FORESTS, WATER AND DEVELOPMENT: SEEKING EFFECTIVE WAYS OF UTILISING OUR RESOURCES

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Abstract

This paper suggests that the introduction of alternative forms of slower-growing forest trees (such as indigenous hardwoods for either timber or traditional medicines, but not excluding high-value exotics), using significantly less water than industrial plantations as we know them, might provide an acceptable land use in areas which are stressed or water scarce. This might offer a means for the regulatory authorities to allocate at least some water to rural communities in ways beneficial to development, without putting undue strain on catchment resources. It is time, too, for the commercial forestry sector to seek ways to reduce its impact on water and the environment, and a move towards slow-growing high-value trees might offer a way of bringing more benefit at less cost.

Conversion of jungle wattle and other stands of invasives to slow-growing trees of value may also be an acceptable way of utilizing the environment, and offering ecological improvement, along with social, economic and financial benefit.

In catchments which are currently heavily afforested and also 'water stressed' a phased conversion to trees using less water is suggested as a demand management tool which may be preferable to reductions in afforested areas aimed at increasing downstream yields.

This paper is our first public testing of these ideas. It is bound to bring strong reactions. We are the first to acknowledge that far more homework can and must be done, and hope that these reactions will help to fill some of the gaps we have left. If we have started something then we have achieved our objective.

The hypothesis

South Africa is a country with very limited water resources. What water there is has for the most part been utilised by commercial agriculture, forestry, industry, mining and domestic use. The rural areas, and particularly the communally owned lands, use very little of this water. This is an inequity which needs to be redressed, and ways must be found whereby water can be used for development in effective and efficient ways.

Water needs to be brought to the rural areas in order to offer some sharing of the resource and a measure of equity. This provision of water has to take account of what is available. Plantation forestry has the advantage of being a **distributed user**, which does not require water supply infrastructure. But many catchments are stressed and all forestry, both on privately–owned and communal land, is constrained from significant further expansion. This because of its impacts on the water resource, and also on the natural environment. Slower growing trees use significantly less water for each year of growth and, if properly marketed, should offer a far higher product value, thus compensating for their lower production rate. The most common counter-argument is the time taken to realise a return on investment, but there are

prospects for intermediate and multiple-use benefits which could surely compensate for this.

Where licences for commercial fast-growing plantations might be refused on the grounds of water conservation, it is possible that slow-growing high-value trees might be permitted. So too, where catchments are water stressed and reductions in afforested areas are proposed as a means of increasing supply, a phased conversion to species using less water may provide an acceptable water demand management measure. This is an alternative land-use option which needs to be explored by the forestry industry, by rural communities in search of development opportunities, and by water managers seeking to bring water in meaningful ways to areas disadvantaged in their allocation and use of resources.

Background

Commercial forestry in South Africa is limited almost exclusively to the production of pines, eucalypts and wattle trees. These are all fast-growing species which can, under favourable circumstances, offer returns on investment in as little as seven to ten years. Products include wood chips for export, pulp (all species), mining timber, poles, tannin (from wattle bark), furniture, and building and construction material (pines on a longer rotation).

The planting of commercial forestry species has been regulated by a permitting system since 1972. With the gazetting of the National Water Act in 1998 (NWA, Act 36 of 1998) forestry was declared a Stream Flow Reduction Activity (SFRA). This means that all forestry activity (old and new) must now be licensed. This will not be difficult for existing areas of legal plantation but considerations for the issuing of licences for any new afforestation now include the availability of water, the impact on the environment, economic viability, and social benefit. Commercial forestry in its current form is recognised as a major user of water and new licences are not issued in areas of water scarcity or stress.

The Forestry Sector promotes the upliftment and empowerment of thousands of rural black South Africans through community or small-grower forestry schemes, comprising woodlots or small plantations producing fast-growing exotic tree species on short rotations. This is marketed as the only viable and sustainable means of bringing wealth (often equated with ‘achieving development’) in rural areas. The truth is that other options are often harder to realise. Eco-tourism is promoted as an alternative, but rarely developed in a substantive and meaningful way in remote rural areas. Irrigation infrastructure is expensive and water for irrigation even more scarce than for forestry. Urban and industrial development is only successful through the intentional establishment of economic nodes, with substantial funding and allocation of natural resources.

