Towards sustainable harvests of natural medicines

Validated RNRRS Output.

Three new books have sparked moves to balance competing demands on threatened forests in southern Africa. One in three people in developing countries use traditional medicines, especially the very poor. But, because gatherers collect tree bark and other natural medicines from communal or state-owned forests, supplies are threatened. The new books suggest sustainable ways of harvesting bark for traditional medicine from forests and woodlands, commercialising medicinal plants and taking stock of non-timber products from forests. Together, the three books offer vital information for preparing forest management plans—including community management. Already, many different stakeholder groups, from traditional healers to senior forestry officials use the books. This is a positive step towards collaboration to sustain forest resources in southern Africa.

Project Ref: FRP39: Topic: 5. Rural Development Boosters: Improved Marketing, Processing & Storage Lead Organisation: Wild Resources Ltd, UK Source: Forestry Research Programme

Document Contents:

Description, Validation, Current Situation, Current Promotion, Impacts On Poverty, Environmental Impact, Annex 1, Annex 2,

Description

FRP39

A. Description of the research output(s)

Research into Use

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

Geographical regions included:

<u>Malawi, Mozambique, South Africa, Zambia,</u> Zimbabwe,

Target Audiences for this content:

Forest-dependent poor,

RIU

1. Working title of output or cluster of outputs.

Southern Africa Sustainable Indigenous Resource Use

Abbreviated title: SASIRU

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

Forest Research Programme FAO and South African co-funding of publications arising from associated projects

3. Provide relevant R numbers along with the institutional partners involved in the project activities.

R8305 / ZF0192 De facto partnered with ZF0077

Lead institutional partners Dr Coert Geldenhuys, ForestWood cc, P.O. Box 228, La Montagne, Pretoria 0184, South Africa. email: <u>cgelden@mweb.co.za</u>

Mr Mazumba Fabian Malambo, Copperbelt University, School of Forestry & Wood Science, P.O. Box 21692, Kitwe, Zambia. E-mail: <u>fmalambo@cbu.ac.zm</u>.

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Prof. Christoph Kleinn, Institute of Forest Management, Faculty of Forest Sciences and Forest Ecology, Georg-August-Universität Göttingen, Büsgenweg 5, 37077 Göttingen, Germany. e-mail: <u>ckleinn@gwdg.de</u>

Other institutional partners CPWild, Stellenbosch University, South Africa Department of Water Affairs and Forestry, South Africa Eduardo Mondlane University, Maputo, Mozambique Fakisandla Consulting, Durban, South Africa FAO, Rome & Harare Forest Research, Kitwe, Zambia Forestry and Agricultural Biotechnology Institute, University of Pretoria, South Africa Kaloko Trust, Zambia National Herbarium and Botanical Gardens, Zomba, Malawi Sizamimphilo Association, Durban, South Africa South Africa National Parks University of Wales Bangor, UK University of Witwatersrand, South Africa

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

The project produced three principal outputs commencing in 2005 and continuing until mid 2007.

(1) Books which present the state-of-the-art in;

- (a) **bark harvesting** (Wong *et al*, 2007),
 - (b) medicinal plant commercialisation (Diederichs, 2006) and

(c) **NWFP resource assessment** (Wong & Kleinn, 2007)

in a form suitable for use by forestry technical officers, NGOs, community groups and natural resource managers.

The bark handbook (a) presents advice on the selection of appropriate harvesting regimes for harvesting bark for use in traditional medicine from afro-montane forest and miombo woodlands. Three basic management regimes are presented based upon species response to wounding and simple experiments are described to select the best regime for species other than the 20 included in the project experiments. The CPWild book (b) is concerned with the commercialisation of **medicinal plants** to enhance livelihoods. The FAO guidelines (c) provide decision-support for the selection of appropriate **inventory** techniques for any NTFP. Together these three books address several technical shortcomings in previous approaches to **sustainability** of medicinal plant management.

(2) A new **SADC** institution to foster collaboration in the development and implementation of sustainable use of the **indigenous resources** of **southern Africa**.

