Farm forestry & buffer zone enhancement in Southwest China

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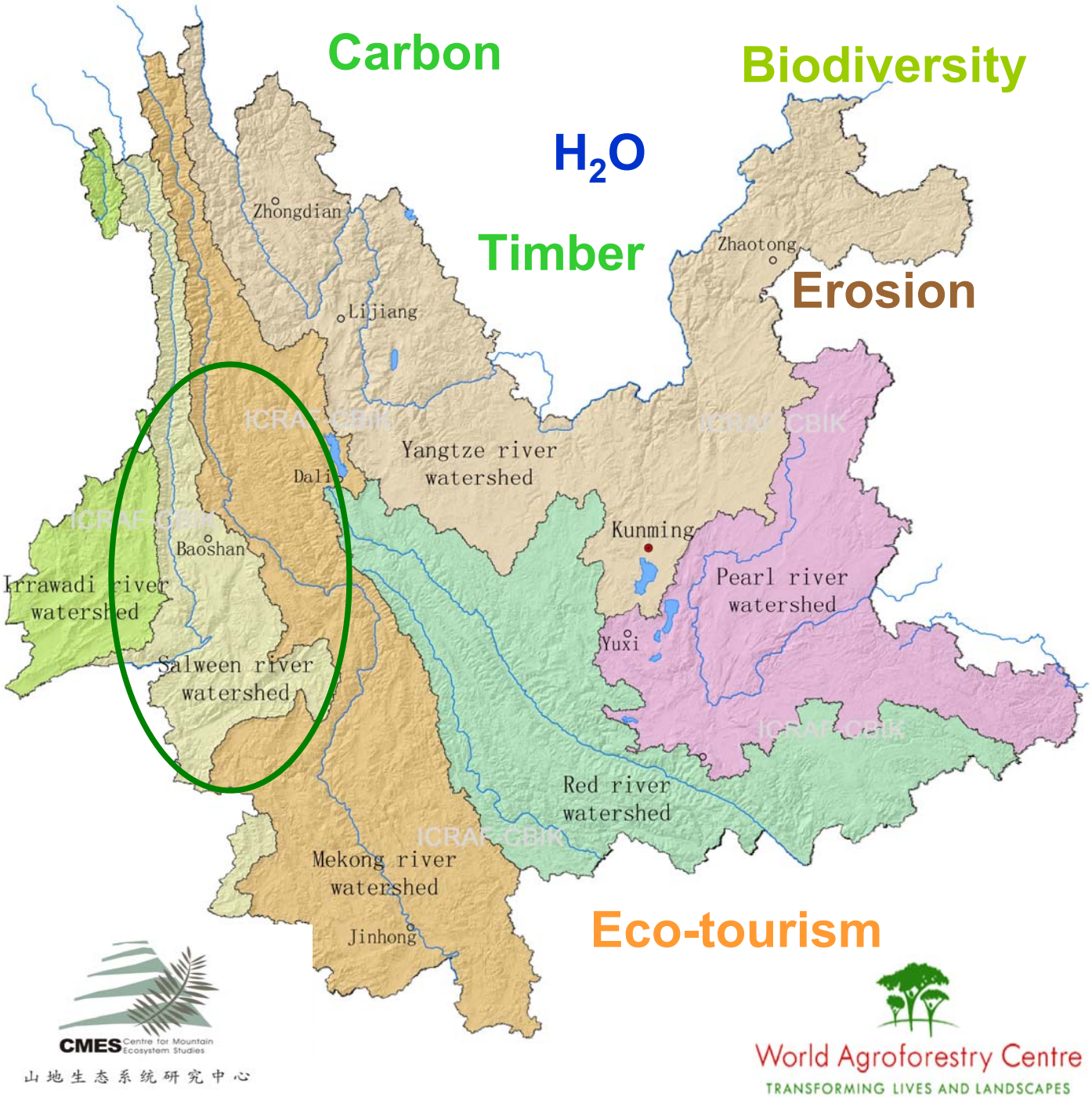
TRANSFORMING LIVES AND LANDSCAPES

