

**The role of forests in water-related risk management**  
**Speech by Ms BP Sonjica, Minister of Water Affairs and Forestry**  
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Ladies and gentlemen, let me begin by saying that it is a great pleasure to be here today and to take part in this discussion on water and forests. It is particularly a pleasure because of the long relationship that South Africa has with Achim Steiner of the IUCN who extended the invitation for me to be here today. I think particularly of the involvement of one of my predecessors, Prof Kader Asmal, with Achim on the World Commission on Dams. They worked together extensively to produce a challenging and far reaching set of guidelines regarding the development of dams in a process that brought together opponents and proponents to try to find a way forward that allowed for infrastructure development while protecting the environment and those, often the poor and the vulnerable, directly affected by such dam development. I am glad to say that in South Africa we still have a process of civil society and Government working together on how we can implement these guidelines and develop win-win approaches to much-needed infrastructure development.

We are here today to discuss another crucial issue, looking at the role that forests play in water related risk management, of which the key must surely be floods, droughts and water quality issues.

Let me say that South Africa comes to this discussion from a different perspective from many other countries. Ours is not a heavily forested land. Ours never has been a heavily forested land, or not naturally. Much of our natural landscape, if not semi-desert, is grasslands, fynbos, succulent and woodland systems and open canopy woodlands. So we do not face currently, in the same way as many other countries do, the challenge of deforestation and its associated risks and challenges. On the other hand, we must recognise that large portions of the limited forests and wooded riparian areas that we did have historically were quickly utilized, leading ultimately to the need to bring in commercial, alien timber species. The introduction of these species helped to conserve the remnants of our natural forests. Historically, the threat to our indigenous forests came from unsustainable timber harvesting, but this is now rapidly changing to threats from invasive alien species.

Thus, in South Africa, one of our challenges in managing water resources lies in managing commercial afforestation and the spread of invasive alien-tree species. Let me try to paint the picture.

We have about 1,35 million hectares of plantation forests, of almost entirely alien species. We have only about 530 000 hectares of closed canopy indigenous forest, which as you can imagine, we consider to be extremely precious and try very hard to protect. Large areas, particularly in the drier areas to the north of the country, are covered by open woodland. These woodlands are important from a biodiversity perspective and in terms of the maintenance of catchment integrity. They are also vital to poor rural communities for natural resource use – for fire wood, medicinal plants, stock grazing and so on.

Estimates are that at least 10% of our country is already invaded by alien invasive tree species. The nature of these invasions are exponential, so there will be an acceleration of invasions, given the foothold that has already been gained by these species. Many of the large trees that are invasive have a far greater impact on water than the plants they displace, and the estimate is that around 7% of mean annual run-off is being lost to invasive alien plants. Note that these are invasive species, and NOT the same species in controlled plantations.

Left alone, the impact of the invasives on water security will be increasingly problematic, especially in mountain catchment areas and other difficult-to-reach areas. The problem is that alien invasive trees tend to go to the very areas that responsible forestry industry avoids – riparian areas, steep slopes, wetlands and other areas where the impacts are more severe. As can be readily understood, these trees use far more water when there is more available, such as when they have their “feet in the water” along riverbanks.

It is because of the impacts of such species on our water security that we have established a major job creation programme, the Working for Water Programme, to clear alien invasive species from our catchment and riparian areas.

This Programme is also one of our flagship poverty reduction programmes. In amongst the alien invasive trees, plantations, forests and woodlands, we are a country of extremes in standards of living. In South Africa you will find a microcosm of the world today – the very rich and the very poor living side by side. 40% of our population are poor. A small fraction of the population own most of the wealth of the country and this inequity is reflected on the ground. Most of the people living in our rural areas are poor. There are also large populations of poor in and around our cities and towns. I raise this because I believe that in the discussion today we should not focus only on the technical understanding of the role of forests in water related risk management. We must also focus on the people who are at risk. In South Africa, as in most parts of the world, the people who are most at risk are poor women and men.

Not only do they often live in areas vulnerable to natural hazards, such as urban flood plains where they crowd together in fragile shanty towns, but they have little or no access to emergency services, to emergency transport, to insurance to enable them to rebuild their lives after a disaster. They are the most vulnerable members of our societies, wherever we live. It is in their interests in particular that I am speaking here today.

It is not by chance that the people left stranded in the New Orleans flood were largely poor (and black). They were the people who did not have their own cars in which to leave town. They were the ones dependent on public transport and unable to leave without assistance.

It is not by chance, in South Africa, that people living in informal settlements choose not to leave their shacks despite flood waters swirling around their feet. They do not want to leave the few, precious things that they have, the few belongings that enable them to cling to life and dignity.

It is these people that are at the centre of my focus today.

Let me sketch some of the risks associated with water management in South Africa. We are a relatively dry country – we receive around half the world's average rainfall. Within that dryness, we are vulnerable to both floods and droughts. Over the past several years we have been in the grip of a dreadful drought. We have put in emergency water schemes, tankered water to communities where water supplies have dried up, cut water supplies to farmers and watched crops and animals die. The past two months, on the other hand, have brought heavy rain that filled our dams, replenished groundwater in many areas and brought flooding to some areas.

