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Author: Rodgers, W. A.

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AN INTRODUCTION TO THE CONSERVATION OF THE EASTERN ARC MOUNTAINS

W.A. Rodgers

Sub-Regional Coordinator for Eastern and Southern Africa,
UNDP-GEF Biodiversity Programmes
47 Old Moshi Road, P.O. Box 1041, Arusha, Tanzania

AN HISTORICAL INTRODUCTION

It is 19 years ago, that I, as the organiser for the 4th East African Wildlife Symposium, which was hosted in Arusha by the University of Dar es Salaam, dared to add a section on forest biology and forest conservation. The conservation agenda then was concerned with issues of managing elephants and lions and other large hairy wildlife. Conservation then was about National Parks not Forest Reserves, it was about savannah grassland not forests, it was about elephants not camphor trees or African violets. Conservation then still had not got to grips with the involvement of people. Conservation was centred on wilderness areas, not on the people resource interface!

Whilst the 1978 conference also had 150 participants from all over the world, few of them cared about forests. It is a sobering thought that today we can host a major conference on the Eastern Arc Forests alone! (Has the world changed? And are we about to see an era of real conservation?). In 1978, most participants were from overseas. In today's workshop, Tanzanians make up over half the active audience!

It is instructive to think back 20 years and consider forest conservation issues in Tanzania in 1978:

- The word 'conservation' was not in the University Forest Curriculum (not once!).
- Forest students did not go to natural forests for training (not once in three years!). Logging and on-farm agro-forestry were the focus topics then.
- Intense mechanical logging was underway in the East Usambara Forests, supported by government and foreign aid.
- The word biodiversity did not exist.
- The human population of Tanzania was half that of today, and the demand for forest products was less than half. Woodland resources were still available to meet much of that fuel wood need.
- There were conservation arguments in the Usambara Forests. Much of the canopy had a cardamom understorey. We noted that Kenya with no cardamom growing areas exported twice our national output!
- The Forest Department had money and capability—but little conservation concern. But now, there is much greater concern, but lost capacity and no money!

In 1978 after the first conference, we took 30 biologists, land use experts and foresters, to Amani in the East Usambaras, for four days. We reported back to government on the biological values of the mountain forests and the threats facing them. That was the beginning of the Eastern Arc Forest conservation movement. In 1980 we wrote to Government suggesting a Forest Conservation Group, and in 1983 we formed the Tanzania Forest

Conservation Group. Yes, it took that long; some professional foresters did not see the need for NGO activity in forest conservation. The Group still functions, we produce the *Arc Newsletters* distributed at this 1997 conference.

Now twenty years later—are we better off in terms of forest conservation? Are we winning the conservation battle? And, if it is a battle, do we know whom we are fighting, who are the enemies? Maybe it is ourselves!

Considering forest conservation, twenty years later:

- The threats to the forests have grown as our populations and resource demands increase.
- There is now little spare resource (land or wood) in the mountains.
- We still have not found solutions to the question of “How best to conserve?” and “How best to involve people in that conservation?”

Thirty-six years after Tanzanian Independence, we are just beginning to learn how to work with people as partners! Government itself now recognises the need for forest conservation (for example, logging has been stopped in the East Usambaras). But, much of the conservation capability within Government has decreased. Pressures on land and resources have greatly increased, and much of the available ‘unreserved’ woody resource has been cleared. The available spare land to absorb pressure has gone! Now the problem of resource demand is directly facing the Reserve system.

Let us put the Eastern Arc Mountain Forests into context. These are now recognised as the richest forests for biodiversity in mainland Africa; (I note that even we cannot compare with the special richness of Madagascar). These forests are the main catchments for water for our cities (e.g. Dar es Salaam via the Ruvu River, and Tanga via the Sigi River). The forests are full of potential forest values, (as the WWF adverts on Kenya Television say, “The cure for Aids may be in that small shrub that is being cut down”). But, and it is a big but, can these values stand up to the pressures being put upon them? The Eastern Arc forests are surrounded by some of the highest population densities in Tanzania, many of these people have some level of dependence on forest products. These people want land!

