

Validated RNRRS Output.

New methods are available to help communities extract medicinal plants and other non-timber forest products (NTFPs) from their community forests in sustainable ways. More and more communities are now managing or co-managing their forests and pastures, and this is boosting the amount of medicinal NTFPs being collected. To ensure that resources like medicinal plants last, researchers have worked closely with communities in India and Nepal to develop appropriate ways of ensuring sustainable use. The project has produced a variety of useful outputs, ranging from a method of assessing the sustainability of extraction activities to a handbook to help extension workers train villagers in the new techniques. The methods developed are proving popular and have recently been taken up and transferred to Peru by the UK's Darwin Foundation.

Project Ref: **FRP38**:
Topic: **6. Promoting Success: Partnerships, Policy & Empowerment**
Lead Organisation: **University of Oxford, UK**
Source: **Forestry Research Programme**

Document Contents:

[Description](#), [Validation](#), [Current Situation](#), [Current Promotion](#), [Impacts On Poverty](#), [Environmental Impact](#), [Annex](#).

Description

FRP 38

A. Description of the research output(s)

1. Working title of output or cluster of outputs.

Working title:

Methodology for planning sustainable management of medicinal plants in India and Nepal

New working title:

Participatory science for sustainable forest harvests

2. Name of relevant RNRRS Programme(s) commissioning supporting research and also indicate other funding sources, if applicable.

Forestry Research Programme

3. Provide relevant R numbers (and/or programme development/dissemination reference numbers covering supporting research) along with the institutional partners (with individual contact persons (if appropriate)) involved in the project activities. As with the question above, this is primarily to allow for the legacy of the RNRRS to be acknowledged during the RIUP activities.

R8295

Dr Anna Lawrence,
Programme Leader
Environmental Change Institute
Oxford University Centre for the Environment
The University of Oxford
South Parks Road
Oxford, OX1 3QY, UK
Tel: 01865 275880
anna.lawrence@eci.ox.ac.uk

Mr Giridhar Kinhal
Coordinator GEF and other Special Projects
Foundation for Revitalisation of Local Health Traditions (FRLHT)
74/2 Jarakbande kaval, Yelahanka, Via Attur
P O Bangalore 560064, India
Tel: +91-80-856-8000/1
Fax: +91-80-856-7926
ga.kinhal@frlht-india.org

Research into Use

NR International
Park House
Bradbourne Lane
Aylesford
Kent
ME20 6SN
UK

Geographical regions included:

[India, Nepal, Peru.](#)

Target Audiences for this content:

[Forest-dependent poor.](#)

Mr Harisharan Luintel
 ForestAction Nepal
 Jawalakhel, Lalitpur, Nepal
 P O Box 12207, Kathmandu
 Tel / Fax: 977-1- 4499023
 hl@forestaction.wlink.com.np

4. Describe the RNRRS output or cluster of outputs being proposed and when was it produced?

It is increasingly common for communities to be in the position of managing, or co-managing, forests and pastures. At the same time, there has been an upsurge in the extraction of medicinal plants and NTFPs in general from the wild. Proven scientific knowledge about such species is rare and even where available may not relate well to the ecological or cultural conditions of the community. Development based on the commercialisation of such plants, without concern for the resource, is not sustainable.

To test the sustainability of existing practices, or to compare them with alternative practices, locally specific information is needed about the effects of harvesting on the plants, their reproduction and their habitats. Our methodology enables community members themselves to plan, conduct and interpret experiments that produce information both they and scientists can trust. The results are *reliable* and *relevant*. They have been jointly tested by forest users and foresters/facilitators, and are therefore much more likely to be adopted and incorporated in forest management plans than scientific knowledge which is simply transferred from outside, or local knowledge which remains unexamined.

For all the following please see <http://www.eci.ox.ac.uk/research/humaneco/india-nepal.php> for further information or to download the output.

Working handbook

December 2006

For intermediary organisations working with communities in resource management. The handbook describes how to facilitate and enable communities to develop and test **sustainable management strategies for non-timber forest products (NTFPs) using rigorous scientific methods**. It provides a structured guide to the process and methods for planning, conducting and analysing **participatory experiments** (and **monitoring plots**) in **community forests**, with examples and tips.