CMES Centre for Mountain Ecosystem Studies

山地生态系统研究中心



Yunnan:

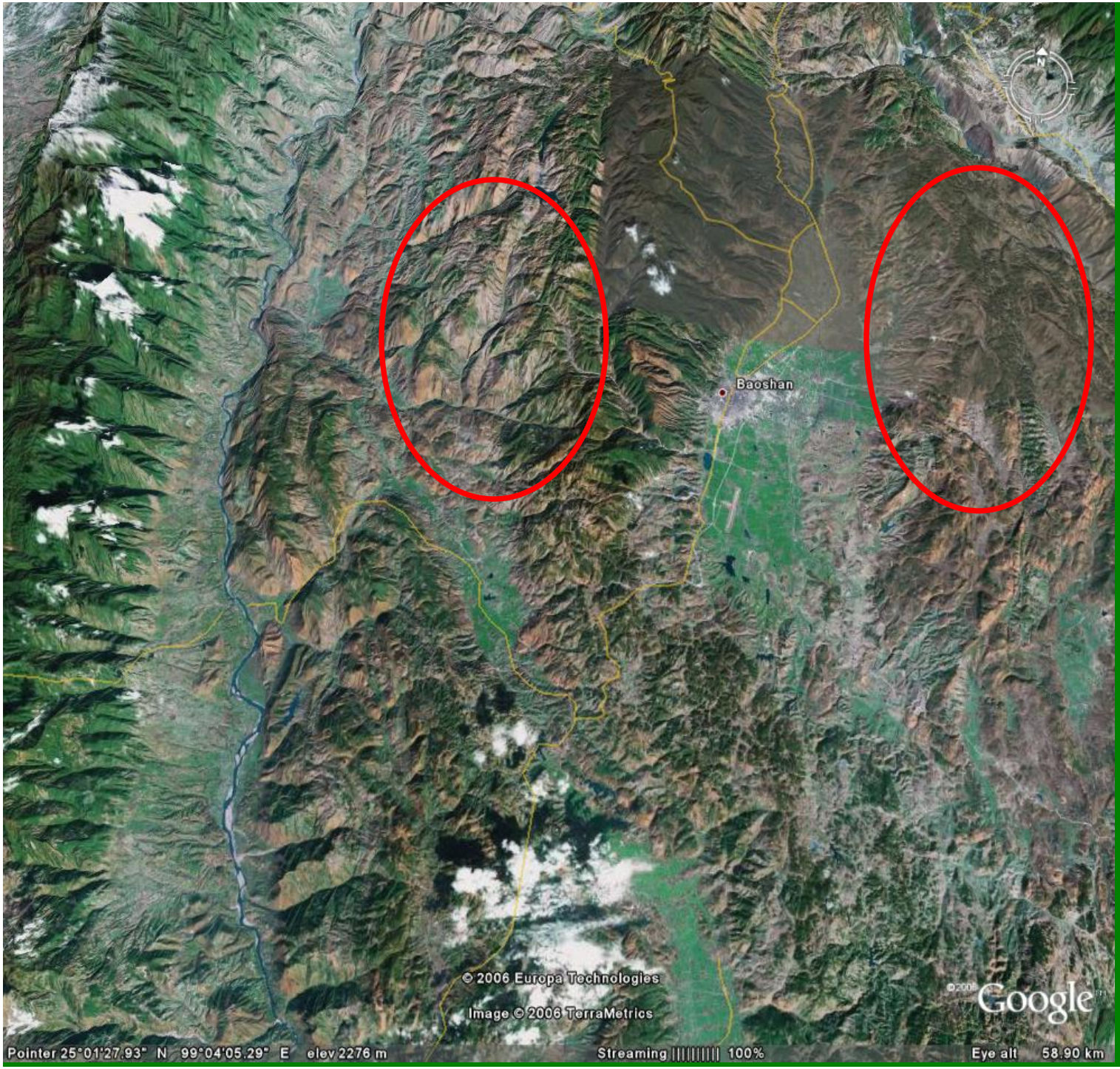
biodiversity hotspot

74 % of forests are managed by communities

communities depend heavily on their forests for additional income

major environmental problems (floods, erosion, pollution, forest fires/pests, etc.)