These forests have more staff per hectare, and more donor support than any other natural forests in Tanzania (this is still very little per hectare!). But still they degrade. Talking of forestry staff reminds me of a story comparing conservation priorities in Tanzania, here in Morogoro Region. This requires the comparison of Kilosa District Catchment Forestry with Mikumi National Park. The Kilosa forestry staff protect the Eastern Arc Ukaguru Forests, with high biodiversity including plant and reptile endemics (species found nowhere else on earth). Mikumi is a pleasant enough Park, but with nothing unusual or endemic. There are 57 ranger staff in Mikumi, most armed, with vehicles, with radios etc. Kilosa catchment forestry had eight staff, with no equipment, but considerable illegal over-harvesting. One is led to question how government reaches its conservation priorities!

But conservation takes more than numbers of field staff, it is also using them properly. I want to tell another Forest Guard story; this one comes from the East Usambara Forests in 1987, when I was assisting in the planning of the FINNIDA support project. We interviewed an older forest guard in Kwamkoro: “When did you last patrol in the forest, from A to B?” I asked. “Oh no”, he replied, “we cannot do that, the forest is too thick and dangerous”. “Ah”, I said, “but you used to, I remember when....”. He then turned on me and retaliated: “How do you expect us to do anything in this forest, I do not get paid on time, my salary does not even buy food for a month. I get no uniform or equipment. I never see my superior, as he does not enter the forest. How dare you come here in your big car and tell me what I should do in my forest!” I shall never forget the look of hurt and anger on his face.

If we cannot protect the Eastern Arc forests, Chairman, our richest forests in biodiversity, our most important in terms of water, then what hope is there for other areas in Tanzania?

THE EASTERN ARC MOUNTAINS AND THEIR FORESTS

My task is to set the scene for a five-day workshop on the Eastern Arc Mountains. I speak as a conservationist. I was a biologist, but I am no longer actively involved in biology. I was a resource manager in the Tanzania Civil Service, but that was 20 years ago. (I have not been a resource-hungry peasant farmer, although I have worked with them, and try to understand their needs!)

I am to highlight why we care about the forests of the Eastern Arc Mountains; what are the values of the forests? what are the threats? (and a bit of **why** are there these threats?). I am to introduce “What are we doing about forest conservation”, and ask ourselves if these conservation activities are working.

We start in the workshop from the perspectives of science: biological sciences and the human sciences. I note that most of us are biologists—and some of us pretend to have social skills. But the issue here is people, and unfortunately few of us here can claim to represent people’s points of view. The threats to the forests come from within our society. We must understand how our society works if we are to conserve. I stress that we manage people, rarely do we manage trees! (Trees are much easier to manage! They do not run away, they do not take bribes nor have political alliances).

This workshop starts with facts and puts values on those facts. We then discuss the art of the possible—managing resources and people so as to achieve the best compromise possible. I roughly do the same in my presentation. I want to set three overlapping scenes, interchanging between:

GEOLOGY, the landscape, and how the Eastern Arc evolved.

BIOLOGY, the forest resources, and how they evolved in the Eastern Arc.

HUMANS, the evolution of those who use the Eastern Arc resources today.

But above all I want to set the scene of some of the most beautiful areas in Tanzania. These are truly forests to love, and I was privileged to work there for many years. I start with the oldest component, setting the geological scene, some 200–300 million years ago.

After long periods of geological quiet, with constant erosion, and so base-levelling eastern Africa was relatively flat. In the Karoo geological period however, we had a period of activism, the early rift faulting, leading to Lake troughs such as that of Nyassa.

The relatively flat ancient Africa was also hot and dry. But the faulting in the earth’s crust had far-reaching effects. I describe today ‘The ugali theory of geology’, based on what goes down, must come up (anyone who has cooked ugali or porridge will understand this). Down go the Rift Valley troughs, and so up come the Block Mountains. It took a few million years, but it happened. There were two periods: the early Karoo, and then with more recent faulting came the development of the eastern rift of Kenya and northern Tanzania. The West Usambara Mountains are a perfect example of a big rectangular block, with steep slopes on all sides and a flat top plateau. What was flat land, now stands up as a series of mountain blocks in the face of wet ocean winds so we have high rainfall. Here we have an arc of mountain blocks all with wet east facing slopes. These slopes are wet enough (2,000 to 3,000 mm rain per year) to grow moist forest.