Methodology brief

June 2006

A four-page introduction to **community experimentation** through **participatory science** to develop **sustainable harvesting methods for non-timber forest products (NTFPs)**. Summarises the process described in detail in the handbook.

Policy brief

March 2006

For planners and policy-makers, to promote the **methodology of participatory science** to support **community natural resource management**, in particular of **non-timber forest products (NTFPs)**.

Training workshop on statistical analysis

January 2005.

To support institutions and organisations in the use of **statistical** methods to analyse data collected from experimental plots. This **training workshop** increases **organisational capacity** to support communities in scientifically testing and comparing different harvesting or management strategies for NTFPs.

Methodological and technical training

December 2005

Developed for and by forest officers in India to increase their understanding and use of the **methodology**, thereby increasing their capacity to support **communities** when scientifically testing and comparing different **harvest** or **management** strategies for **non-timber forest products (NTFPs)**.

Poster series

March 2004 – February 2006.

Designed to be displayed in communities to provide simple and accessible reminders of the purpose of **experiments, methods**, species information and the **participatory** process at the **community** level.

7. Numerous papers, newspaper articles and workshop presentations designed to raise awareness and stimulate dialogue about the need for sustainable production linked to promotion of NTFPs as a poverty alleviation strategy.

5. What is the type of output(s) being described here?

Product	Technology	Service	Process or Methodology	Policy	Other Please specify
	X		x		

6. What is the main commodity (ies) upon which the output(s) focussed? Could this output be applied to other commodities, if so, please comment

Non Timber Forest Products, (NTFPs), particularly medicinal plants. The method can be adapted according to part harvested leaf, root / tubers, whole plant, fruits, etc.

Because it is a process, the outputs can be used by any community group to test different ways of managing and harvesting any species, including timber if necessary, not only from the forest but also from cultivated land.

7. What production system(s) does/could the output(s) focus upon?

Semi-Arid	High potential	Hillsides	Forest-Agriculture	Peri-urban	Land water	Tropical moist forest	Cross-cutting
x		X	x	x		X	

8. What farming system(s) does the output(s) focus upon?

Smallholder rainfed humid	Irrigated	Wetland rice based	Smallholder rainfed highland	Smallholder rainfed dry/cold	Dualistic	Coastal artisanal fishing
X			X	X		

9. How could value be added to the output or additional constraints faced by poor people addressed by clustering this output with research outputs from other sources (RNRRS and non RNRRS)?

Our methodology enables communities to scientifically test local knowledge and management regimes on local forests, thereby increasing the relevance and credibility of results.

Our project was designed to build on previous RNRRS projects, including recommendations for biometric protocol (ZF0077), participatory inventory and monitoring methods (R7475), and the participatory action and learning process (R6918).

Our outputs focused on experimental validation of sustainable harvesting. It could benefit from being clustered with the following projects all included with the permission of the project leaders:

Project	Output	Added value
ZF0077	NTFP Inventory (Wong & Kleinn, 2007)	These FAO guidelines provide further decision-support for the selection of appropriate inventory techniques.
R8305	Handbook for sustainable harvesting of tree bark	Tested methods for tree bark harvesting would give communities a good base to start experimenting with local bark harvesting management
	Extensive network of contacts in Southern Africa	Awareness has been raised regarding the importance of sustainable harvesting, and these contacts may be interested in workshops and training in our methods, so as to extend techniques to other types of NTFP and other species.
	Medicinal Plant commercialisation (Diederichs, 2006)	Use of this output will combine with outputs from R7925 to aid communities involved in the methodology to commercialise NTFPs in their studies.
R7925	CD-ROM Methods manual for data collection and analysis	All four of our participating communities asked us for information on commercialisation of NTFPs. These outputs would enable supporting institutions to answer such questions in the future.
R7856	Participatory policy process framework	Clustering with this output could facilitate the integration of participatory science methodology and experimental results into local policy.

Non RNRRS projects:

Project report published by FRLHT for the Government of Chattisgarh State, India:

“Participatory Value addition to NTFPs in Chattisgarh state of India” by G A Kinhal.

