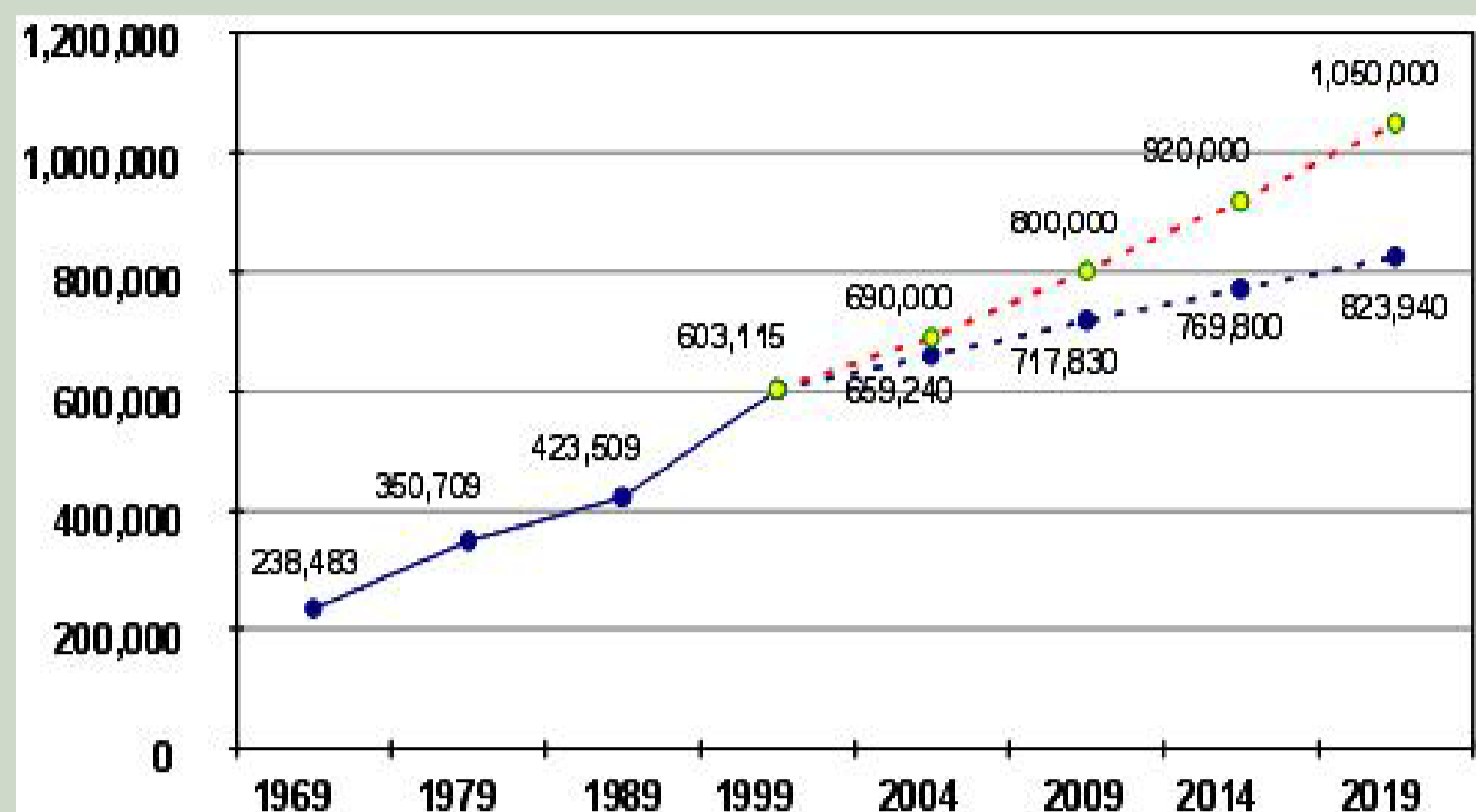


# Reconciling biodiversity conservation with improved rural livelihoods

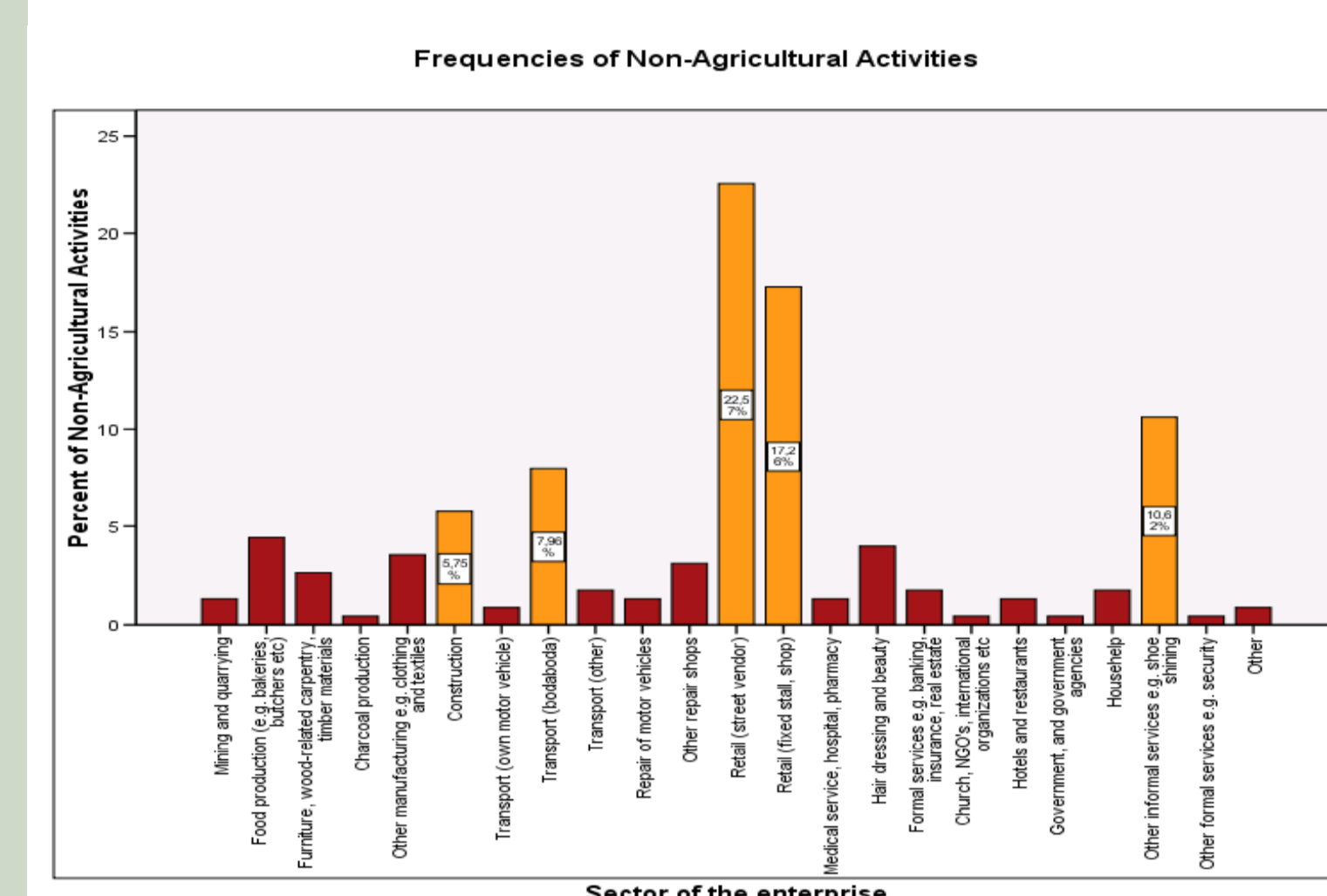


Becker, Gaesing, Kappel, Mussnug, Rietdorf, Schmidt-Kallert, Wünscher