The mention of forests turns us to the Biology of the Arc. Climates change and fluctuate

for all sorts of reasons (*e.g.* sunspots). But even in dry periods there was high rainfall on these mountain faces! Halve the rainfall: half of 2,500 mm is 1,250 mm, still enough to grow adequate forest. But, half of the western dry side's 600 mm is 300 mm. This is almost desert, not enough to support trees!

These arguments give us our first two facts: The Arc has **old** forests, and forests which are **nearly always wet**.

The block mountains are not a continuous range or chain, they are a series of separate blocks, distinct from each other by intervening valleys or lowlands. They have a different geological history from the other large mountains in East Africa. Compare the Arc with Mount Kilimanjaro. Kilimanjaro, a volcano, exploded some 200,000 years ago. All went boom, all vegetation was lost, and species died out. Lesser blows from Kibo summit more recently (before 10,000 years ago) accentuated these losses. Now the only plants on Kilimanjaro are those that have colonised since the eruptions—the generalist easily-dispersed species. An example from the world of snakes: Kilimanjaro has only three forest species of snake, the Usambara Mountains have 33 species. Sorry, 34, a new one was discovered recently!

So we have fact three: there are several **separate** blocks of forest.

The forests from these separate mountains joined up in wet periods (as forests spread onto the drier flatlands in times of higher rainfall), and separated again in dry periods. (Note that a period is several thousand years!). There were many cycles of these wet and dry periods over millions of years. At really wet times the eastern African forests would have joined up with West African forests. Even in dry periods there would always have been some forest left. These relict patches of forest are termed 'Forest refugia'. What does this repeated joining and splitting mean? It means great speciation. There was time to evolve before rejoining again in new combinations, and then periods of separation again.

So to fact four: **separation led to great species richness in the forest**.

Why the **Eastern Arc**? This was a catchall name (we cannot continue to say the Pares, Usambaras, Ngurus, Ukagurus, Ulugurus, and Udzungwas—all in one breath)! We needed a simple general term. They do form an arc of mountains along the eastern side of Tanzania into the corner of southern Kenya in the Taita Hills. Eastern Tanzania faces the ocean, receiving wet oceanic wind.

Geography leads us to fact five: there is **great variation** in the type of forest.

This variation comes not only from the eight main separate blocks but also changes within each block:

- wet and dry sides (east and west),
- low (hot) and high (cold) areas,
- ridges, slopes and valleys,
- steep and gentle slopes with relatively flat plateaux on top.

This variation gives us a great range of biological or forest communities. The wet forests are of a different community from the drier forests for example. I digress a little bit here and come to the 1990s. The international conservation community at Rio de Janeiro in 1992 approved the Convention on Biological Diversity (CBD). The Government of Tanzania ratified the CBD in 1996. This ratification commits Tanzania to three things:

- the conservation of Biodiversity (meaning the wise use of biodiversity),
- the sustainable use of Biodiversity,
- the equitable sharing of the benefits of Biodiversity.

Biodiversity is defined in the CBD as: genes, species and ecosystems or communities. This is of course the very epitome of the Eastern Arc forests, and brings us to our last fact.

Fact six: **The age, wetness, variability etc. of the mountain systems, gives the forest a very complex structure:** There are many communities! There are many species! There is much genetic variation! From the Convention of Biological Diversity viewpoint these forests have exceptional biodiversity.

SCENE SETTING: THE PEOPLE

People are like forests, they are dynamic; they move and they change, and they adapt. There have been great movements of people in eastern Africa. These movements have not been random, but have been movements in relation to forces. The forces of:

- drought (people move to water! Into forest),
- wars (people move to safe refuges, places of security! Again into forest), and
- technology or opportunity allows this movement (Iron Age, and fires needing fuelwood from felling forest).