The report sets out guidelines for assessing surplus and building methods of value addition to Medicinal Plants.

A proposal to the Darwin Initiative is currently being prepared by Dr Julie Hawkins (Reading University) in collaboration with FRLHT and Dr Anna Lawrence, on ‘Securing sustainable livelihoods by promoting legal Indian medicinal plant trade’. If successful this would complement the possible clustering with R7925.

Validation

B. Validation of the research output(s)

10. How were the output(s) validated and who validated them?

The methodology has been tested in an exceptionally robust and collaborative manner. Every stage of the process was itself validated by members of all three partner organisations. Comparison of experience and reflection on methods and outcomes was built into the project at regular intervals and contributes to a strong sense of adaptiveness of the approach.

Methods were also validated by community members, who commented on the ease or difficulty of certain activities, and any benefits gained from particular methods, through focus group discussions, interviews, and also informally during field work.

All methods have been recorded in the **handbook**, which also features case studies often used to document the modification process which led to their development. The draft handbook was tested in workshops with members of NGOs, communities, forest departments and universities in both India and Nepal, and comments were taken into account in the final version.

The entire tested process has been summarised in the **methodology brief**, which was approved by

members of all three collaborating organisations. This was also distributed to all participants in the Expert Workshop on Assessing the Sustainable Yield in Medicinal and Aromatic Plant Collection, International Academy for Nature Conservation, Isle of Vilm, Germany, 14 - 17 September 2006, and feedback was incorporated into the revised version now available on the ECI website.

The **policy brief** was validated by the project liaison committees set up in both India and Nepal, consisting of representatives from NGOs, Forest Departments, universities, independent research institutions, cooperatives and local institutions.

The **training workshop on statistical analysis** was tested by members and partners of our collaborating organisations. They provided feedback on the methods used during the workshop and workshop aids. Understanding was further tested during actual project statistical analysis.

The **poster series** was assessed and validated by local communities in which the posters were displayed. Community members involved in Community to Community Training (CTCT) now use these posters as aides when talking to other communities about the need for such research, and their experiences.

11. Where and when have the output(s) been validated?

Community validation occurred in the four study locations: two in India, two in Nepal. The four villages represent four different forest types: semi arid (India), tropical moist forest (India), hillsides (Nepal) and forest-agriculture interface (India and Nepal)

Community research teams were formed in each village, known as 'NTFP research committees' in Nepal and 'Task teams' in India. These were elected by the forest user communities, and included women, poor people and traders to ensure they represented all interest groups affecting and affected by forest harvests. Task teams facilitated the intergenerational knowledge assimilation, as members ranged broadly in age. They also covered multi stakeholder knowledge and aspirations for the research.

Dates for testing:

1. Working handbook: June 2003 – February 2006, many locations in Karnataka, Nepal and Oxford
2. Methodology brief: June 2006 (by email); September 2006 Isle of Vilm, Germany
3. Policy brief: February 2006 (by email)
4. Training workshop on statistical analysis: January 2005; Nagarhole National Park, India; repeated support visits Kathmandu and Bangalore, to January 2006
5. Methodological and technical training: February 2006 – September 2006, various locations in Karnataka State, India
6. Poster series: March 2004 onwards, Agumbe and Savandurga, Karnataka, India
7. Presentations at conferences, lectures and workshops: August 2004 – September 2006. Nepal, India, Isle of Vilm Germany, Vancouver Canada.

Current Situation

C. Current situation

12. How and by whom are the outputs currently being used? Please give a brief description

At the level of intermediary organisations (national NGOs, state agencies) the outputs are being used as follows:

- The Karnataka State Forest Dept (KSFD) has assimilated this process into its training packages and has started inviting Task Team members from the partner communities to conduct training for staff and village forest committee members from other districts of the state.
- Methodology currently being implemented in a project involving four Indian States: Karnataka, Tamil Nadu, Orissa and Madhya Pradesh, with the support of UNDP, the Ministry of Environment and Forests, and the Government of India.
- Within Karnataka state, Joint Forest Management (JFM) microplans have been changed to include a specific chapter on Methodology for Sustainable Harvest and Adaptive Management.
- Two states in India (Andhra Pradesh and Madhya Pradesh) have written proposals for the initiation of a CTCT programme to train the local forest communities under JFM. These proposals are under consideration with the State Forest Departments under projects with external aid (JBIC in Madhya Pradesh and World Bank in Andhra Pradesh).
- Other NGOs are using the posters and journal papers to raise awareness and promote methods around Nepal.