high pressure of central government (H_20, dams, timber supply)



Forests cleared in the 60's

Large scale reforestation with various results

High timber demand

Very limited species available for reforestation

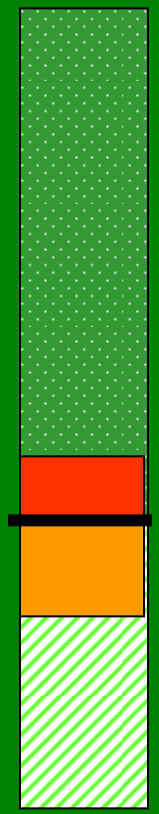
No information on impact of tree planting on water regime

Elevation: 600 to 4,000 masl

Rainfall: 1000 to 4,000

Current policies & institutions ⇔ farm forestry reality in the landscape

Forest



Conservation

Protective

Production

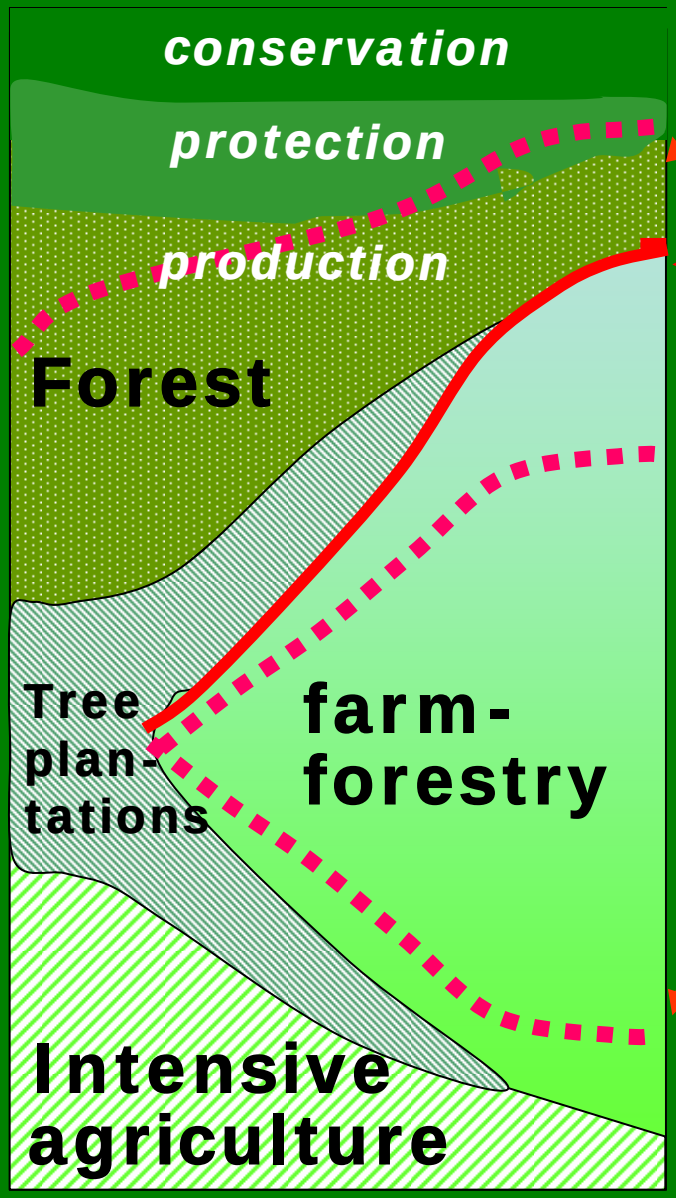
Plantations

Tree crops

Upland crops

Paddy rice

Agricultural lands



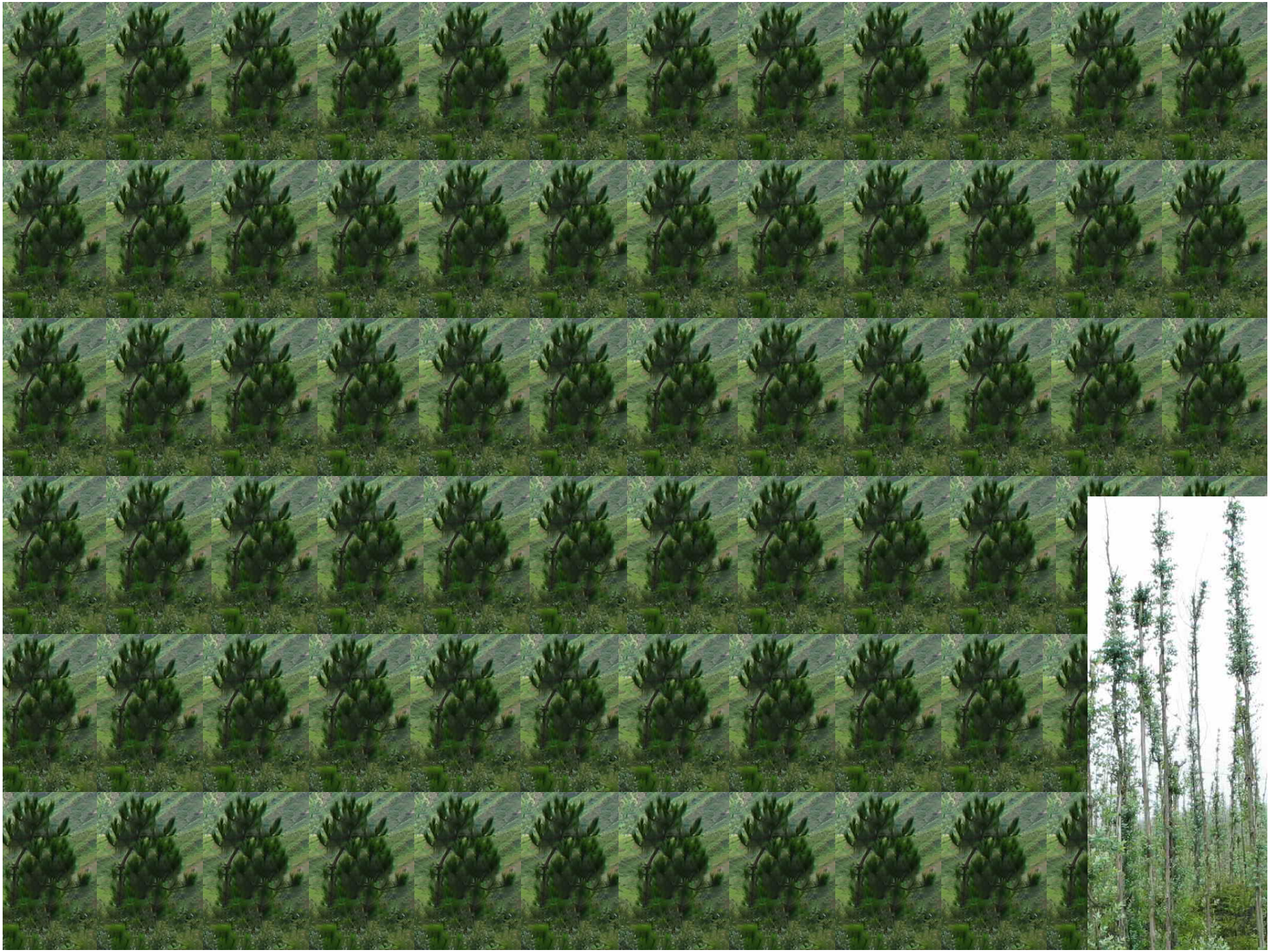
'deforestation'

Impact on water quality and quantity, erosion, biodiversity

Timber & fuel wood prices

NTFP

ICRAF-SEASIA



What species for which purpose and where?