As a multi-country project R8305 fostered the development of a regional perspective which was consolidated at the Trees for Health Forever workshop held in Johannesburg in November 2005. The meeting culminated in a resolution (See Annex 1) that formed a regional working group (later termed the Indigenous Resources Working Group – IRWG) to foster close collaboration and action to implement sustainable forest management with an initial focus on medicinal plants. This was signed by policy advisors, forest managers, herbalists, traders and NGOs from seven SADC countries. A meeting in March 2006 prepared a programme of activities for the IRWG (See Annex 2). A regional response to forest resource management issues had previously been lacking.

(3) Awareness of the risks to health security, livelihoods and forest biodiversity posed by unsustainable harvesting and inter-regional trade of medicinal plants.

The findings of the various components of R8305 were summarised in a series of policy briefs and media stories intended to alert people the supply of medicinal plants is endangered by current demand. The messages generated by R8305 proved to be an emotive issue, of interest to local media and has generated considerable demand for further interaction particularly from TMP. This

has potential as an entry point for **civil society** engagement in **forest sustainability** which has proved elusive.

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

Product	Technology	Process or Methodology		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

Bark collected from indigenous forest trees for use in traditional medicine

The output also applies to other medicinal plants, use of bark for other purposes and non-timber forest products in general.

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

[Semi-Arid	High potential			Tropical moist forest	Cross- cutting
			X			

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

Smallholder rainfed humid	Irrigated	 Smallholder rainfed highland		Coastal artisanal fishing

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)?

Clustering R8305 outputs with those outlined below would facilitate the development of an integrated approach to NTFP management, the adaptation of research outputs for use in the SADC region and an exemplar pilot study of the integration of science and development:

R8295 – developed a participatory approach which applies scientific principles to the development and validation of harvesting prescriptions for medicinal plants. This will complement R8305 which did not identify optimal site and species-specific harvesting techniques.

R6709 – generated methods of tree regeneration and woodland management for wood. These methods are applicable to the production of bark where whole-tree harvesting is recommended.

R7475 – developed a manual to assist in the development of biodiversity guides. Many of the

medicinal plant species are not well known and a guide to the commonest medicinal species in file:///F|/FRP39.htm (4 of 16)03/03/2008 14:17:13

miombo woodland would be invaluable.

R7925 – the decision-support tool developed by this project could be used to identify business models for medicinal plant based enterprises which would complement the CPWild experience in South Africa.

The institutional output (IRWG) is intended for regional dissemination and action – as such it offers an opportunity to add significant value to all the projects listed above. Since the IRWG is also intended to encompass other NTFPs, it could act as a dissemination channel for:

R7822 – this Zimbabwean project deals with domestication and commercialisation of mopane worm which is an important resource across the region.

R7250 (Flexibility Fund) – this Malawian project investigated edible miombo fungi which are an important food resource especially in the hungry period of the early rains across the region.

Collaboration with non-DFID projects would also add considerable value to the output. Early discussions have been held with IUCN and FAO to identify areas of synergy with new and existing SADC programmes.

[1]

Validation

B. Validation of the research output(s)

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

The outputs for R8305 have only just been completed and key outputs have yet to be disseminated so it is too early to demonstrate the full impact of uptake on dependant livelihoods or the resource base.

However, during the project the R8305 team worked closely with many and varied stakeholder groups from village-based healers through to senior officials of the Forestry Departments and including forestry training institutes. In all but a minority of cases the project outputs were well received and have resulted in many expressions of demand for completed outputs (see Question 11). Representative examples of stakeholder responses to project outputs are:

• FRIM and hence resource supply issues are now represented on the traditional medicine steering committee of the Malawi National AIDS Commission (NAC). The steering committee approves research projects on traditional medicines for funding by NAC. It has been suggested that projects to consider sustainability of supply could be funded by NAC.

Even before publication the project is receiving requests for this book outside the project partner countries. In particular from SAFIRE in Zimbabwe to support their GEF medicinal plants project and also from Indian collaborators on R8295 as they did not include bark harvesting in their experiments and this is a common practice in India.

• Official representatives of regulatory authorities from forestry, conservation and TMP associations attended the Johannesburg workshop and signed up to the workshop resolution.

• Researchers were willing to contribute to the project team to the extent that the research team grew from a group of seven at the start of the project to over 25 by the end.