The outputs are designed to be used by intermediary organisations. As an indication of their application however, it is important to note that the outputs have all led to the following in the project partner communities:

- Project learning institutionalised (through new and revised management plans) and practiced
- new experiments developed for other species
- Community research committees institutionalised within the community forest management institutions (CFUGs / VFCs).
- Participating communities teaching other communities about the methodology through study tours, exposure visits and CTCT
- Other communities fully or partially adopting methods, with task teams are being formed by five other VFCs to start the application of the methodology in Karnataka, India.
- Village level NTFP enterprises created as a result of the research.
- NTFP management reserved for poor families in order to improve livelihoods in Nepal

13. Where are the outputs currently being used? As with Question 11 please indicate place(s) and countries where the outputs are being used

India:

- Agumbe (Western Ghats, Karnataka):
- Savandurga (Bangalore District, Karnataka)
- CTCT in villages in neighbouring districts
- State-wide: KSFDF forest officers have received training to use method with communities involved in JFM
- Nationally: In a new project of the Country Cooperation Framework II Project of the UNDP, the use of the methodology at eight sites in four states, transferring the technology to general forest management in India through working plans.

Nepal:

- Baisakheshwori CFUG (Dolakha District)
- Sundari CFUG, Terai
- At district level: Baisakheshwori CFUG have been promoting NTFP-based Enterprise Development activities in the Dolakha district with support from the Nepal Swiss Community Forestry Project.
- Nationally: Participants in the handbook testing workshop have requested copies of the final handbook
- Nationally: ForestAction have incorporated a section on this methodology in their community forest user group training package.

Peru:

- By ECI and a local NGO in the Peruvian Amazon, through a project funded by the UK Darwin Initiative, to develop sustainable harvest and commercialisation of NTFPs with indigenous communities.

14. What is the scale of current use? Indicating how quickly use was established and whether usage is still spreading

In India, excellent working relations between our partner NGO and the State Forest Department have enabled extensive use of the methodology. Linkages to the Indian Forest Service have facilitated replication into three other states, with further possibilities in another two states, as documented above. This move from state to national scale is in the early stages.

In Nepal, current direct use is limited to the research communities and replication is inhibited by the current (and until recently severe) security situation. However, awareness about the research and outcomes is reaching the national level through community-to-community visits and incorporation into ForestAction's training packages.

A high level of national and international interest in these outputs was expressed at the project maturity workshop, and at the Expert Workshop on Assessing the Sustainable Yield in Medicinal and Aromatic Plant Collection, International Academy for Nature Conservation, Isle of Vilm, Germany, 14 - 17 September 2006. This latter event was hosted by the German Agency for Nature Conservation in connection with the development of the International Standard for the Sustainable Wild Collection of Medicinal & Aromatic Plants ISSC-MAP, and collaboration to incorporate the methodology and findings of this project is ongoing.

As documented above, the methodology is also being applied in Peru, showing applicability to similar natural resource management systems on other continents.

15. In your experience what programmes, platforms, policy, institutional structures exist that have assisted with the promotion and/or adoption of the output(s) proposed here and in terms of capacity strengthening what do you see as the key facts of success?

Both India and Nepal have programmes which transfer some autonomy to communities when managing forests. This community **tenure** of forests enabled project success, as local people were interested in learning how to better manage their resource and in devoting time to the process.

Both countries also have natural resource management policies that highlight the need for improved NTFP management. The NTFP and Medicinal Plant Policy was enacted in 2004, and strongly promotes the NTFP sub-sector in Nepal, although currently with more attention to production than to sustainability.