People have lived at the forest edge for millennia. Four things revolutionised how people interact with forest. I borrow from Jeff McNeeley here, looking at the history of forest people and culture.

FIRE	Gave people the ability to clear forest and so prevent its regrowth, Burn it!
AGRICULTURE	Increased the need for land, and so permanently cleared forest. Note: people wanted wet 'fertile' land (such as forest land).
TECHNOLOGY	Specifically the Iron Age, some 2,000–3,000 BP (before present).
TRADE	This is more recent, and moves us from subsistence use to a commercial use. Poles, fuel wood, timber, medicines are examples. This change led to much greater use of forest.
ADD THIS UP	Technology and trade = Massive mechanical logging. Fire and agriculture = Greater people densities.

All these revolutions increased the impact on forests. We now need desperately a fifth revolution that conserves forests!

Let us return to Tanzania more specifically and look at our forests. Science tells us that before 8,000 years ago (the end of the last northern Ice Age) it was colder and drier with 30 % less rain than now. The vegetation belts on the mountains were 1,000 m below what they are today! Then: 8–6,000 years ago there started a relative wet and warm period—with lots of forest. Since 5,000 years ago, there has been a slow drying period (with minor drier and wetter fluctuations) and so a forest retreat. But now for the first time, these climatic forces have been accelerated by the influence of man. What happened? Three things happened, these were:

- The use of fire, in Tanzania since 60,000 BP, increasing with time, as human numbers built up.
- The Iron Age some 2,000 BP led to greater clearances and greater ability to clear.
- The Azanian Culture seen in the Uluguru, Usambara and Usagaras dates from this time.

These early stone-bowl cultures left relics in the open glades on Mounts Kilimanjaro and Meru. We see charcoal layers and earthenware in the soil under good closed forest in East Usambaras. This is evidence of early use and forest re-growth. This makes us question what

is Primary Forest? What we see today as extraordinary richness has had some hand of man in shaping that richness.

A series of minor dry periods increased forest use, for example the period around 1000 AD, and 1600–1750 AD. This latter was a minor dry period, coinciding with the movement of the Wambugu people into Usambara forests in the ‘early 18th Century’ or 1700s.

All the sources of evidence fit together: oral history, archaeology, climatology, ecological history, and vegetation science. The Eastern Arc Mountain Forests are a veritable melting pot of research! Why do I stress this past history? I want to build up the past pattern of **interlinkage** between **people** and **forest**. Forests are complex communities with many species. Some of them like deep shade, some like open sunlight. Camphor, those huge forest trees, prefer some sunlight, they will not regrow in deep forest shade, they regrow after disturbance. It is possible that the great abundance of camphor that we saw 50 years ago (and felled so avidly!), was due to past disturbance say 3–500 years ago. But people’s influence in those days came and moved on again. Fires came and went. Forest was able to regrow! Not so today, people pressure is permanent!

We move now to the time of the colonial inputs, causing huge upheavals! But these upheavals were documented, counted and photographed. We are in the age of contemporary history. (Anyone who remembers German Rule would have been say age 10 in 1914, and so 94 today! We must hurry to document this oral ecological history!).

The first Eastern Arc forest descriptions were in 1860 or so (130 years ago). The Usambara forest was described as having a great wealth of species. (I am indebted to Professor Schabel of SUA for a history of German forestry in Tanzania). There then followed a **rapid** reservation of forests, largely for conservation of water supplies. For example the Mount Meru, Kilimanjaro, Northern Highlands, Oldeani, Usambara and Uluguru forests were all reserved by the German administration. Eighty percent of our closed Forest Reserves date from German times! Land was reserved for timber values as well; there was rapid recognition of the importance of camphor, of mvule, podo, cedar etc.