## Population & Poverty



Poverty - population growth – few non-farm activities

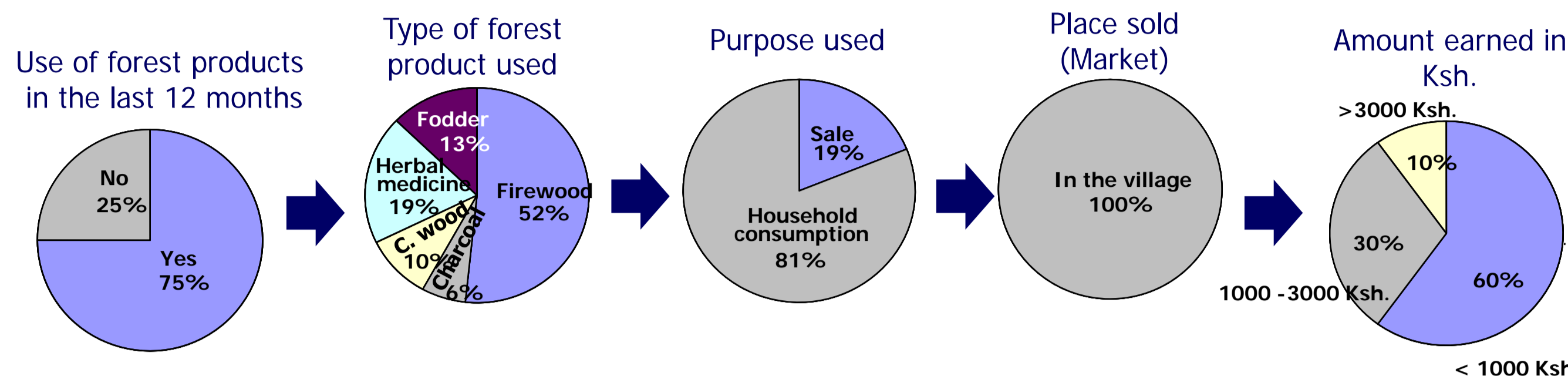


Population growth – Resource base degradation – Declining production potential - Few alternative income opportunities

