

Biodiversity values inferred in five communities in Nepal

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A collaborative research project in Nepal⁵ aimed to develop participatory systems for monitoring and evaluation of community forestry in five communities in Baglung District of the Middle Hills of Nepal. As one component of such M&E systems, outside facilitators worked with the communities to explore their perceptions of biodiversity and which components of biodiversity they would consider important to monitor.

A research framework was developed, based on the different levels at which diversity occurs (genes, species, habitats and processes) and on the different kinds of values people might hold for those components. These different dimensions of biodiversity are summarised in box 1.

Box 1. Key dimensions of biodiversity

Levels of diversity:

- Varieties
- Species
- Habitats
- Processes / ecological functions

Change in any component of diversity

Kinds of values

- Direct use values
- Indirect use values
- Existence values
- Option values (including bequest values)

Change in any kind of value

Differences in any of the above, between different kinds of respondent

Table 1 sets out a framework for exploring such values with a preliminary indication of which kind of values different stakeholders apply to the different components. The facilitator of a PM&E exercise based on this framework would need to encourage stakeholders to explore which components were valued by those stakeholders, and within each of these cells attempt to qualify:

- **Which** species, ecosystems, processes are valued (these will be different for different stakeholders), and
- **Why** (what they are valued for)

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- As well as whether *diversity* itself is valued within each category (e.g. do farmers value *diversity* of varieties for risk reduction; do politicians value diversity of habitats within the landscape for conservation purposes?).

By understanding both the components valued, and the kinds of values used, we can give examples of the kinds of indicators that different stakeholders might apply to forest management, of relevance for biodiversity (table 2). This gives the facilitator a guide to help illustrate the purpose, for participants, but it should be noted that very different indicators might also emerge.

Table 1: Examples of indicators that might be used by different stakeholders, based on experience of values held

Indicator	Expect villagers might use	Expect outsiders might use
Presence / absence of indicator plant sp(p)	v	v
Presence / absence of certain wild animals	v	v
Presence of range of priority species	Useful species	Threatened or keystone species
Number of species		v
Diversity of uses	v	
Number of varieties		v
Number of forest habitats		v
Access to full range of forest habitats	?	
Accessibility of forest (i.e. density of undergrowth etc.)	v	
Stable climate	?	
Stable water supply	v	
Stable soil	?	

Using this framework, and through group discussions, field visits and semi-structured interviews, values were indicated by people living in different communities. These values are summarised in table 2.

Table 2: Biodiversity values inferred through PM&E process (*Italics indicate negative values*)

	Pallo Pakho	Jana Chetana	Bhane	Sirupata	Jyamire
	Good cohesive FUG. Relatively easy access.	FUG functions well; High forest: household ratio. Remote.	Inactive FUG; small forest	Community forest is very small plantation. Relatively easy access.	No FUG. Highly politicised access to forest. Fairly remote.
Intraspecific (genes and varieties)	<u>D</u> : Awareness of varieties of fig; one valued more than other	None	None	None	None.
Species	<p><u>D</u>: Range of uses; species with no use to be cleared</p> <p><u>D</u>: <i>Non-used spp. described as 'bad'. This perspective changing through dialogue.</i></p> <p><u>E</u>: Some species valued for beauty; some with religious value (not in forest).</p> <p><u>Q</u>: <i>(Negative) lack of individual ownership restricts management rights, less interest in fodder trees</i></p> <p><u>Diversity O</u>: More species better than few; increased awareness of number of useful spp.; need for enrichment planting to bring in new spp.</p>	<p><u>D</u>: Interest in spp. Identification to enhance marketing of NTFPs; non-used spp. cleared. Market influences no. of spp. valued.</p> <p><u>E</u>: <i>Cultural value of medicinal plants decreasing.</i></p> <p><u>Diversity O</u>: Need for enrichment planting to bring in new spp.</p>	<p><u>D</u>: Protection led FUG to plant more spp. (all useful).</p> <p><u>D</u>: Elites focus on narrow range of commercial spp.</p> <p><u>I</u>: Identified local species as priority for enrichment planting.</p> <p><u>E</u>: <i>Non-used spp. are not known, generally will be cut back..</i></p> <p><u>O</u>: Need for enrichment planting to bring in new spp.</p> <p><u>Diversity D</u>: Previously unaware of no. of useful spp in the forest.</p>	<p><u>D</u>: Want local spp. instead of planted ones. Explicitly decided to enrich forest with local broadleaved species, for fodder.</p> <p><u>O</u>: Need for enrichment planting to bring in new spp.</p> <p><u>Diversity O</u>: Plant as many species as possible to see which will grow best. Risk management.</p>	<p><u>D</u>: Interested in few species because they don't own the forest.</p> <p><u>D</u>: Species suggested for enrichment are not local. Responses rather <i>ad hoc</i> because real chances of management seem remote.</p> <p><u>Diversity D</u>: Prefer landslide areas to undisturbed forest because there are many useful species in one place.</p> <p><u>O</u>: Need for enrichment planting to bring in new spp.</p>