Selection of planting schemes and species selection based on needs/demands/economics, markets and availability, etc.

Timber, fire wood, charcoal

Nuts/NTFP/oil (energy forests)

Shelter and watershed purposes (catchment closure?!)

Water quality & quantity

Biodiversity

How? Large scale, small scale, individual trees

Additional issues:

carbon sequ. (funding from gov. or global sources)

1. The Framework Species Method of Forest Restoration

Planting 30-50 indigenous forest tree species, which enhance natural forest regeneration and accelerate biodiversity recovery.

Adapted for SW-China to include species which are beneficial to communities and forest sector

First devised in Australia to restore tropical rainforest to Queensland's Wet Tropics World Heritage Site.

Plant 20-30 pioneer and climax tree species in a single step

Pioneer trees close canopy and attract animals

Natural seedling succession established

Original tree species composition of the forest restored

Tree planting schemes with forestry department and communities (include economic species into the Framework Species)

Which species are in demand, have a market?

Where can you get them and what quality and quantity?

Who has experience growing them?

How costly are they?

Indigenous or adapted?

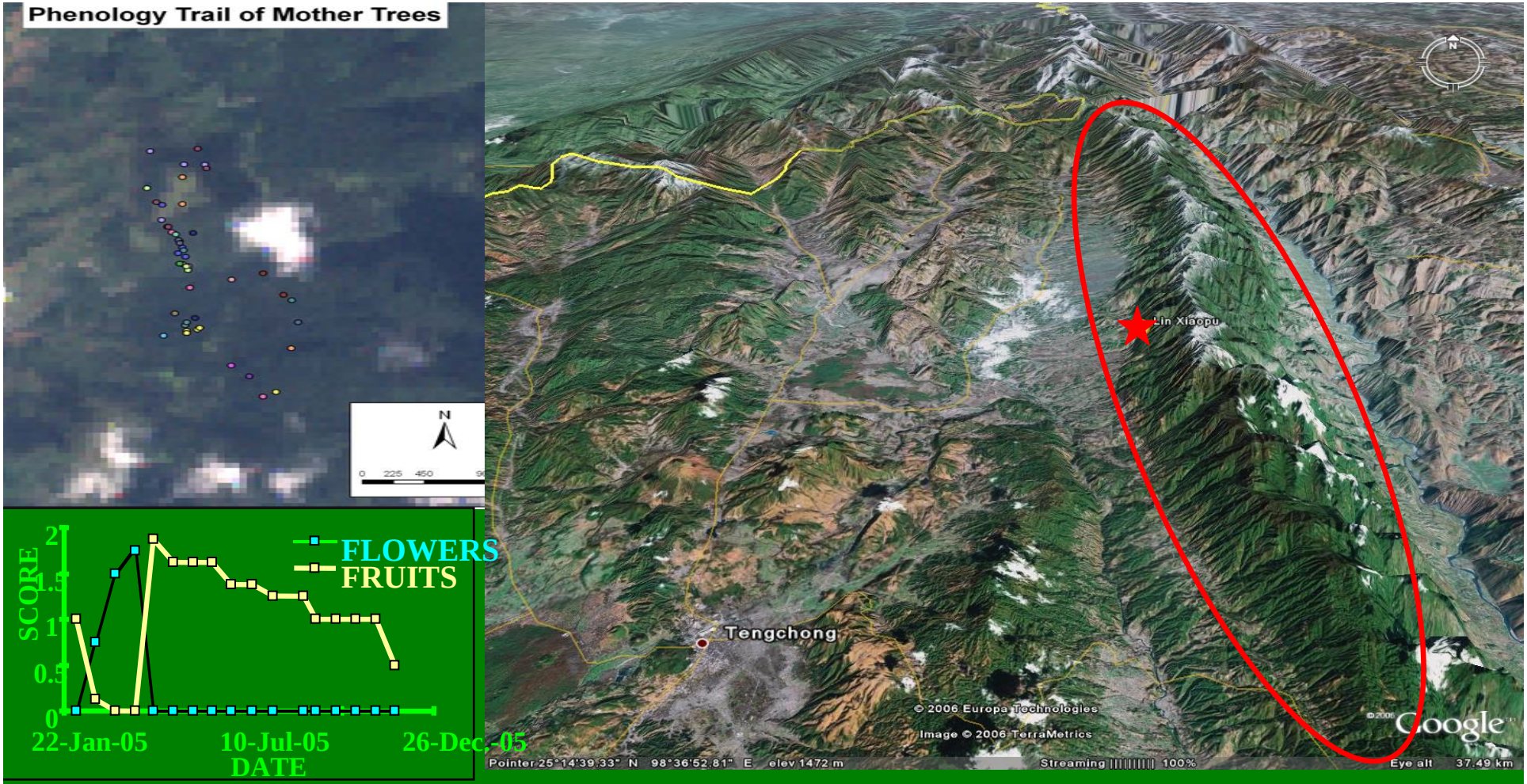
Intercropping and interplanting?