• Forestry colleges and universities willing to utilise project outputs as teaching materials with the forestry curriculum and expressed a demand for more material on NTFP management (see Annex 3).

• Village-level workshops in Luansobe (Kaloko Trust), Zambia demonstrated that the project outputs are pertinent at this level and that raising awareness of the threats to medicinal species can prompt internal village-led discussion on the formulation of resource-conservative collection regulations.

• In South Africa as shown by the previous CPWild project engagement in sustainable bark

harvesting can increase livelihood security for poor, urban, female traders in medicinal plants by legalising a previously illegal activity. Membership of the Sizamimphilo Association continues to grow and associations are being established in secondary markets.

• Project messages have been considered newsworthy in Malawi where media interest has been sustained with several unsolicited follow-up newspaper articles and radio programmes.

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

The majority of project outputs to date are concerned with awareness raising and advocacy except in a few instances where the project team worked directly with primary stakeholders during information collection (IK and market surveys) or monitoring of experiments. The main stakeholder groups with whom there was significant interaction during the project as listed in Table 1. This list is restricted to those stakeholder groups where uptake can be verified or there has been feedback to the project team, other users known to the project team are listed in Table 2.

Country	Targeted social groups	Place	Date
Malawi	College & University lecturers	Zomba	Mar 2005
	Research policy makers (NAC)	Lilongwe	2005-to date
	Media	Zomba	2005-to date
South Africa	Sizamimphilo Association	Durban Herb Market &	2003-to date
	[mainly poor, urban women]	Umzimkulu, Kwa-Zulu-Natal	
	Muti market traders [including men as well as women]	Faraday Market, Johannesburg	Jun 2005
	DWAF	Umzimkulu	2003-2005
Zambia	THPAZ	Kitwe	2003-to date
	Forestry college lecturers	Mwekera College	Jan 2005

Table 1 Stakeholder groups who have validated project outputs

	Traditional councillors Headmen Traditional healers Bark rope harvesters Users of traditional medicines Tie and dye practitioners [182 people included including men and women and a range of ages]	182 people from 8 villages within Kaloko Trust (Luansobe, Copperbelt Province)	Aug-Sep 2004
SADC	Decision-makers Opinion leaders	Johannesburg	Nov 2005
Global	ISSC-Medicinal Plants Specialist Group	Vilm, Germany	Sep 2006

End users/beneficiaries for technical outputs i.e. bark collectors highlighted in bold, other targeted groups are intermediate users on the uptake pathway.

All technical outputs are intended for use in the forest-agriculture interface production system. Although most collectors are likely to combine farming with collection, trade or TM practice, they are not necessarily farmers or reside close to the forest.

[1]

The extreme vulnerable poor group of Hobley & Jones (2006)

Current Situation

C. Current situation

12. How and by whom are the outputs currently being used?

Outputs (2) and (3) (see Question 4) are being actively promoted by FRIM and CBU in their respective countries and in SADC as opportunities present themselves.

In Malawi, advocacy for sustainable management of medicinal plants has been particularly successful. In particular the media (TV documentary, radio programmes and newspaper) continues to make use of Output (3). Interest sparked by the media has also been sustained with more than 20 telephone enquiries to FRIM from traditional healer groups, forest managers, forest educational institutes and NGOs requesting more further information. The lead collaborator for Malawi is a member of a traditional medicine steering committee which provides an on-going opportunity to include resource issues in traditional medicine research programmes.

Various technical outputs are in use in teaching in CBU and GAU.

All project collaborators are engaged in the finalisation and dissemination of Output (1) publications. DWAF have agreed to publish the Bark handbook (1a) and FAO the NWFP assessment guidelines (1c).

13. Where are the outputs currently being used?

Outputs are currently in use mostly within the project team though interim reports and components of the technical work have already been incorporated into teaching in several universities.

Table 2 Current users of project outputs

Country	Users	Place
Malawi	Research policy makers (NAC)	National
	Media	National
South Africa	Research students	Wits; Stellenbosch;
		FABI, Pretoria U.
Zambia	Students	CBU
SADC	[1] SAFIRE GEF medicinal plant project	Zimbabwe
	Students	Eduardo Mondlane University,
		Mozambique
Global	Research students	GAU, Germany

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

Current use of project outputs is low compared to expectations as major publications have yet to be disseminated. However, interest in the project is high among many stakeholder and target user groups based on relatively modest, albeit targeted advocacy programmes. With regard to uptake of policy messages uptake has been remarkably rapid and is spreading. With careful cultivation of current interest and opportunities it is likely that there will be rapid uptake of publications and that this has potential to spread relatively rapidly across the region.