This country is in dire need of land, water and economic redistribution amongst its majority - poor rural black people. This can be seen in the context of the following:

- There is an inequity in the current distribution and use of resources, not least water
- Water resources are often limited/limiting for all sectors
- Available land for development is limited/limiting

- Rural communities often have land but lack the resources for its development
- Positive economic growth is needed, especially in the rural areas, and water is essential to that growth
- People wish to live on the land and to benefit from its use. This may require a reallocation of resources (such as water) or the introduction of innovative ways to better use the resources available.

The problem

The production of fast-growing timber species requires significant water. Forestry also requires large areas of land but is a relatively low-value product (even with value addition) and employs a limited number of people (on average 1 person per 10 hectares of plantation). All this makes forestry licences harder to come by given the limits to the water supply and the increasing competition for that water. Environmental constraints are also beginning to take their rightful place in decision-making, often reducing development options.

Yet forestry has built-in efficiencies. It uses water on site, without the need for distribution infrastructure. It is truly rural, and can provide a land use with an income for people with no assets other than the land, and no other apparent sources of income. There are also strong, albeit cyclical, market demands. Forestry makes use of technologies that are appropriate and familiar to many rural people.

The challenge therefore is to make forestry more attractive to the licensing authorities. But it must also be appealing to the people owning the land and to the sector which provides the technology, the finance and (perhaps) even the market, i.e. the established commercial forestry growing and processing sector. The optimal forestry solution would be:

- A tree (plantation) that has a limited impact on the water resource. Ideally this impact could even be viewed as positive
- A high-value product – or one that offers greater opportunity for value addition
- The plantation would also, ideally, be fast-growing and offer more jobs
- A situation which is seen as either ecologically desirable or, at best, less ecologically destructive than the commercial forestry to which we have grown accustomed
- Something which can be produced on relatively small areas
- Something which could be managed in its entirety, by community or communal owners (acknowledging the likely need for technology transfer)
- Something that lends itself to the alleviation of rural poverty
- Trees that enrich society.

Seeking innovative solutions

Licensing forestry is increasingly becoming a function of a balanced consideration of environmental, societal, and economic costs and benefits. There is no magic tree which fills all of the requirements set out above. There are however a number of

forestry options which could comply sufficiently to make the production of timber/trees very deserving of a water use licence.

The world is facing a growing hardwood supply crisis. The current commercial, short-rotation market has been in disarray, although this should not be used as the only argument to switch to a long-term high-value hardwood strategy. The situation with regard to value hardwoods will only get worse and the value of such timber is likely to increase exponentially. South African natural indigenous hardwood forests are generally very unproductive and cannot come close to meeting demand. These trees grow slowly, and commercial production requires a carefully thought out, and probably hedged, investment strategy.

South Africa has an extremely active market in traditional medicines. Bark, roots, leaves and wood are stripped from indigenous trees across the country and many such forests and woodlands are harvested for such products at levels way beyond the sustainable. There is also a high demand for woods for crafting and furniture making which cannot be met, meaning inevitable over-exploitation. Ultimately this means the destruction of our indigenous forest and woodland.

Many areas are also either covered in stands of worthless but water-using invasives, or are seriously eroded, or otherwise degraded. There are thousands of hectares of land that were previously used for agriculture but are now “worked out” and no longer capable of supporting viable food crop production.

Productive stands of slow-growing (low water using) high-value trees could well be a desirable alternative. These trees would ideally, but not necessarily, be indigenous and trees could be grown either in single species or mixed stands for the production of furniture timber, craft woods, traditional medicines (leaves, bark, roots) and for other uses. Multiple use of such forest stands should be encouraged.