➔ Poverty – Low livelihood level

## Background

### Forest product use



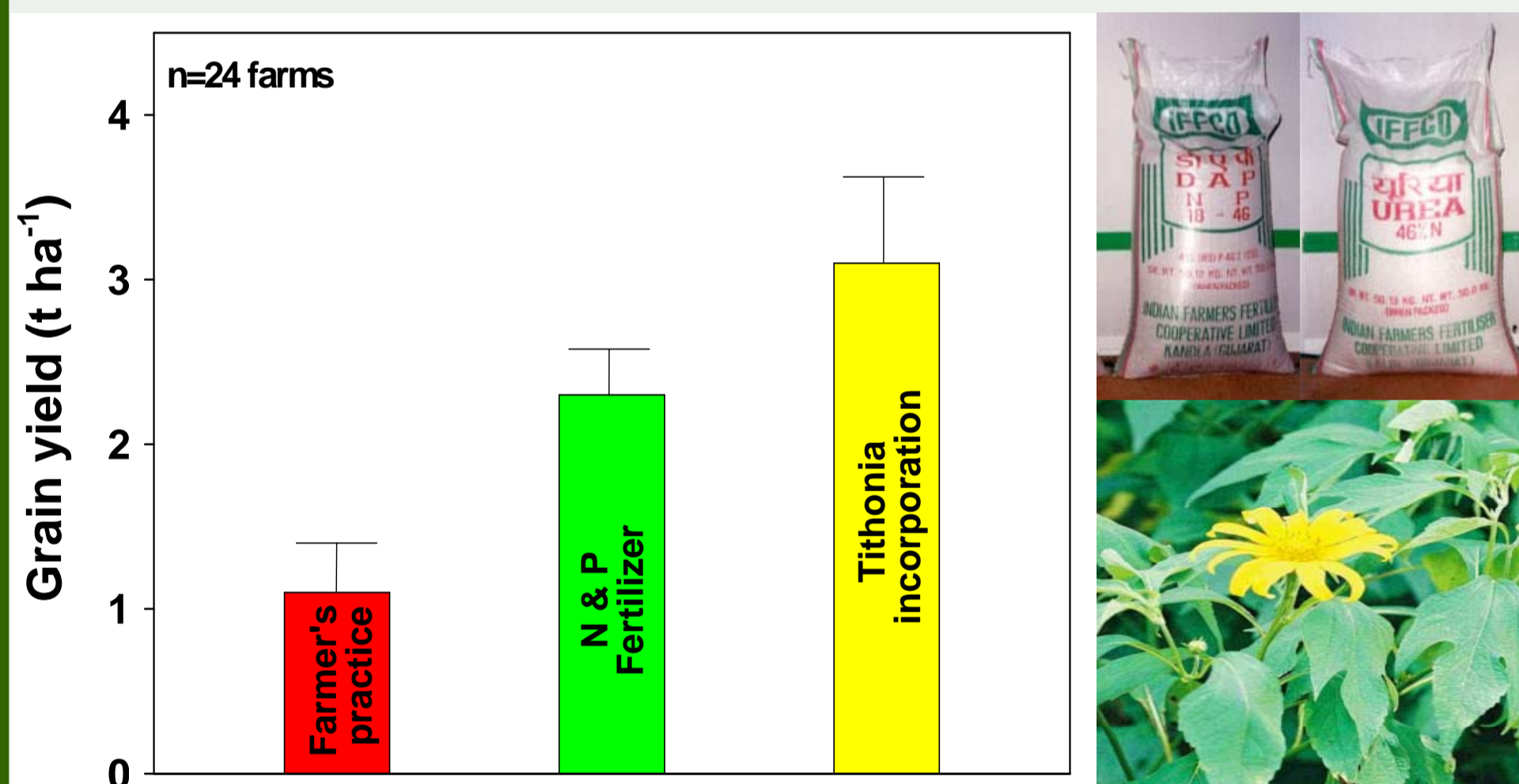
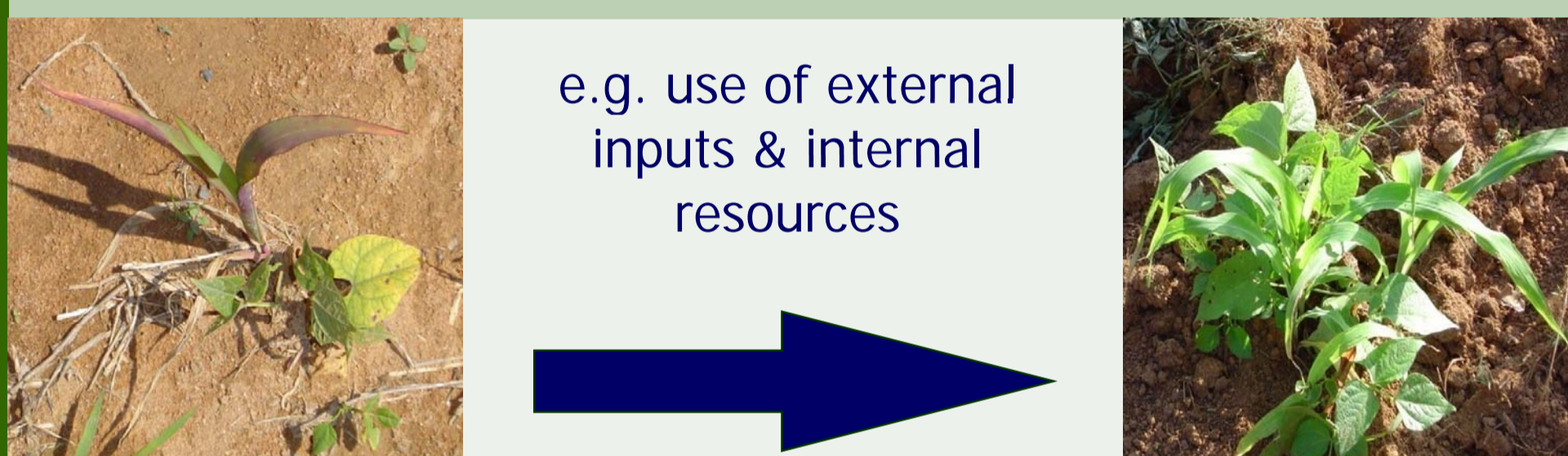
## Forest Benefits & Costs

	Benefit	Overall (US\$)	US\$/ha
<b>Local</b>	Fodder/grazing	783,066	32.63
	Firewood	748,790	30.69
	Charcoal	25,424	1.27
	Thatch grass	147,312	7.37
	Pollination services (beans 2 seasons)	6,451,390	263.00
	Local water regulation	225,676	9.20
<b>Regional</b>	Local erosion control	1,042,525	42.50
	Regional water regulation	909,081	37.06
<b>Global</b>	Entrance fees	43,262	1.76
	Reduced emissions from deforestation	40,548	1.65
	Carbon sequestration	122,650	5.00
	Recreational surplus	144,000	5.87
	Existence values	49,060	2.00
<b>Total</b>		<b>10,434,389</b>	<b>440.00</b>