Useful indicators of the spread of interest in project outputs are the hit rate and download statistics for project pages and documents available on the internet. A description of the project and its outputs to date are available on two web sites; www.wildresources.co.uk and www.frp.com. uk. Figure 1 illustrates activity on the first of these for the nine months from April to November 2006. This shows relatively constant but low levels of activity. However, experience with other sites suggests that it can take 2-5 years for a site to become established as a resource. It is also apparent that hit rates from SADC is less than half of the total which reflects the relative ineffectiveness of the internet for regional dissemination. Given that access to the internet is likely to remain restricted across much of the SADC more conventional, paper-based dissemination products will be required.

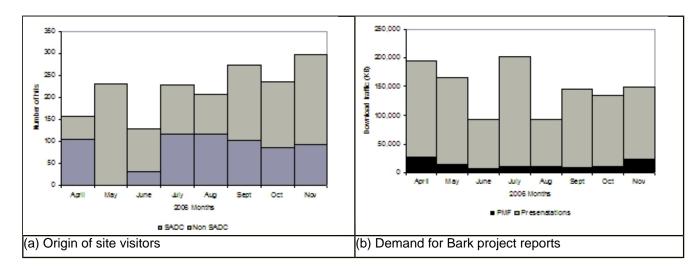


Figure 1 Web activity statistics

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?

The partner countries have forestry policies and programmes in place that promote and make provision for collaborative management of forest resources. South Africa has some experience with the implementation of participatory management, Malawi is piloting co-management and Zambia just initiating co-management. Participatory management is strongly associated with the development of management agreements as a pre-requisite to regularisation (legalisation) of access to NTFPs. However, there has been very little systematic research to support management prescriptions for the wide variety of species and products which can be used as NTFPs. There is therefore demand and ready acceptance for any tools which can be used to put NTFP management onto a scientific basis.

There are a number of projects which are intended to facilitate the dissemination of environmental messages. In Malawi, USAID (COMPASS II) and the Department of Environmental Affairs sponsors environmental journalism particularly radio. This has been particularly valuable as it meant that it was possible for the project to access journalists who were interested in chasing stories rather than funding.

SADC has a number of institutions relevant to NTFP management such as the Biodiversity Support Programme and Forestry Technical Group. Unfortunately it has not been possible to engage the interest of the former and an anticipated meeting of the latter has been repeatedly postponed. Likewise the Lusaka Accord on regional trade in endangered species has no programme or monitoring for medicinal plants or NTFPs.

The project itself gave rise to a new regional institution (Output (2) the IRWG). This nascent institution needs sympathetic nurturing if it is to become a credible and effective organisation.

Perhaps the key factors for success has been the incremental formation of a flat, open-ended project team. Regular, informal working meetings focussed on capacity building, technology transfer and joint problem solving served to create a vibrant team. As the project evolved new institutions and people were invited to meetings and were often rapidly absorbed into the team. If the project has real value the team members should natural evolve into project champions and be able to access dissemination pathways within their countries and parent institutions.

[1]

See request from Sibonginkosi in Annex 3 for assistance with implementing the FAO Guidelines

Current Promotion

D. Current promotion/uptake pathways

16. Where is promotion currently taking place?

The project team are actively promoting outputs whenever an opportunity presents itself. The capacity building in science advocacy provided by FRP in 2004 was timely and greatly enhanced the effectiveness of the project in the policy arena. Table 3 gives details of promotional activities for Output (3). The main targets for these activities are Forestry Departments, educational institutes, the NTFP sector and civil society.