- **Indigenous trees offer a realistic alternative, using less water and providing multiple benefits**
- **Certain slow-growing exotic hardwoods and even softwoods might offer similar benefits. The measures would be those of value and benefit for water used.**

This approach is seen primarily as a way of bringing a water allocation to communal lands, but applies to all South Africa. It is also possible that the conversion of existing stands of fast-growing trees to slow-growing high-value crops could be exercised in areas currently experiencing water stress. Typically, if a curtailment in forestry is demanded as a water conservation measure, this conservation could perhaps better be achieved by a phased shift from fast-growing to slow-growing species.

- **The conversion of fast-growing exotic trees to slow-growing, high-value, species offers a very useful water conservation and demand management mechanism**
- **Should a ‘curtailment’ (reduction in water use) of existing forestry be required for reasons of water resource management, then these objectives might be far less traumatically achieved through a degree of conversion to slow-growing, low water-using species, than through forced removal of existing plantations.**

The regulatory authorities concerned with water and the environment would consider an application for the licensing of a Stream Flow Reduction Activity (SFRA) in the form of slow-growing indigenous hardwoods as opposed to fast-growing exotics, in the light of the perceived impact and the perceived benefit.

It is recognised that there will be a longer wait for a significant return on investment, although the value of short-term benefits and products from indigenous forests cannot be written off until these have been be explored and assessed. The regulatory authority might also be willing to consider a planting plan in which some fast-growing forestry is licensed in order to provide bridging funds.

The choice and silviculture of species will need to be backed by research into species and site, and into marketing. Candidate species could include indigenous trees such as *Millettia grandis* (Umzimbeet), *Ptaeroxylon obliquum* (Sneezewood), *Acacia xanthophloea* (the Fever tree), *Podocarpus spp*. (the Yellowwoods), and *Khaya nyasica* (Red mahogany). But thinking should not the limited to indigenous species and could include exotics such as *Azadirachta indica* (Neem - from India and Burma, used as an insecticide amongst other things), *Pseudotsuga menzisii* (Douglas fir - a North American softwood), *Jacaranda mimosifolia* (a decorative hardwood but also invasive), *Quercus acutissima* (saw-toothed oak), and many more.

It is vitally important that the Forestry (timber production and processing sector) adopt a positive stance to new species and new products – taking a long-term view of the growth and survival of the sector. Research, technology transfer, finance and, above all, marketing, will have to be led by the established sector.

Why has forestry not taken this on before?

South African forestry has limited itself almost entirely to fast-growing species offering a quick return on investment, often within 7-10 years. Even trees grown for saw-timber now rarely stand for more than 25 years. This quick return is seen as particularly important when it comes to encouraging poor rural communities to grow trees. Nobody wants to wait fifty or a hundred years for an income, whilst financing can be offered on a ten-year crop. There does not appear to be any other model for South African forestry and research into alternatives is woefully non-existent. So why should the sector change its habits? In the first instance there is now insufficient water and insufficient land for further extensive low-value forest production. The measure of profitable forestry has always been cash income, and it has never been necessary to set this against the external costs, i.e. costs in water, land and biodiversity. Nor has forestry value been compared to the opportunity costs – the ways in which that land and water could otherwise be used to the benefit of society.

The regulators are saying, “We do not have lots more water, and what water we have must be used to optimise the benefits to society, the economy and the environment”. What is notable is that the regulator is joining the development arena. Regulators, developers and people on the land can now be found together seeking a mutually acceptable solution.

To move the forestry sector from fast-growing, relatively profitable trees to a system requiring totally different management, silviculture and markets is asking a lot. This

only seems possible if it becomes clear that in many catchments new forestry will only be licensed provided it offers more and consumes less than current practice. Equally if curtailments should prove essential to water supply management, then a better form of implementation might be through conversion to less water-consumptive species. There remain very strong constraints of mindset and market, which need to be turned around. This will require, *inter alia*, bilateral agreements between regulator and roleplayer that this is an acceptable approach, and that the production of timber/forest products will be approved with a minimum of red tape.