Benefits/ha: \$ 440.00  
Costs/ha: \$ 188.73  
Net benefit/ha: \$ 251.27

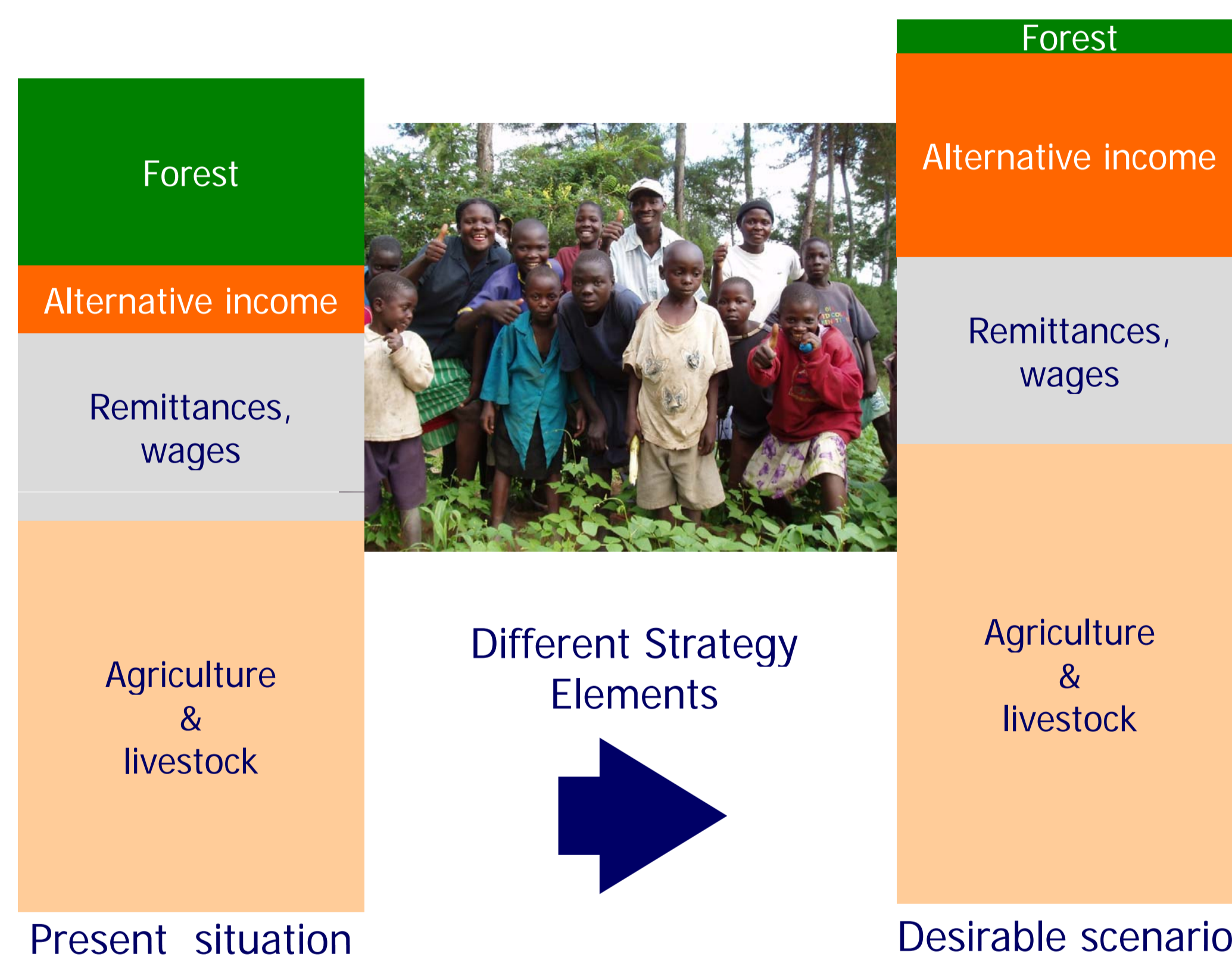
## Strategies

### Enhanced Production Potential



Options to enhance maize productivity differ largely in resource requirements (capital, land & labour)