As the Karnataka State Forest Department was an active partner in the development and implementation of the methodology, it has already shown interest in adopting the methodology and has selected two sites in the state to initiate the process. A similar process in Nepal was inhibited by the security situation.

Close links with and experience of the forest departments in both countries greatly facilitated our partner NGOs to help communities make changes to their existing management plans to incorporate findings from experiments.

During the project, a NTFP Network was developed in the Nawalparasi District Nepal. This was created as a forum for exchanging information about NTFP management and commercialisation opportunities, and aims to mobilise CFUGs to promote NTFP management in the district. Moreover, it has been promoting marketing links for different products, supporting communities in the cultivation of NTFPs and encouraging CFUGs within the district to establish local level NTFP based enterprises. Additionally, in Nepal the NGO partner accessed the various tiers of users federations, networks, NGOs and their federations who are actively supporting in organizing series of sharing platforms including workshops and training at different levels.

In Nepal, the participatory action and learning (PAL) approach in Nepal embedded the technology development in a deliberative and reflexive methodology that led to direct changes in the circumstances of the poorest. Participatory methods also increased communication and understanding of different knowledge bases (scientific and local), and respect for these different knowledge sources. Exchange

visits between participating communities also significantly increased interest and commitment to the project. Study tours and exposure visits from communities around the country to the research CFUGs raised the interest of other communities in managing and utilizing NTFP resources in their respective community forests.

Both the project planning workshop and the Project Maturity Workshop provided important fora and processes for the promotion of project lessons and methodologies.

Key factors in success include:

- Lead institutions experienced in participatory methods and facilitation, and committed to genuine participation by communities;
- Lead institutions with excellent existing relationships with communities, state forest departments, NGO networks, national policy makers, and international agencies.
- Established trusting relationships between lead institutions and users.
- Time dedicated to careful building on working relations;
- Clarity of expectations through detailed participatory project planning and memoranda of understanding with project partners and communities;
- Project maturity workshops ensuring uptake at the national level;
- Communities with established and positive experience of forest management;
- Policy context permitting community forest management.

Current Promotion

D. Current promotion/uptake pathways

16. *Where is promotion currently taking place? Please indicate for each country specified detail what promotion is taking place, by whom and indicate the scale of current promotion*

Current use (questions 12 and 13) overlaps significantly with promotion in terms of place and scale. The research team developed a comprehensive promotional strategy at the project planning workshop, and has continued in use over the last four years. The strategy includes:

Communities: brochures, posters, newspaper articles, study tours, festivals, workshops, CTCT, PMW
Forest Departments: training, workshops, proposals for uptake and institutionalisation of methods, handbook, technical notes, newspaper articles, handbook testing workshop, PMW
Research Institutions: fact sheets, case studies, methodology brief, handbook testing workshop, scientific articles and book chapters, conferences and workshops
NGOs: workshops, articles, handbook, handbook testing workshop, methodology brief
Policy makers: policy brief, methodology brief, articles.

India

- Through the efforts of the Indian lead partner and his connections with the Indian Forest Service, the project approach is being actively promoted within Karnataka, and in three other states, as detailed in Q12.
- A GEF funded project will use the methodology in three more states (Uttaranchal, Arunachal Pradesh and Chattisgarh).
- Numerous presentations have been made to foresters and policy makers at national level.

Nepal

- Methods promoted at conferences, workshops, in national journals and through training, though the security situation in Nepal is inhibiting national promotion to some extent.
- The research communities have promoted project processes and lessons at the local level through interactions and publication in the calendar.
- Sundari CFUG and the NTFP Network of Nawalparasi have promoted project lessons through participating and presenting their lessons and products in trade fairs.

Internationally

- Invited presentation to the Expert Workshop on Assessing the Sustainable Yield in Medicinal and Aromatic Plant Collection, International Academy for Nature Conservation, Isle of Vilm, Germany, 14 - 17 September 2006. This attracted considerable interest and has led to on-going collaboration on refinement of the International Standard. The methodology brief was distributed, reviewed and modified at this workshop.
- "Participatory science: harvesting experiments for sustainable medicinal plants in India and Nepal." Presented at the International Symposium on Society and Resource Management, Vancouver, 6-9 June 2006.