What does ‘Forest Reservation’ do? It gives rights over forest to Government and so alienates traditional rights of people! These trees are not yours, you will go to jail if you cut this tree, it is illegal to do a, b, c etc. Colonial Governments saw people as the culprit in forest conservation terms, not as the real or potential forest guardian! Note that in eastern Africa we do not have well established customs of traditional forest management. People used resources. Resources are only husbanded when they are in short supply, and forest products up to the turn of the century were rarely in short supply. We have some Sacred Grove examples, but for ancestor worship not resource conservation. There were some Sacred Trees, often *Ficus* species (figs). There were some Sacred Sites (e.g. Nyumbanitu Mountain in Udzungwas. But these were caves not forest).

The Germans also created private (foreign owned) estates. These again alienated local traditional use customs. The new crops on the Eastern Arc Mountains were coffee, tea, quinine etc.

Most arguments (be they wars or political squabbles) are about land and resources, who owns it, who uses it, how it is used. Forest land is valuable, and so forest land has had its share of arguments in Tanzania’s history! Examples are:

- The Uluguru Mountains. In the 1950s arguments over the intensification of agriculture through terracing led to localised resistance and the move to Independence!
- The Usambaras-Mlalo area and the call for degazettement of forests. There was great pressure for land, and government gave in. There was massive deforestation against expert advice. Ten years later and huge landslides led to great loss of life and property.
- There are similar deforestation pressures on the Makonde Scarp, the Pares, and the

Usambaras again. The demand for land increases, and pressures will increase.

Recently, we the Members of the Wildlife Conservation Society of Tanzania, and forest conservationists all over the world were grateful when the Vice President was able to visit the Pugu-Kazimzumbwi Forest Reserve outside Dar es Salaam. Land speculation was causing major and flagrant deforestation of a Government Forest Reserve. Whilst such political input halted illegalities for a while, it continued again. We need continuous political support if forest conservation is to succeed.¹

We must not forget that Governments themselves, past and present, have caused great deforestation. For example:

- Kimboza FR, and a road bisecting it, and plantations in it.
- Magombera FR, and a railway bisecting it.
- The felling of natural closed forest and replanting of exotics at Magamba, Longuza, Pugu, Rondo and Vikindu Forest Reserves.

We are talking history for a while. Let us acknowledge the great amount of research that has been stimulated by the Eastern Arc forests. This Symposium commemorates over 100 years of science. Adolph Engler, a German botanist, started to write on the plants of the Usambaras in 1893. Many plants are named *engleri* in his honour. The German interest in the Usambaras—its forest and its potential for agriculture—led to the development of research stations in both west and east Usambaras, and the Botanical Garden below Amani. Amani under British rule became the Headquarters of EAAFRO (the East African Agricultural and Forestry Research Organisation) until 1948. Many major advances in tropical science came from these studies—as well as the slow but steady cataloguing of the richness of the local flora and fauna. Moreau, Pitt-Schenkel, Peter Greenway—are scientific names to remember. After 1948 forestry activity slowed somewhat, and Tanzania's natural resource research effort went into wildlife (e.g. the Serengeti Research Institute became a world leader).

It was not just the Usambara forest that was the base for research. The Ulugurus received their share of attention as we recall Loveridge's work on reptiles, for example. Schleiben was an early collector of plants in the Ulugurus. The Udzungwa Mountain forests though were largely forgotten. It fell to chance, to the closure of Uluguru forests for security reasons (ANC camps), and to my liking for new attractive places, that in 1979 we discovered the riches of the wet forested slopes of Sanje Scarp! I say 'discovered' wrongly, and this is the time to acknowledge local skills and indigenous knowledge. My colleagues and I went to Udzungwa as the Uluguru Forests were closed to foreign researchers. We went to Sanje as we had seen this magnificent cool waterfall as we struggled with students in the hot mosquito-ridden swamp forest of Magombera! "One day" we said "we will go there and explore." The story is often told: on the first day in the forest we heard a strange noise. "What is that?" said I, who had been a wildlife warden near there for ten years (but then

