING MINI-TERRACES AND SOIL MULCHING



# MAIN ACHIEVEMENTS

Increase in forest coverage

Increase in food production

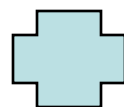
Diversification of cash crops

**There are:** *Influence of food production  
on improvement of forest cover*

# Degradation of forest resources in the past

## Several decades past

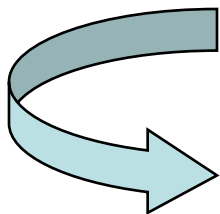
**Too fast population increase**



**Unappropriate policies and directions**

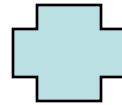
### Degradation and impoverishment of forest resources

- In 1943 forest area was 14,325,000 ha (occupying 43,70% of the total territory of VN).
- In 1990 forest area reduced to 9,175,000 ha (occupying only 28% of total territory of VN).

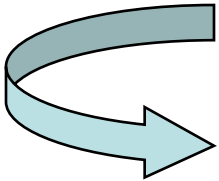


# Since more than 15 years to now

**Right policies, orientations  
and external support**



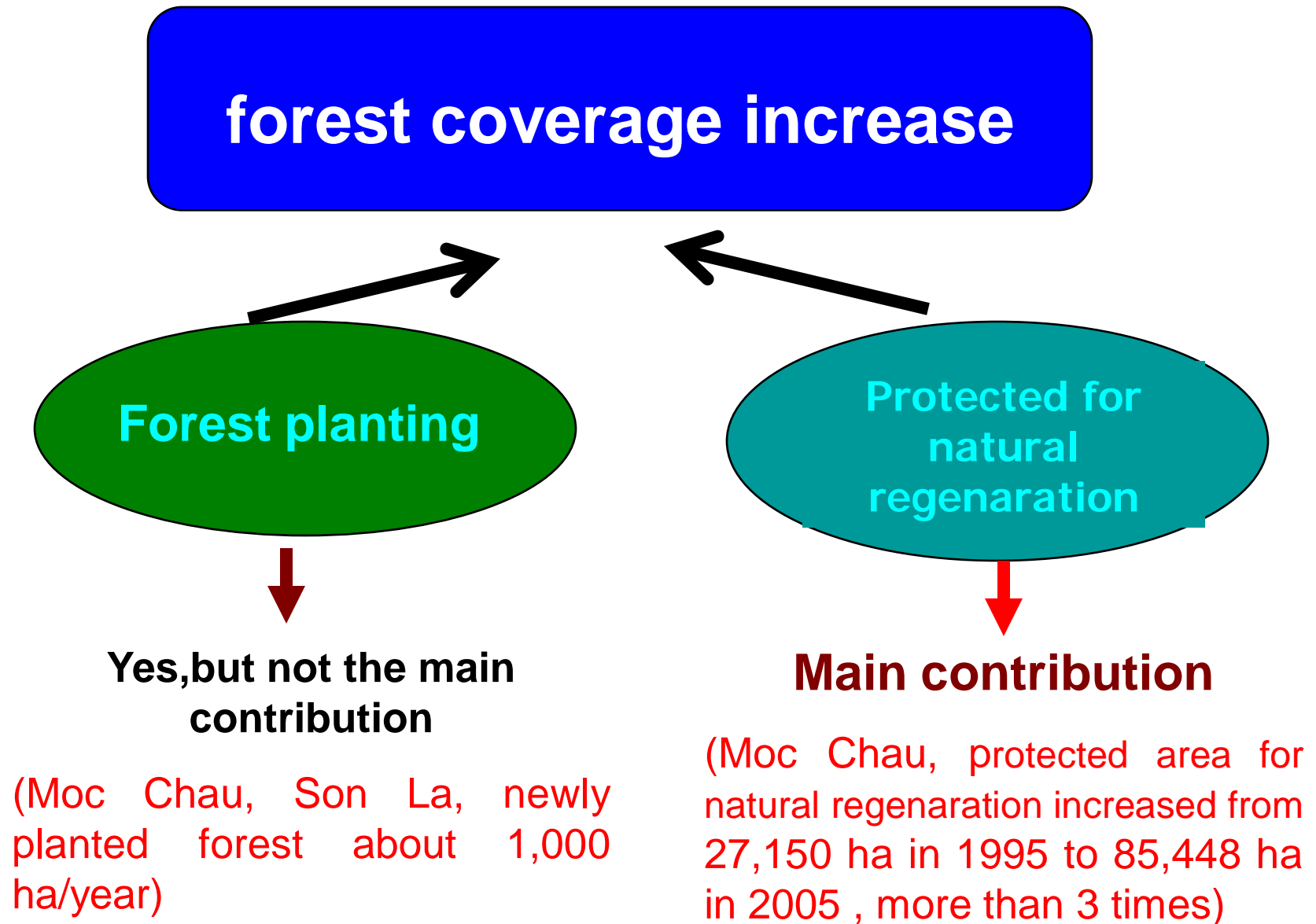
**Efforts of Ethnic communities  
living with forest resources**