17. *What are the current barriers preventing or slowing the adoption of the output(s)? Cover here institutional issues, those relating to policy, marketing, infrastructure, social exclusion etc.*

In comparison with other projects managed by this project leader, this one stands out as generating particularly high levels of interest and demand, as expressed through feedback at the PMW and international meetings, as well as more general interactions. Therefore the predominant barrier is not interest or need, but resources, and context specific adaptation.

In individual countries, constraints include

- lack of community forest policy or tenure
- low official priority attached to NTFPs; or NTFP policy based on high expectations of economic return, without attention to sustainability of resource base;
- difficulties of defending the forest where tenure is insecure;

- the need for monitoring to be on-going, and therefore for strong partnerships with institutions
- lack of knowledge, skills and capacity to promote the research findings to all levels.

The incentive to invest time and resources in the kind of experimental processes advocated by this project, comes from the potential for marketing the species concerned. Consequently, wider constraints include:

- highly uncertain markets, and
- currently low value added in many rural situations.

In Nepal political conflict also inhibits adoption of outputs.

18. What changes are needed to remove/reduce these barriers to adoption? This section could be used to identify perceived capacity related issues

[see also question 23]

The following address the barriers noted in the previous question:

- training, particularly of trainers, in the context of workshops designed to adapt methods to specific contexts so that options are simplified and recommendations easily recognised as relevant;
- enabling tenure and policy context allowing resulting action plans to be respected and supported
- institutional incentives for staff who work in a participatory way.
- greater importance attached to NTFP management and harvest at policy level
- marketing of sustainably harvested produce obtained by adopting such standards developed under this methodology
- consumer education; regulations in place to ensure all material harvested from the wild conforms with the International Standard for the Sustainable Wild Collection of Medicinal and Aromatic Plants (ISSC MAP).
- The capacity of research institutions to promote and disseminate results needs to be increased so that adequate knowledge and skills can be transferred to other institutions and individuals.
- Training in facilitation and statistical methods needs to be available to both Forest Officers and NGO staff wishing to facilitate such projects.
- At the community level, promotion of pro-poor capacity-building strategies will enable NTFP harvest to contribute to the livelihoods of the poor.

19. What lessons have you learnt about the best ways to get the outputs used by the largest number of poor people?

A promotion strategy based on careful targeting of different types of outputs to selected stakeholders was very effective (see Q 16 for further details). Outputs were tailored such that end users were accustomed to the format, local language was used and common vocabulary. All levels of stakeholders were considered, from rural community members to policy makers.

The skills, experience, and high national standing of our partner NGOs created a project which was effective at many levels simultaneously, including good and time-tested community relations, membership of NGO networks, and direct access to state and national policy makers. This allowed an unusual number of events where these different stakeholders engaged with energy and interest – most notably the PMW.

At the community level a number of **innovative extension methods** were developed and found to be successful. Photographs can be supplied on request.

India:

- A set of posters explaining the process in the local language
- Community-to-community training (CTCT) whereby participating communities visited others involved in JFM and used some of the posters to train them to promote sustainable harvesting
- A schoolchildren's march to advertise sustainable harvest of NTFPs

Nepal:

- Study tours between participating communities and other local communities.
- The maintenance of demonstration plots gave important exposure to visiting communities.
- A strong emphasis on the social and political processes underlying this approach to forest management, resulting in a refinement of the Participatory Action and Learning (PAL) process developed in earlier RNRRS projects (R6918).
- The development of the NTFP network led to intra- and inter-community meetings to raise the awareness of the need for sustainable harvesting of NTFPs.
- Poster production with the consultation of community members and distribution

Targeting other types of stakeholders we found the following methods to be successful:

- Formation of community research teams that are socio-economically representative.
- Training forest officers in the methodology
- Training the field facilitators in the PAL process, methodology and statistical methods
- Publication of issue based articles in local language and journal and wider distribution of those products
- The Project Maturity Workshop enabled interaction with multiple stakeholder groups in one session

Impacts On Poverty

E. Impacts on poverty to date

20. Where have impact studies on poverty in relation to this output or cluster of outputs taken place?

The project concluded eight months ago so it is still too early to formally evaluate poverty impact. However impacts were noted informally by project partners and through facilitating reflection discussions amongst the participatory communities. In particular, the use of the PAL approach in Nepal embedded the technology development in a deliberative and reflexive methodology that led to direct changes in the circumstances of the poorest. By reflecting on levels of participation in decision-making and benefits, members of both CFUGs developed specific benefit schemes for landless and the poorest families in each community, including providing new homes for some.