Table 3 Current project output promotion

Country	Promotional material/activity	Details
Zambia	Posters	FD offices across southern half of the
		country
		Within Kaloko Trust villages
Malawi	Posters & Calendars	All FD offices and forest educational
		institutes
	Radio	Radio 2 FM MBC – National audience in
	 jingle 	excess of 3 million people. Aired 14 times
	 Hidden Treasure 	since January 2006.
	(interviews)	
	Chilengedwe (TV documentary)	TVM – National audience ~ 1 million. Aired
		10 times since January 2006.
	Newspaper	3 articles in The Nation – National
		circulation 20,000

	Newsletter	FRIM newsletter – 1000 copies to research and forestry sector
South Africa	Stellenbosch University Nelson Mandela Metropolitan University	Inclusion in course materials
Mozambique	Posters	Eduardo Mondlane University
Global	Web site	See Figure 1
	Academic papers	5+ papers awaiting publication
	NWFP digest & Nonwood News	FAO NWFP dissemination channels

17. What are the current barriers preventing or slowing the adoption of the output(s)?

Table 4 Barriers to uptake of project outputs

Barrier	Details
Policy	Forest policies support co-management agreements with local communities.
	Herbalist and collector/trader user groups may not be 'local' and prevented by
	statute from engage directly in resource management.
	TMP not formally recognised or integrated into mainstream medicine (i.e. by the
	Ministry of Health). Codes of conduct for the use of TMP, where they exist often
	treat supply-side issues in a superficial manner.
Infrastructure	No funding available to establish IRWG
	Several ways of enhancing sustainability e.g. value addition, waste minimisation,
	enterprise development etc. have not been addressed by the project.
Institutions	There is little or no access to large-scale traders as they are often not nationals
	of the country in which they collect.
	Outreach to herbalists can be problematic as in Malawi and South Africa there
	are several, competing TMP associations.
Capacity	There are no resources available to translate project outputs into local
	languages.
	The necessary skills and experience to implement the advice contained in
	project outputs is lacking in both FDs and NGOs.
	Forestry sector press officers have little or no experience in environmental
	journalism.
	Forestry education - even where curricula include NTFPs there are no suitable
	course materials available.

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

Change in any area identified as a barrier in Table 4 requires:

- funding,
- manpower,
- institutional support and
- commitment.

Of these the first two cannot be overcome within existing funding arrangements while the second and fourth are to some extent in place. Funding within civil service institutions is perennially in short supply and unlikely to change in the near future. It has been noted that it is easier to secure partnerships with existing programmes such as COMPASS if representation is from an established and resourced programme – there is always suspicion when a relationship is seen to be one-sided so this is not the answer. However, a more serious barrier is staffing. Often little staff time is given over to uptake and this needs to change either by recruitment, re-deployment or by out-sourcing.

Institutional support for change is perhaps less of a barrier however, there is considerable inertia within forestry sector institutions – pooling resources across the region may help build confidence to take on larger policy issues, to assess priorities and meet SADC-specific needs. Institution of the IRWG could help achieve this and also open a dialogue outside the forestry sector.

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

Project experience confirmed the maxim that involving end users from an early stage in a project will increase its the participation in a project will increase its uptake, in this case the end users being TM practitioners and traders. However, although this is certainly true for those involved and the outputs will be more relevant with their inputs this is not going to serve as a mechanism for reaching large numbers of poor people.

Switching delivery of outputs between the forestry authorities and NGOs simply shifts the problems of capacity shortages sideways. Decentralisation and institutional reform of forestry authorities may offer an opportunity for greater involvement of poor users but this is by no means certain.

The project experience suggests that there are several ways to stimulate adoption of outputs by end users and intermediaries on the uptake pathway:

- media coverage,
- · involvement of training institutes as project partners,
- engagement with formal user group associations,
- · involving policy makers in formulation of project recommendations,
- providing evidence to support arguments that address the concerns of opinion leaders and
- in the case of medicinal plants generating trust by NOT enquiring about the uses or efficacy of the plants being managed.

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?

Not applicable as project outputs not yet disseminated.

The market network study and border post monitoring provide a baseline of activity within the trade network where income dependency on medicinal plants is most evident. This could be repeated in the future to determine whether there has been any net change in livelihood security.

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)

There have as yet been no studies which examine the poverty impacts of the project outputs.

[1] However, based on the experience of CPWild and Sizamimphilo it is possible to speculate that uptake by traders could have the following impacts in relation to the five capitals of the DFID livelihoods framework in Table 5.