**Forest resources have been being recovered**

In 2009, the forest coverage reached 47% IN NMR

# Contribution patterns to forest coverage increase



# Why fast natural regeneration?

**Food demands**

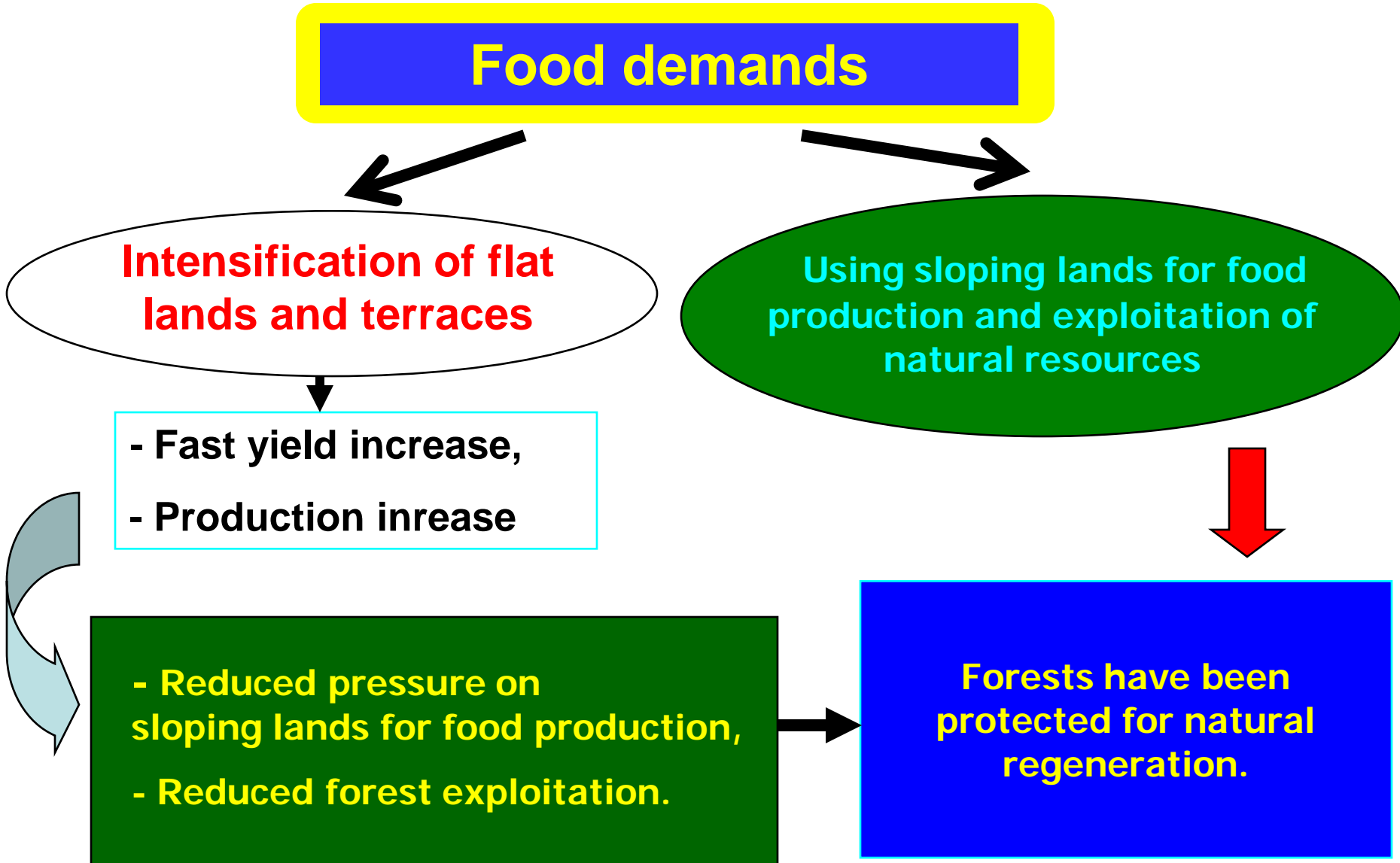
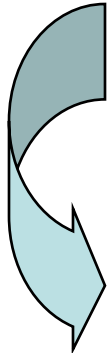
**Intensification of flat lands and terraces**