Clearly there need to be incentives if we are to see change. These could include:

(i) A licence to plant alternative forest crops where fast-growing trees would be refused on grounds of water use

(ii) A licence to convert fast-growing trees to slow-growing species rather than enforcing removal – on grounds of reduced water use (water demand management)

(iii) Permission to convert stands of exotic invasive trees to indigenous trees – recognising the need to phase in a slower-yielding production system

(iv) Permission to phase in indigenous plantations by allowing the production of fast-growing exotics in such a way as to finance the development

(v) Financial subsidies for environmentally acceptable plantations as carbon sinks.

- **The key to achieving the shift lies in water scarcity, and in the willingness of the regulatory authorities to work with industry and with community towards the allocation of water for alternative forms of forestry where benefits can be demonstrated, even in water scarce areas.**

Questioning the hypothesis

(i) The economics of alternative forestry

The economic reasoning that we must have fast-growing trees because we must have a rapid return has been used to entrench the industrial forestry *status quo* in South Africa. It is also common 'wisdom' that within the current paradigm the real profits are not made from the growing of trees but in the processing of fibre. So one might well ask, "A rapid return for whom?" and perhaps this is all the more reason to explore alternative timber crops. There are a number of issues and considerations at stake here:

- 'Downstream' commercial interests seek fibre not forestry. If industrial forestry is making its profits from the processing of fibre then there will be an understandable resistance to change which does not support an increase in that fibre base – even if 'forestry' is advantaged.
- Small growers and particularly community foresters may come from a different value base. There is an assumption that all growers have the same value base as the commercial sector and that quick profits provide the primary motivation for tree farming. Cash flow is certainly an issue with all growers, but views on short-term and long-term investment may be quite different.
- The focus is this paper is on reduced water use, but the measure could equally well be that of water use efficiency – the value of product (economic and social) per cubic metre of water required in production.

- The need to span the 'investment hump' is clearly recognised – hence suggestions for phased conversion of existing stands, and for conditional licensing which allows for the initial establishment and then later trading of fast-growing exotics into slower growing, higher value plantations

(ii) Differences in water use

Do slow-growing trees really use less water? There is sufficient research to indicate that this is so, and abundant empirical evidence. Catchment research in South Africa has historically been based on comparing the differences in small catchment water yield from fynbos or grassland with that of afforested catchments. The development of fynbos (a macchia-type heathland) into dense mature woody shrubland in the Western Cape has shown that this uses some water, although nothing like the adjacent pine plantation. In Limpopo Province the development of dense indigenous forest on a once grassed catchment on the Westfalia Estate did not have a major impact on streamflow. When this indigenous forest was cleared after more than 30 years there was little increase in water production - but when the catchment was then planted up with eucalyptus trees the streamflow ceased entirely when these trees were only two years old. For a comprehensive update of South African forest hydrology catchment research the reader is referred to Scott *et al*., 2000.

Research has more recently focused on the relationships between growth rate, often reflected by sapwood area, and water use. This was demonstrated in review by le Maitre and Versfeld (1996) and the general relationship seems to work all the way from reed stems to redwoods, with some exceptions of course (le Maitre, pers. comm. 2002). The essential rule is that it takes so much water to produce so much fibre. If the fibre (wood volume) is produced over 50 years rather than over 10 years then it takes that much longer to use up a particular volume of water. The relationship is not exact but that is the picture. At the end of the day there is less wood but what there is has a far greater value, and the catchment has more water.