What short, medium, long term strategy to use i.e. reforest or sometime just recover to bring in a first cover and reestablish vegetation, keep any of the old woody tree species, gradually introduce new (known) species?!

Often we know how the mature tree looks like and what to do with it, but we don't know much about how to propagate, plant and grow them


Gordonia longicarpa chang


木兰科 Magnoliaceae
南亚含笑



Mother tree records for seed collecting in Linjiapu

□ □ code	□□□□ Mother tree	GPS□□ coordinate			□□ Aspect	□□ Slope(degree)	□□ Tree height (m)	□ □ □ □ □ □ Fruit maturity status
		E	N	Elevation masl				
13-4	□ □ □ Lindera thomsonii Allen	98”42’164	25”16′532	2,165	□ West	20	5	□□□ mature

Preliminary results of tree domestication for buffer zone development

Local herbarium and phenology trail established, communities and forestry/nature reserve staff collect, monitor and transplant together

Nearly 150 species collected, firewood, timber, energy, some medicinal plants and many of them germinated for the first time in a nursery, collection of very valuable data (seed storage, dormancy) and related processes

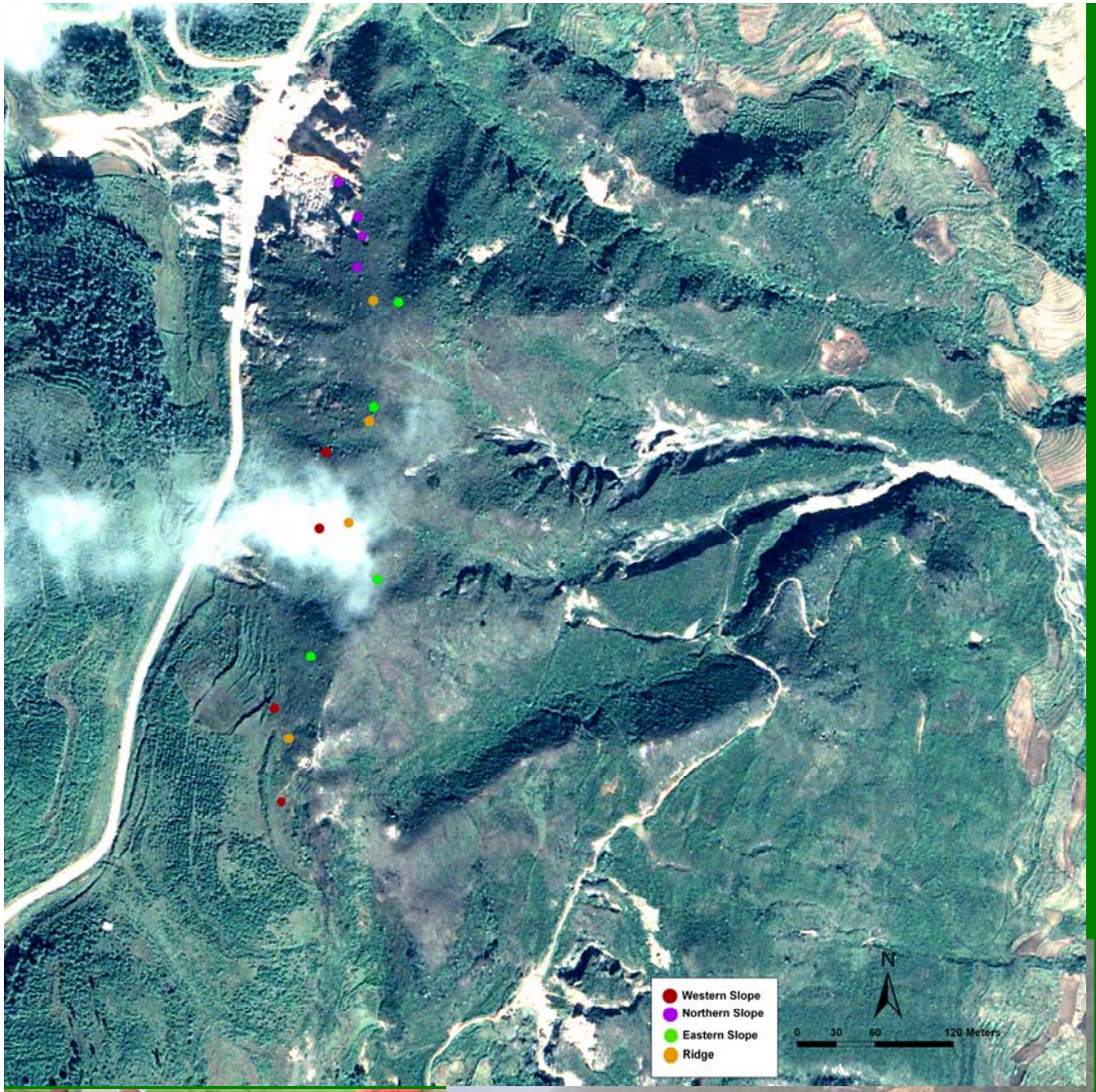
First 2 batches transplanted (nearly 40,000 plants/seedlings)

Research and experience used to develop a new course at the Forestry School

Manuals for farmers in preparation

2007: Selection and germination of additional species involving local foresters and communities, new seedling trials, monitoring, improve existing approach

2. Farm forestry



Preliminary results on farm forestry

Tree planting was conducted by forestry department at state forest land and with local villagers in 2005, and 2006 with technical assistance and plant material from the forestry extension office.