### Livelihood sources of a typical household next to Kakamega Forest

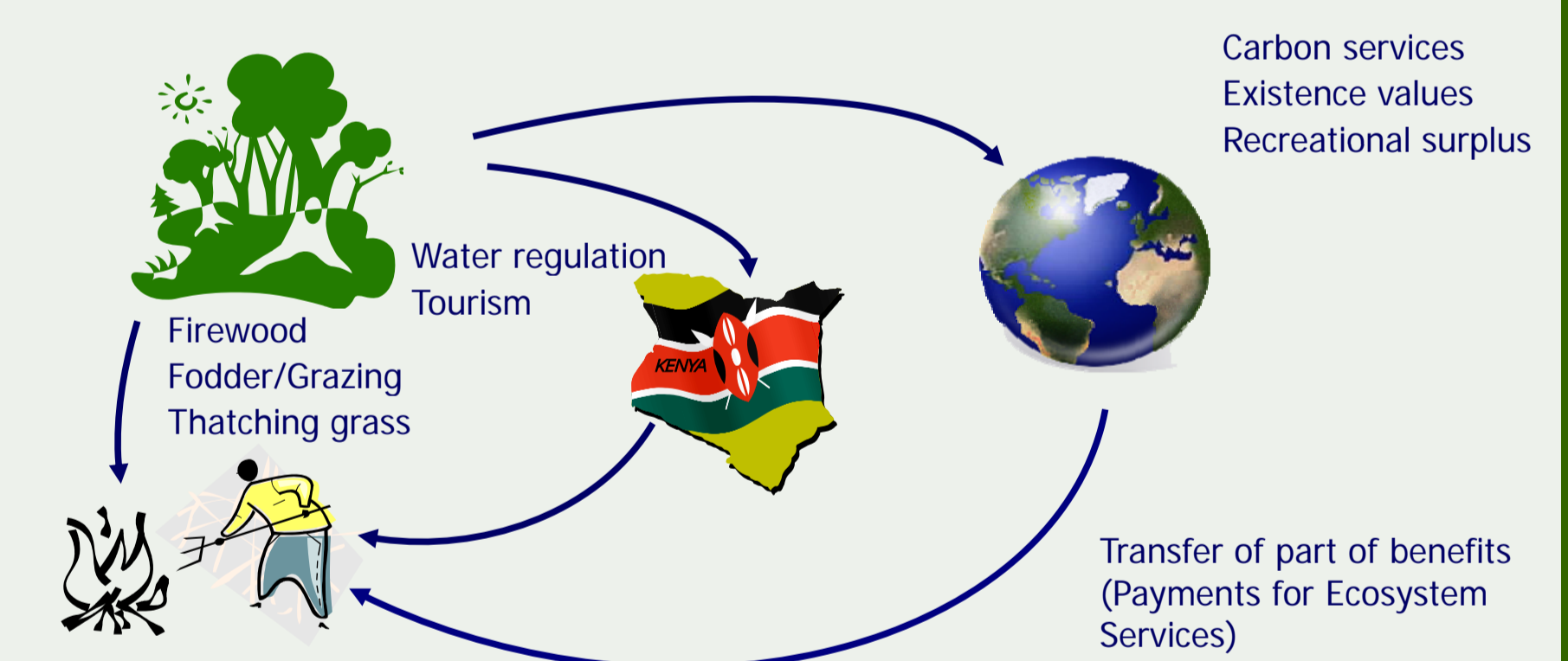


### Payments for Ecosystem Services

Kakamega Forest provides services not only to the local population, but also to the regional and global community. Currently these services are received free of charge.

Payments for the provision of these ecosystem services could contribute significantly to the conservation of Kakamega Forest.

These so-called „payments for ecosystem services“ (PES) need to be directed to the managers and users of the forest for ensuring its continued existence. For example, by reducing the amount of products that are extracted.