	Pallo Pakho	Jana Chetana	Bhane	Sirupata	Jyamire
Ecosystems	<u>Diversity</u> D: Need for different habitats. No favourite habitat.	D: Appreciate natural habitat more than degraded, or plantation, but in contrast to Pallo Pakho, want to change the dominant species, due to the lack of direct use of the current dominant species (Rakta Chandan)	E: <i>Not sure of change in forest condition, due to previous <u>lack of interest</u> in community forest.</i> Hade unyun (a fern regarded as a weed), has prevented establishment and growth of seedlings - seen as a major problem	D: Want forest instead of plantation. Focus on protecting natural regeneration rather than plantation - local broad-leaved species of more use to them than pine E: More greenery would be better (value expressed by elites) Q: Joined CFUG to assure rights to share of benefits. Q: (Negative) don't trust government not to take the forest back once improved.	D: Appreciation of negative effects of poor forest condition, on productivity; appreciation of importance of soil condition for forest regeneration. Q: Only interested in forest if their ownership is clearly recognised, permitting their access and management. Otherwise, encroach. Q: Access to forest is through political allegiance. E: No existence values, not very interested in forest because not theirs.
Processes	I: Appreciation of role in water and soil regulation	I: (Negative) competition with farming		I: Want to benefit from more water sources within protected forest, and from soil conservation.	
Biodiversity as a whole	Q: Understanding outsiders' interests in conservation, whole group looking for recognition and honour.	Q: Political capital to be gained by elite groups in conserving biodiversity; officials working with them are looking for recognition and prizes.	Q: Elite groups seeking outside recognition have resulted in over-protection of forests with negative impact on biodiversity		Q: Political capital to be gained by elite groups in conserving biodiversity.

Key: D – direct use (consumption or sale)
I – indirect use (environmental regulation)
E – existence value (appreciation of beauty; intrinsic value)
O – option or bequest value (here including political value, or the realisation that it is of value because others want it)

Preliminary conclusions

Note that our conclusions are highly specific to the research location, and in some cases contrast directly with findings from Cameroon reported in Lawrence et al (2000) and the series of papers by Wong et al (2002) in this workshop.

- Biodiversity aspects most explicitly valued are: range of useful species; increased species diversity; healthy forest; effect on climate and soil erosion (ecosystem function).
- Negative values associated with biodiversity were also in evidence: mostly in relation to option values (rights to benefits from biodiversity), and lack of confidence in government policy.
- The components of biodiversity most directly valued are species, followed by processes and habitats.
- The kinds of value most in evidence are direct use values, followed by indirect use, and option values where rights are secure. Existence value was rarely mentioned (although this might be different in other ethnic groups).
- The utilitarian focus is more marked than in other traditional cultures studied.
- Elites are more market-oriented, and focus on narrower range of species.
- Poor people are more subsistence oriented, more dependent on traditional medicine, and use many medicinal plants
- Tenure and markets could change values significantly. In both cases values relate to perceptions and knowledge.
- Poorer people focus only on use values; only elites hold option values, in relation to biodiversity; often co-opting outsiders' values for political gain.