- **The economic issues require urgent research. What are the blockages? Are these real or institutional?**
- **The relative water use by indigenous trees and other slow-growing timber species will need a more thorough review and better quantification - but there is nothing to suggest that significant improvements in yield cannot be achieved**
- **Consideration can also be given to deciduous trees – which, in the summer rainfall region, lose their leaves in dry winter months when rivers naturally experience their critical low flows.**

Lessons from history

There are very few South African examples to build on. The forest industry does produce the deciduous poplar, but this is in riparian zones and very limited in extent. There have been some experiments using certain exotic hardwoods such as *Gmelina* and *Paulownia,* but these were given limited research and have not seen serious implementation. The objective was also always to find fast-growing species which could compete with what we already have, within the current mindset. By implication these could also be expected to be high water-using species, although perhaps offering higher value. There have been some trial plantings of indigenous trees and slower growing exotics but these have never been given priority treatment. Plantings

have tended to be on second rate sites and with neglected silvicultural practice setting these trials up for failure. Stands of *Khaya nyasica* in Mpumalanga were clearfelled as uncompetitive. A landowner near Grabouw in the Western Cape planted a stand of indigenous trees 25 years ago and reports a very valuable resource (J. Midgely, UCT Botany, *pers comm* 2001). Mike Howard of Fractal Forests reports a 30 year old stand of *Podocarpus henkelii* with a diameter at breast height (dbh) of 30cm (M. Howard, *pers comm* 2001). Indigenous forests have been harvested over the years but not even the Knysna forests come close to being 'profitable'. It must be noted that these natural indigenous forests are generally located on very poor soils and are consequently very low in productivity.

There has been long, slow and relatively unsuccessful research into agro-forestry as a form of mixed land-use. So, few examples of encouragement! We nevertheless argue that with **water** as the key, and with a sector committed to seeking a turn-around using alternatives, there are prospects for forestry of a different form in South Africa.

- **Examples of alternative forestry plantings in South Africa need to be researched and documented**

Why would indigenous forests appeal to communities?

Why should rural black communities take this route when white landholders have had the easy road and planted so much land with fast-growing trees for quick easy money? Certainly there is room to argue that this should not be a one-sided practice and that established forestry should make a concerted effort to reduce its own consumption of water by instituting a conversion programme. Established commercial forestry can also make a contribution through marketing support. But it may also prove that, given phased implementation which also allows for some level of quick income, the indigenous forest option ultimately offers greater benefit through multiple use, profit through mixed and high-value products, sustainability, and less ecological impact. The management of such forests will require technical input from the forest companies, and may prove to be quite complex when grown in combination with fast-growing trees, but ultimately should put the land and its production squarely within the hands of the land-holders.

The idea that income from indigenous plantations will take a hundred years to materialize is also seen to be a myth. It is expected that certain benefits will materialize quite quickly from such stands. In the first instance correct site-species matching coupled with good silviculture on high quality sites will certainly yield a far faster growth rate. Other benefits might include mixed cropping and multiple use (traditional medicines, honey, mushrooms), cultural and spiritual value, income for the investment in global carbon sinks, ecotourism opportunities, erosion control and secure water supply. Indigenous trees provide a long-term benefit to the next generation, and on better sites may be offering products in just a few years, not decades.

Commercial forestry, as offered to communities, is based entirely on the western values of rapid cash income. Quick turnover and profits are the driving forces. The 'alternative forestry' model does not deny these needs but suggests that forestry and

its use of water should be set upon a far broader and more sustainable base. How communities really feel has not been adequately tested but there are some strong examples of community desire for indigenous plantings - notably from within the Zululand region (Japhet Ngubane, pers. comm., May 2002). This was also expressed by wood carvers at the Lebombo SDI Crafters Convention in 2001.

The establishment of alternative forms of forest/timber production should be limited, at least in the early stages, to areas where reasonable growth rates can be achieved. This limits implementation to areas also suited to fast-growing plantations, and it is probably true to say that the higher the rainfall the better the chance of success. Certainly few areas under 800mm rainfall are likely to be suitable. Indigenous forestry does not provide the immediate solution to the planting of marginal bioclimatic areas or marginal soils – at least not until we have a much better understanding of what we are dealing with. The needs of indigenous forestry opens up a whole new field both of site: species matching and also of research into crop combinations.