More formally, in Nepal ForestAction carried out a participatory wealth ranking of all community members, to assess equity (Luintel, 2006).

More generally, high hopes have been attributed to NTFPs and their anticipated role in simultaneously addressing needs for natural resource conservation and economic development (Tewari 1993). These hopes have now evolved into a more sophisticated understanding of the variables, recognising that NTFP sustainability and benefits must be evaluated on a case by case basis (Lawrence 2003), and recent studies show the specific benefits accruing to the landless, rural unemployed and women (Bisong and Ajake 2001, Pandit and Thapa 2004, Quang and Anh 2006). Furthermore the benefits of community forest management are seen as linked to the participation of forest users in monitoring and evaluating that management (Hartanto, Lorenzo, and Frio 2002).

Our project is designed to maximise the context specificity and local input of these processes and hence the contribution to poverty eradication.

21. Based on the evidence in the studies listed above, for each country detail how the poor have benefited from the application and/or adoption of the output(s)

As the outputs were only launched in March 2006, we do not yet have formal evidence for the poverty impacts of this project. However, throughout the project impacts on poverty were informally observed.

Human capital:

- Skills in scientific sampling and enumeration techniques combined with rigorous observation of different experimental regimes raise capacity of individuals, who in turn contribute to more informed management decisions.
- Increased knowledge of resource through monitoring and assessment

Social capital:

- Community members gain the confidence to draw up a management plan for the forest, thereby enhancing legitimacy of collaborative forestry
- Through discussions, exchange of knowledge with scientists and scientific testing of different management regimes, perceived value of local ecological knowledge raised.
- In partnership with external agencies, information pathways developed on which to base adaptive forest management decisions
- Through such information and capacity building rural forest users improve control of access to resources (particularly in relation to illicit harvesters, and neighbouring communities)
- Tenure of forest more secure with good community management.
- Health improved where access to medicinal plants is assured (medicinal plant use has measurably increased in the four partner communities)

Natural capital:

- Forest users awareness and value of sustainable harvesting methods increased. Awareness of the benefits of sustainable harvesting, such as improved continuity and stability of the resource, promotes adoption of methods.
- Attitudes towards harvesting changed; less destructive, more traditional methods tested and often readopted
- Further improvements anticipated after implementation of revised management plans

Financial capital:

- Value added at to medicinal plants at village level
- Tools gained to reduce variability and risk in production
- Higher quality products gaining higher market prices
- Access may be gained to emerging markets for certified sustainable products

In Nepal, the extreme vulnerable and moderately poor benefited the most from the research process and outcomes. Social capacity was increased through use of the PAL process, and extreme vulnerable poor members of the community were invited to work on the project. Land was allocated for them to cultivate NTFPs, financial and technical support was provided by the CFUG for NTFP cultivation and other pro-poor schemes were started as a result of community reflection processes.

In India, the impact on livelihoods was measured at institutional level and among individual NTFP collectors.

Quantitative measures to date:

- Ninety members from three VFCs in Agumbe and 135 members from five VFCs in Savandurga indicated a positive impact on their livelihoods.
- Indicators used to assess these impacts are ecological, economic and social incentives generated for the local community.

The numbers of people realising a positive impact on their livelihoods, capacity and social networks are:

- 225 (60% -75%) members of the local VFCs, and their households in India
- 1560 households (equating to around 7800 people) in Nepal

In Nepal, Sundari CFUG has received a 10% increase in profits from the management of NTFPs arising from the research project.

Environmental Impact

H. Environmental impact

24. What are the direct and indirect environmental benefits related to the output(s) and their outcome(s)?

Policies supporting trade of NTFPs currently neglect the serious consequences for the resource base, and traditional forestry science does not have the resources to address this for the very diverse range of species and social contexts that they occur in.