Emphasis on drought-tolerant species with good timber yields.

Area planted: (~40 ha).
5-8 g of hygroscopic gel distributed around the base of the seedling, covered with 2 cm of soil.

Survival rate: 90.8%,
>top soil - >#plant survival;
>slope - <#plant surv. rate.
In addition: positive correlation on the plants treated with hygroscopic gel

~50 different species, mostly timber species
transplanted together with local communities
Research and experience used now by forestry
department (promising species now tested in nurseries

Community evaluation identified two major issues of concern:
species selection was still limited and they would like to see more diversity.
Ownership of the trees. (seedlings were not allocated to each household so it was unclear who will benefit directly from any from any future timber sales.

Next steps: increase research on promising tree species, best planting practice, evaporation and water up-take
Improve quality of existing and new woodlots & plantations
Increase area at state farms and communal land
Support long term lease contracts for communities

Thank you

Farm forestry and buffer zone enhancement in SW-China:
A Way to Enhance Rural Economies and the Environment

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Actively opening space
Interplanting, fostering natural regeneration
followed by thinning and general transformation
of remaining plantation

Alnus spp, Betula spp, Cyclobalanopsis spp, Quercus spp, Magolia spp, Castanopsis spp, Parakmeria spp and *Alcimandra spp. among others (30-50 per site)*