- **There are many and varied forest products from which an income can be derived**
- **Benefits could materialise very quickly, not necessarily over 100 years**
- **The responses of communities to the planting of slow-growing high-value species offering multiple benefits, and the models most suited to implementation, need to be explored through a participatory research survey.**

Providing solutions: putting ideas into practice

Involving the public and private sectors – requisite steps

Government (through the Departments of Water Affairs and Forestry, Agriculture, and Environment Affairs) must commit to the concept of Indigenous (or high-value) Forest Units (IFUs) as a sustainable and efficient form of land use, rural development tool and way of delivering water profitably to rural communities. All departments having an interest or stake in land use planning and management should co-operate *via* Memoranda of Understanding. Government will also need to commit financial and implementation resources (both skills and technical). If finances are required this could be in the form of subsidies raised from local and international funding. Some regulation and control will always be required and the first step is a policy specific to the planting of indigenous forests for commercial gain. Existing regulatory and development structures such as the Stream Flow Reduction Activity (SFRA) Licence Assessment Advisory Committees (LAACs) can be used.

The Private Sector (Forest Industry) needs to direct existing programmes and technical support towards the establishment of IFUs. Financial contributions can also be considered. International subsidies for the establishment of carbon sinks should be solicited. University and technical training should broaden the horizons of the student body.

An R&D programme must be initiated, supported by both government and the private sector. Technical requirements include site:species matching, development of plant material, and silvicultural research. One red flag is the possible temptation to develop genetically improved material. Certainly one can expect selection, and possibly even cloning of existing material, and it is likely that gene pools will become

mixed as material from a particular source is planted on sites across the country. There has never been any control over the movement of indigenous plant material within the borders of the country and we will not speculate here on ecological impacts of gene mixing – other than to suggest that genetic modification would certainly be unacceptable to any self-respecting environmentalist.

In parallel with the above processes high-value forest units are licensed and established in both rural (communal) and also commercial farming areas. Establishment, especially in the early phases of this approach, should be on good soils, with sufficient rainfall (>800mm), and adequate infrastructure. Note however that roads, and transport in general (a major cost in forestry), are far less critical than they would be for fast-growing timber. This reduces some of the major hidden costs associated with industrial forestry.

- **A policy is required stating cooperative governance support to the licensing of indigenous and high-value forest trees for commercial gain**
- **Development programmes and technical support will need to be supplied by the forest industry.**

Designs for solutions

The model for establishment of indigenous forest units has many permutations. Some typical situations are suggested:

- A new development on otherwise unafforested land.
- Where formal forestry is seen as an alternative land-use to invasives which have colonised the landscape.
- The conversion of existing fast-growing industrial forests to slower-growing trees, for purposes of water conservation.

In many cases it is likely that the longer time taken to realise a return on investment will demand compromise. It is suggested that this compromise could take the form of a mix of fast-growing 'commercial' timber (providing quick income) and slower growing indigenous trees (providing multiple benefits and a longer-term income).

Possible models include:

(i) For new development of previously unafforested land

As an example 100 ha of forestry is licensed on the following basis (this example assumes a 10 year rotation for fast-growing species and a very conservative 100 year rotation[1] for indigenous hardwoods). 90 ha may be planted to fast-growing trees but 10 ha of indigenous trees must be established as part of the licence. If the fast-growing trees include potentially invasive exotics then the surrounding environment should preferably be buffered ('ring-fenced') by the indigenous stands. At the end of each rotation of the fast-growing species a further 10 ha is converted to indigenous trees. The area relationships are reflected in the table below.

[1] 100 years is used as a convenient number although what little evidence there is suggests that rotations might be far lower and that high-value crops of some species could be produced on a 30-50 year rotation – particularly on good sites with correct site-species matching and the silvicultural attention accorded a 'commercial enterprise'.