Through using this methodology, forest users become aware of change in their environment. Local knowledge is widely promoted as a solution to environmental problems, but such knowledge can be dormant or subconscious, or overridden by concerns about resource access and security. This process helps resource users to become more aware of this knowledge and to act on shared observations about resource use and change. Their knowledge may also be highly context-specific, and is strengthened by combining it with more universal scientific knowledge thereby also stimulating the desire to manage it sustainably. In particular such awareness and information is formalised through revised management plans to ensure that the forest resources are monitored and managed sustainably.

25. Are there any adverse environmental impacts related to the output(s) and their outcome(s)?

No

26. Do the outputs increase the capacity of poor people to cope with the effects of climate change, reduce the risks of natural disasters and increase their resilience?

An adaptive collaborative approach provides the institutional and technical flexibility to cope with change. The adaptive experimental approach developed here is therefore at the core of socio-ecological resilience.

The approach assumes that the social, institutional and ecological context of resource management is changing, and affecting rural livelihoods. It enables community members to explore the factors affecting such change, and to propose and test adaptations to such change. It explicitly draws on and combines local and scientific knowledge processes, ensuring the benefits of both small and large scale awareness of change.

Adaptation only occurs when information is absorbed and applied to resource management. Importantly this approach provides the information necessary for adaptive management, in a form which is relevant and reliable to the stakeholders. In other words, credibility is established by direct involvement in the information generation, and the results are therefore more accessible to the local resource managers, and likely to be taken up by them.

Annex

Acronyms

BFN	Federal Agency for Nature Conservation, Germany
Germany	
CFUG	Community forest user group
CTCT	Community to community training
ECI	Environmental Change Institute
FAO	Food and Agriculture Organization
FD	Forest department
FRLHT	Foundation for the Revitalisation of Local Health Traditions
GEF	Global Environment Facility
GO	Government organisation
ICIMOD	International Centre for Integrated Mountain Development
ISSC MAP	International Standard for the Sustainable Wild Collection of Medicinal and Aromatic Plants
IUCN	The World Conservation Union
JFM	Joint Forest Management
KSFD	Karnataka State Forest Department
MAPPA	
MDG	Millennium Development Goal
NGO	Non-government organisation
NTFP	Non timber forest product
PAL	Participatory action and learning
PMW	Project maturity workshop
RECOFTC	Regional Community Forest Training Centre
RNRRS	Renewable natural resources research strategy
VFC	Village forest committee

Annex 1: references

- Bisong, F., and A. Ajake. 2001. An economic analysis of women's dependence on forest resources in the rainforest communities of South-Eastern Nigeria. *Global Journal of Pure and Applied Sciences* 7:345-350.
- Hartanto, H., M. C. B. Lorenzo, and A. L. Frio. 2002. Collective action and learning in developing a local monitoring system. *International Forestry Review* 4:184-195.
- Lawrence, A. 2003. No forest without timber? *International Forestry Review* 5:3-10.
- Luintel, H. 2006. Do civil society organizations promote equity in community forestry? A reflection from Nepal's experience. Chapter 9 in: Mahanty, S., J. Fox, L. McLees, M. Nurse, and P. Stephen. Editors. 2006. *Hanging in the Balance: equity in community-based natural resource management in Asia*. Bangkok: RECOFTC and East-West Center. Available from: <http://www.eastwestcenter.org/stored/misc/HangingInBalance09Nepal.pdf>
- Pandit, B. H., and G. B. Thapa. 2004. Poverty and resource degradation under different common forest resource management systems in the mountains of Nepal. *Society & Natural Resources* 17:1-16.
- Quang, D. V., and T. N. Anh. 2006. Commercial collection of NTFPs and households living in or near the forests: Case study in Que, Con Cuong and Ma, Tuong Duong, Nghe An, Vietnam. *Ecological Economics* 60:65-74.
- Tewari, D. N. 1993. Non-timber forest produce in poverty alleviation. *Indian Forester* 119:959-969.
-