The issue of commercial forestry in a drought situation is complex. Firstly, let me say that plantation forestry has brought job opportunities and development to underdeveloped rural areas. It is an important economic activity and one that we hope to see grow over the next period of time. None the less, as a water scarce country, we have also recognised that the dense planting of trees in areas that were previously grasslands, or open canopy woodlands, increases the water used by the vegetation in that area. In other words, a plantation uses more water than a grassland area of the same size, simply because of the volume of water used by trees through evapo-transpiration. Thus, the conversion of grasslands to plantations requires, in South Africa, a water-use licence. It also requires us to examine whether sufficient water is available in a catchment to allow further plantation extension.

In times of normal rainfall, the use of water in the catchment should be in balance with availability, and all is well. However, in drought conditions, where water availability decreases we are often compelled to impose restrictions on water users. In the recent drought some farmers were informed that they had no water to use at all – 100% restrictions were imposed on them. It is, however, difficult, in a heavily afforested catchment, to impose restrictions on plantation forestry, simply because the trees use whatever water is available. The only solution would be to cut down the trees – something that we have not yet resorted to, largely because of the longer term implications on the availability of wood should we compel early harvesting of timber. Downstream users may, in a drought, therefore, find their water sources drying up, at least partly due to the presence of large-scale commercial plantations.

On the other side of the picture, as I have mentioned, we face the challenge of floods in South Africa. In South Africa plantation forestry does not have a particular role in either the generation or the amelioration of floods, nor are our indigenous forests extensive enough to be particularly important in this regard, except in particular sub-catchments. Two specific areas of risk management can, however, be mentioned. Firstly the hydrological impact of plantation forests, where these are established in degraded catchments and in the rehabilitation of eroded landscapes, is not well understood within the country. It is certainly demonstrable that there is likely to be less flooding and erosion, with less total runoff, with increased low flows in response to improved infiltration and slow release. The Storms River tragedy of 2002 in which 13 people died is demonstrable evidence of this. Massive fires in the catchment and extensive felling led to unprecedented flooding in a tributary of the Storms River.

The second aspect is that fires through plantations established on certain soil types have been found to elicit serious soil water repellency – with consequent localised flooding accompanied by catastrophic soil erosion.

There are also challenges that we face with regard to the linkages between forests and the quality of water resources. Firstly, there is the potential risk posed to the water resource by the associated uses of especially plantation forestry, such as the paper pulp industry. This industry is a major player in the international market, and provides a lot of job opportunities. However, where most of the international paper pulp industries are located close to the ocean, and can discharge their effluents into the marine environment, this is not the case in South Africa. The high salt, especially chloride, content of the effluent from this industry, as well as the disposal of its sludge waste on land, poses a risk to both our inland waters in our rivers, and our vulnerable, but extremely important groundwater resources. It must be noted here that although ground

water only contributes to 13% of our total national water supply, 65% of the population of the country rely on groundwater as their sole source of water, especially in rural communities.

The second aspect that comes to mind when considering the linkages between forests and the quality of water resources, is the potential positive uses of especially communal or community afforestation in addressing localised impacts on water quality, in particular impacts on groundwater. Here a small communal forest can be used to address potential impacts from small-scale sanitation facilities, such as septic tanks. Also, there has been some good research into the use of various tree species in the absorption of mine water – both run-off from dumps and slimes dams, and more particularly to prevent water ingress into extensive areas which have been mined for coal. Trees can offer a strategy in the amelioration of acid mine drainage by taking up that water. This sometimes puts us in the invidious position of making a decision to have either polluted water or no water at all. Not surprisingly water-cleansing approaches are taking precedence.

Ladies and gentlemen, the linkages between forestry and water are complex in the context of South Africa. Forestry is a disproportionately larger contributor than agriculture (the largest water use sector in South Africa) to the socio-economic development of the country. Like agriculture this contribution is felt in the rural areas where many of our poor people live. In fact proportionately by area, forestry contributes five times more to South Africa's GDP than does agriculture and it is much more resilient to market changes and other negative influences. This combined with the strategic value of having timber resources in a country recognised during the earliest colonial times as having very few timber resources, combined with the absence of nearby alternative supplies in the region, must influence how we evaluate water use for forestry against other users.

We must, however, obviously balance all these benefits with the realities of water availability, other more pressing or basic water use needs and the impacts of the forestry sector on water availability, especially in times of drought.

While we see plantations as highly consumptive of water, we view indigenous forests as relatively neutral water users but as very important from a catchment integrity perspective, and very effective in flow regulation. So for us protection of our small natural forests is paramount. Indigenous forests in some parts of the country are nevertheless under threat due to uncontrolled exploitation for a variety of purposes, including fuel wood and traditional medicines.

The exploitation of woodlands is perhaps more serious – the areas are greater (27 million hectares), the rainfall lower but more variable, and the degree of protection lower. Woodland areas are often degraded through overgrazing, clearing for firewood (often by unscrupulous outsiders), and sporadic agriculture in areas of high population pressure. This has implications for infiltration; resulting in overland flow, flash flooding, soil erosion and groundwater recharge.

Obviously, the benefits and costs of further commercial forestry expansion (water and others) must be weighed against the benefits and opportunity costs that competing water uses present, and we need to have the flexibility to allocate and re-allocate according to the outcome of such evaluations.

None-the-less, I believe that there is scope for expansion of the important forestry sector in the country. Our President and I have pronounced on this growth and expansion, especially given the opportunities which it presents for poverty eradication in rural areas, socio-economic growth and development and to the broader transformation of South Africa's society and economy.

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