Year	Rotation	Fast-growing exotics (ha or %)	Indigenous trees or slow-growing exotics (ha or %)
0	1	90	10
10	2	80	20
20	3	70	30
30	4	60	40
40	5	50	50
50	6	40	60
60	7	30	70
70	8	20	80
80	9	10	90
90	10	0	100
100	11	0	100

In this way early income is generated from the sale of the fast-growing exotics. This income declines with each rotation, but is supplemented by both income and benefit from the indigenous trees. Some economic modelling would be required to see that the balance proposed here is reasonably maintained. It is hypothesised that the indigenous stands will start to yield real benefit by age 20 years, or perhaps much sooner (for example through selective harvesting for poles, traditional medicines, crafting etc), and that by 50 years these stands will have outstripped the exotic trees in terms of value and benefit.

(ii) Where invasives have colonised the landscape

Forestry is licensed as a means of bringing development, and also as a means of managing the alien invasive problem. In this example a 100 ha area of alien invasives is licensed as forestry land under the following conditions:

- A certain area (at least 10%) of indigenous trees is planted. These must surround the invaded area in such a way as to minimise the threat of spread, and to facilitate management. These indigenous trees may be planted on new (uninvaded land) or on land first cleared of the exotic invaders.
- The exotics are managed as plantations for forestry through 'improvement' management, or may be converted to standard industrial plantations through replanting.
- The stands of exotic trees, now being grown for profit, are converted to indigenous trees over time (with the same 10 year/10% approach, as proposed above, suggested as a simple working model).
- After 90 or 100 years all the exotics have been replaced by indigenous trees which are then managed on a controlled cutting cycle (10 ha every 10 years, or through selective harvesting).

(iii) The conversion of existing industrial forestry plantations.

This would be phased in a way to best meet the needs for water production. It is likely that conversion would be planned in a phased manner, perhaps over as long as 50 years. Fast-growing exotics would be replaced after normal harvesting, with the pace of conversion dictated by the demand for the expected water gain, and the expected benefit.

In all of the above examples we suggest that planning design strive toward the principle of 'ring-fencing', with indigenous trees used to surround and contain any exotic stands. This has the advantages of offering a more fire-resistant perimeter, providing an aesthetic barrier and visual screen, and providing a barrier to the movement of invasions from the exotic core.

A summary of costs and benefits of IFUs

Costs

- Investment period – income stream is slowed in the short term
- Less fibre to existing markets
- Need to establish new markets
- Technical resources and finance required
- Plant material must be sourced and supplied
- R&D required
- Risk
- New management skills
- Need to achieve understanding, commitment, and bilateral agreements

Benefits

- Conservation of water-producing areas. Less water used. More water available for trading, downstream development, environmental requirements
- Regulator more likely to license timber production
- Incentive to control and remove invasives
- Water Conservation and Demand Management tool available through conversion of existing industrial forests)
- Rehabilitation tool for invasive areas and degraded land
- Smaller areas of forestry offer higher value – less conversion of landscape required, less grassland lost
- Ecofriendly, biodiversity gains and environmental corridors, carbon sink
- Multiple use (traditional medicines, furniture wood, honey, mushrooms, etc) bringing sustainable livelihoods
- Local processing opportunities. Stimulation of local economies
- Reduced exploitation of natural resources
- Cultural and spiritual value
- Fewer roads within plantations
- Reduced strain on transport infrastructure (public roads)
- Tourism and ecotourism

Conclusions – Is this realistic?

There are a number of really powerful incentives in favour of slow-growing high-value forestry. Forestry as we know it has limited scope for further expansion in South Africa under the current constraints of available water, land, and the conservation of biodiversity. The industrial sector has always worked only towards one goal – the production of more fibre. The regulatory sector has always had the goal of regulation with the aim of protecting natural resources, particularly water. Both sectors will have to change their objectives, with the commercial sector seeking high-value products

and the regulator taking proactive steps to encourage not just the protection, but also the improvement, of the environment through new forestry practice.

The keys lie in the hands of both sectors but the role of the commercial sector in providing R&D, technical expertise, finance and marketing skills must not be underestimated.

Above all there needs to be commitment to a new paradigm in South African forestry, given which truly sustainable forestry can become a reality.

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