### Participatory Land Use Planning

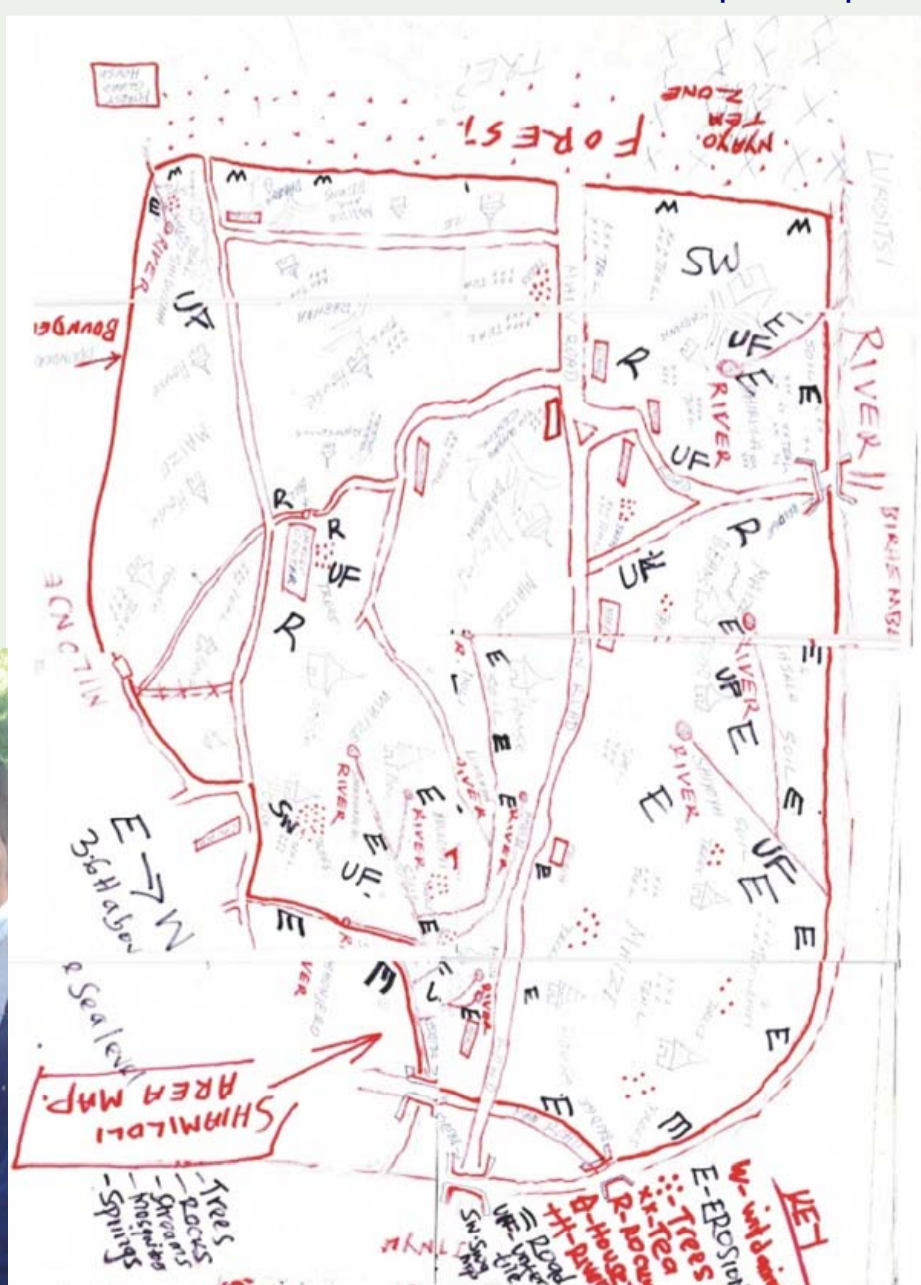
PLUP as an instrument to promote local development

Government & NGOs facilitate PLUP

Communities analyse problems and potentials to improve their livelihood and conserve biodiversity

Example for a community development plan

Develop joint community action plan  
➔ Activities and their sites  
➔ Planning schedule  
➔ Involved actors and their contributions



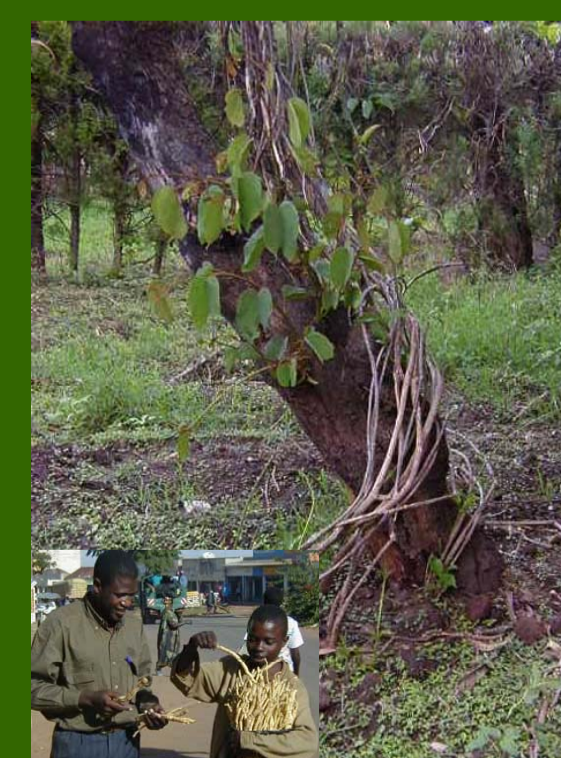
### Cultivation of Biodiversity utilizing unproductive on-farm fence lines

#### Mondia whytei

- Aphrodisiac & natural appetizer
- Vitamin, mineral & protein source

Used to be abundant in Kakamega Forest but is now getting scarce:

- Slow growing
- Extensive harvesting and trading



#### Leguminous trees

- Sesbania sesban
- Calliandra calothyrsus
- Leucaena ssp.