- Fast yield increase,
- Production increase

**Using sloping lands for food production and exploitation of natural resources**

- Reduced pressure on sloping lands for food production,
- Reduced forest exploitation.

**Forests have been protected for natural regeneration.**



## Increase in food production

### Increase rice yield in the stage of 1995-2009 in NMR

<b>Year</b>	<b>1995 (T/ha)</b>	<b>2000 (T/ha)</b>	<b>2005 (T/ha)</b>	<b>2009 (T/ha)</b>	<b>Comparing 2009 to 1995 (%)</b>
<b>NMR</b>	<b>2.73</b>	<b>3.59</b>	<b>4.33</b>	<b>4.55</b>	<b>66.7</b>
<b>Whole country</b>	<b>3.69</b>	<b>4.24</b>	<b>4.89</b>	<b>5.23</b>	<b>41.7</b>

## Increase in food production

### Food per capital in the stage of 1995-2009 in NMR

Year	1995 (kg/ person)	2000 (kg/ person)	2005 (kg/ person)	2009 (kg/ person)	Comparing 2009 to 1995 (%)
<b>NMR</b>	<b>210,4</b>	<b>287,5</b>	<b>361,9</b>	<b>412,3</b>	<b>95,96</b>
Whole country	<b>363,1</b>	<b>444,9</b>	<b>480,9</b>	<b>503,7</b>	<b>38,73</b>



## Increase in forest coverage

Year	Whole country	NMR
	(%)	(%)
1995	28.2	28.5
2000	33.2	34.5
2005	37.9	43.6
2009	39.1	47.1



**DIVERSIFICATION**

- Tea production
- Coffees, rubbers
- Fruits, flowers and vegetables
- Livestock production





## Tea cultivation

➤ *Year 2000:*

*Area: 66.7 thousand ha,*

*Yield of 3,1 ton/ha,*

➤ *Year 2009:*

*Area: 135 thousand ha,*

*Yield: 7.15 ton/ha.*

# Coffee



## COFFEES AND RUBBERS

*Arabica coffee and rubber trees are gradually established and well grow in the region*

New varieties, adaptive test and cultivation technologies are researched and speeded up large scale.

# Rubber



Ngày 17/8, Phó Thủ tướng Trương Vĩnh Trọng đã đi thăm thực địa diện tích trồng cây cao su tại xã Mường Pồn và xã Thanh Nưa, huyện Điện Biên, tỉnh Điện Biên



## TEMPERATE FRUIT TREES

Appropriately selected to promote under specific temperate Zones in upland regions





## VEGETABLE AND FLOWERS

**Starting introducing commercial fruit, flower and vegetable to exploit potential of diverse climate conditions**



**Production of summer, off-season flowers and vegetable**

**Developing grass for cattle, buffalos and cows.**



# CONCLUSIONS

1. Uplands are complicated and diverse WITH MANY CONSTRAINTS but ALSO LOTS OF DEVELOPMENT POTENTIALS. So we have to approach the problems carefully and comprehensively.
2. Intensification of valley land agriculture plays an extremely important role in food security, farmer income and improvement of forest resources and environment protection.
3. Thanks to rapid increase in food production, particularly rice production, the mountainous farmers have can overcome poverty and become rich (planting cash crops, intensive animal raising, development of cottage industries especially the traditional ones, and eco-tourism service).
4. Together with the improvement of forest resources, other resources like water availability, soil fertility, particularly biodiversity will be recovered and ecological environment will be improved as well.
5. If we continue to work in these directions, the sustainability will be sooner achieved.



An aerial photograph of a mountainous valley. The foreground and middle ground are dominated by terraced rice fields, some of which are filled with water, reflecting the sky. A small village with several buildings is nestled in the valley. The background consists of steep, green mountains with some terraced fields. The overall scene is lush and scenic.

**Thank you for  
your attention !**