¹ Since this paper was written, the deforestation situation deteriorated greatly at Kazimzumbwi Forest Reserve. Forest Division with NGO support was unable to control the situation. However the political will to conserve forest did exist in Government. Villagers made the mistake of asking State House to intervene on their behalf. State House on ascertaining the facts, ordered the removal of illegal encroachment from within Forest Reserves. This was achieved in early October 1998. The Tanzanian press after a first coverage portraying poor peasants being evicted, eventually reported the great resource conservation gains.

interested in elephant not monkeys!). “Makakou” said our local guide called Langson, and Langson went on to describe this odd creature much against my scepticism. My colleague however had studied a type of monkey in North Kenya not found in Tanzania. She insisted that the call she heard was a mangabey! We searched the steep ridges to get a sighting, until Langson asked if we were serious about seeing one? “If so”, he said, “there is a baby ‘makakou’ in the village”.

That was the start of the new species of Sanje mangabey monkey. (The infant is still alive in Arusha—aged 20 years now!). This was the first new monkey species in Africa for 25 years. Since then new birds, snakes, shrews and almost 100 plant species have been discovered from the Udzungwas, many from Sanje! New finds continue to be made.

What we do about forests depends on how much we care about forests or how much value we attach to forests. Our perception of forest values has changed over time. This perception of value also varies spatially. Mahenge District, we learn, has laid off all their forest guards due to structural adjustment pressures! “Over half the district is miombo woodland full of elephant and tsetse, why should we protect it?” say the District.

What then are the values of forests that are important in modern Tanzania? I see four, with Biodiversity as a possible fifth.

1. *Water*

The Germans rapidly recognised forests as important for water. They were reserved and protected. Surely our present Government must see the fewer remaining smaller forests as even more important for water, as now they serve ten times as many people. Unfortunately, we have allowed and continue to allow, excessive utilisation of our watersheds to the point of degradation.

2. *Timber*

Big timber is big money. Governments reserved big timber for themselves, allowing contractors, then parastatals the rights to harvest. The lack of regrowth prompted forestry to replant logged over forest with exotic species! Timber was the all-important product! We saw the importance of this with donor supported heavy mechanical logging in the 1970s and 1980s in East Usambaras. Commercial utilisation was the norm then, “We shall log to the last tree of the contract” said the expatriate manager. Fortunately norms were changing, and the contract was stopped before the last tree! Concerns were with environmentally friendly forestry, which did not compact soil, cause erosion, etc.

3. *Minor forest products now named non-timber forest products*

To local communities these products may be major resources. They include poles and fuel wood, much foodstuff (plant and animal), household utilities and medicine. We are still learning about these products through the new science of ethno-botany! Most products are not taught at college. Some products are subsistence—some are in trade. The scale of this use, which may be small per household—is enormous when multiplied by the thousands using them.

4. *Land*

To a person without land, the forest value most precious of all is the land it occupies! Land is the reason for so much tension over forest conservation. With only 1.9 % of our land as closed forest, we cannot afford to give out any more natural forest!

5. *Biodiversity*

Recognition of the values of biodiversity is more of a western philosophy than a Tanzanian

one. But, at local levels, there is an underlying dependence on biodiversity and a detailed knowledge of the workings of some of that biodiversity. This dependence is rarely vocalised. At leadership levels there is a general awareness of the values of biodiversity but these are often subordinated to shorter-term benefits for both personal and public good.

How then do we solve this riddle of competing values? Solutions come ideally from policies.

FOREST POLICY ISSUES IN TANZANIA

Prior to the 1996 policy, our last approved policy dates from 1953. It recognised the need for both protective (water) and productive (timber) functions, but did not suggest how to find a balance. People were not addressed (they were to be kept out) but pressures were not acute. The Forest Division was efficient. Biodiversity was not an issue—globally or nationally.

Independence came and went, but the same policy remained—it was reinforced in fact. Decentralisation arrived, with much de-facto management power going to Districts. The centre, the Director of Forestry, became an advisory role, and a funding agent. But the Director had little responsibility in determining actual management strategies.

Districts are driven by different agendas from national concerns. Some forests were re-nationalised, for example the Catchment Forests of four regions (but not all regions with catchment forest!). The issue of decentralised forestry regimes has caused more fruitless debate in this past ten years than any other single forest problem. But has there been a detailed analysis of the pros and cons of de-centralisation? No!