Table 5 Livelihoods and capital impacts for Sizamimphilo Association

Human	Reduced risk of imprisonment
Social	Formation of association to represent group interests to DWAF Co-operative working problematic as new methods of working especially transport required
Natural	Maintenance of supplies in familiar forests with secure tenure
Physical	Minimal
Financial	In short term new financial arrangements required, in the longer term costs should reduce

Similar impacts can be postulated for herbalists and other collectors. Experience with Sizamimphilo also indicates that it may take several years before stable relationships emerge from the upheaval created by the formation of new institutions.

http://www.scienceinafrica.co.za/2002/november/bark.htm

Environmental Impact

H. Environmental impact

file:///FI/FRP39.htm (13 of 16)03/03/2008 14:17:14

^[1]

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

Direct environmental benefits:

- Reduction of deforestation
- Conservation of medicinal species
- Tending and planting of trees

Indirect environmental benefits:

- Establishment of TMP as a national and local scale stale collaborator in forest management
- Regional monitoring of medicinal plant trade
- Validation of policies supporting user group participation in forest management
- Regional dissemination of FRP project outputs for a range of NTFPs
- Adaptation of FRP outputs from resource identification to commercialisation for use in SADC region

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

Marketing information could increase interest in harvesting hence lead to destruction of some medicinal plants.

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?

The outputs would increase resilience in that it would ensure the availability of medicinal plants.

Annex 1

Abbreviations

CBU Copperbelt University, Zambia

CPWild Commercial Products from the Wild (consortia of South African researchers derived from Innovation Fund Project 31114)

- FAO Food and Agriculture Organisation of the UN
- FRIM Forest Research Institute of Malawi
- FRP Forestry Research Programme
- GAU Georg-August-Universität Göttingen
- IRWG Indigenous Resources Working Group
- IUCN International Union for the Conservation of Nature

NEPAD	New Partnership for Africa's Development	
NGO	non-governmental organisation	
NTFP	non-timber forest product	
NWFP	non-wood forest product (term used by FAO \approx NTFP)	
RNRRS	Renewable Natural Resources Research Strategy	
SADC	Southern African Development Community	
SAFIRE	Southern Alliance for Indigenous Resources	
THPAZ	Traditional Health Practitioners Association of Zambia	
TM traditional medicine		

TMP traditional medicine practitioners

Acknowledgements

Mr Gerald Meke of the Forest Research Institute of Malawi provided the first draft of the proforma. In his capacity of Interim Secretary of the Indigenous Resources Working Group provided much useful input on the future developments of the Working Group and also served as a contact for R7250 and R6709. Mr Fabian Malambo, Dr Coert Geldenhuys, Prof. Christoph Kleinn also made useful contributions and represented their various countries and particular interests. Mr Hikojiro Katsuhisa of FAO and Mr Stewart Maginnis of IUCN also offered support for the proforma and any resulting programmes. Correspondence with Kate Schrekenberg (R7925), Anna Lawrence (R8295) and Alan Gardiner (R7822) confirmed the compatibility of their outputs with this proforma and also their willingness to contribute in the manner specified.

However, the views expressed in this document are the sole responsibility of the author.

Contents

Proforma for R8305

Annex 1 Trees for Health Forever - Workshop resolution. Johannesburg 1-3 November 2005. Annex 2 Proposals for a southern Africa programme for sustainable development of indigenous resources

Annex 3 Evidence of support for proposed interventions

List of key publications arising from R8305

Diederichs N. (Ed.) (2005) Commercialising Medicinal Plants: A Southern African Guide. CPWild. African Sun Media. Matieland, South Africa.

Wong J.L.G. and Kleinn C. (2007) NWFP assessment guidelines. NWFP Series. FAO, Rome. In preparation.

Wong J.L.G., Meke G., Malambo F., Kleinn C., Roux Y., Vermeulen W., Jere M., Syampungani S., Geldenhuys C., Lamy V. and Williams V. (2007) Handbook for harvesting bark for medicinal use in Southern Africa. Department of Water Affairs and Forestry, Forest Research Institute of Malawi and Copperbelt University. In preparation.

Annex 2

Trees for Health for Ever

Click below to view the related information ...

PF_FRP39_Annex2.pdf