Untapped potential for improvement of soil fertility and animal feed:

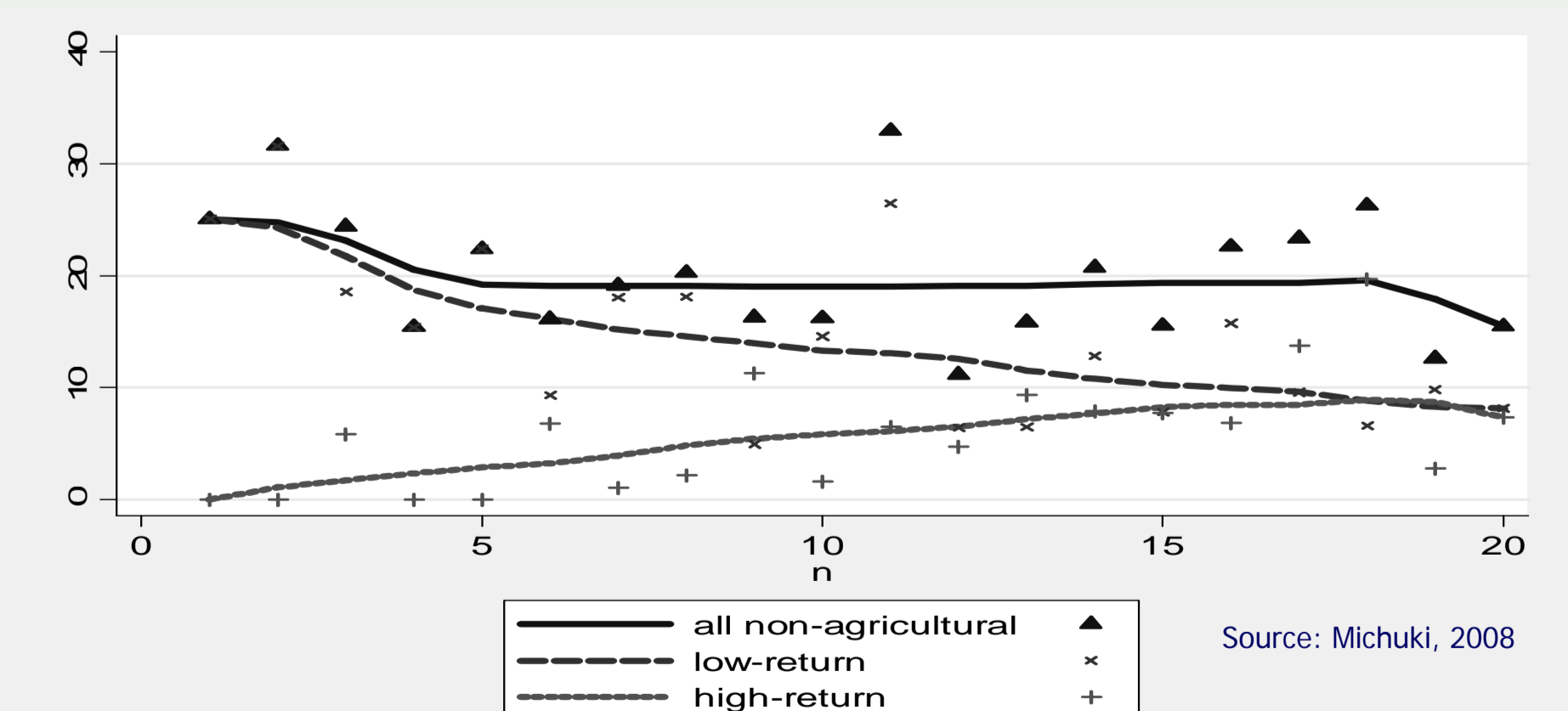
- Nitrogen fixation & nutrient pumps
- Increased milk yield & animal health



### Modelling Returns of Alternative Income

Poverty Simulation:

Growth incidence curve for a 50% growth in non-agricultural activities



➔ Simulation model of income quintiles shows that section of poorest households benefits most from 50 per cent income increase in non-agricultural activities.