I recall a meeting of Kenyan and Tanzanian Foresters discussing Coastal Forest conservation in 1993. We all agreed on the biological issues. We all bemoaned the sorry state of management. But, we disagreed on the solution! In fact:

KENYA,	with centralised forestry, said the only solution is to DE-CENTRALISE,
TANZANIA,	with decentralised forestry, said we must RE-CENTRALISE!

Neither side had analysed what was wrong with their present system, neither side had sought to improve the implementation issues under their system! We still lack rigorous analysis of these and other issues.

In 1986, Tanzania started a new policy process, recognising that the old policy of 1953 was inadequate, principally on questions of how to do things, on conflict resolution, on people, and on cross-sectoral issues. The Tanzania Forest Action Plan (TFAP) gave much professional input to this process. TFAP sought to put forestry more firmly in the centre of Tanzania's economy and decision making.

Forestry—if you add up the export earnings, or add up the collected royalties, or add up the recorded market sales, is a very small sector in the overall Tanzanian economy, but:

- if you count that 90 % of our energy use is fuelwood based,
- if you count that much of our water is from forest catchments,
- if you count up the many services to agriculture,
- if you add up the use of minor products such as plant based medicines,

then forestry is obviously a major contributor to Tanzania's development; and that includes the forests of the Eastern Arc Mountains!

The TFAP recognised biodiversity values, as well as water, people and products. The Eastern Arc forest was recognised as a global hotspot for biodiversity, and became Profile Number 1 for investment. Donor investment did follow, and about half the Arc has donor

support for conservation. TFAP recognised the need for co-ordination in forest management, both horizontally between sectors (*e.g.* forestry and water catchment), as well as vertically from the centre to the Districts. Those of us who have been civil servants will know the difficulty in such co-ordination. Government is often described as a system of isolated antagonistic boxes. The Tanzanian TFAP process was lauded internationally, as was our developing policy process; there was vigour and interest in implementing the plans. And then—it all slowly evaporated. TFAP lost direction, and policy issues faded away. Donor inputs declined and the forests continued to be degraded.

Why forests continued to degrade and why did forestry issues lose importance are good questions, for which we do not have answers. Why did forestry issues decline? There is a need to face up to these questions and to seek root causes of our problems.

MOVING FROM TODAY TO THE FUTURE: WHAT CAN WE DO ABOUT IT?

Here we are in the late 1990s. What resources do we have left on the Arc Mountains? What should we do with the resources, and how? What are the present day dynamics of forests and people?

There are eight separate mountain blocks of the Eastern Arc in Tanzania: the two sets of Pares, two sets of Usambaras, the Ngurus, Ukagurus, Ulugurus and Udzungwas, (and Mahenge a little bit). Each has patches of forest still existing, although it has been greatly fragmented this past five decades.

All of this forest is valuable! As conservationists we are heartened by the words of the Vice President and the Honourable Minister for Forests in their speeches at this Eastern Arc conference. We are pleased that Government attaches significance to the Eastern Arc forests. We are pleased that you see the need for greater conservation input and a greater role for people (including their political leaders), for NGOs and for the responsible government agencies in providing that input.

I worked in India for eight years. A country also with many forest resources, but also with close to a billion people, many of whom are dependent on forests for a livelihood. An older people-centred sustainable development colleague said to me once: “If conservationists ask for the moon, they won’t get it—ask for half the moon and accept that”. Conservationists must be rational, ask for what is necessary to maintain biodiversity, and help ensure the best sustainable use of the rest. (I was a Tanzanian civil servant once, we had a formula that said that you asked Treasury for three times what you wanted, and they gave you a third! Everyone was happy). What is our strategy for forests? How big should our moon be?

What do Tanzanians want from the Eastern Arc Forests? Do we know what or how much forest cover is necessary for water flow, for renewable timber, or for sustainable biodiversity conservation? We have one recent example from Uganda. Ugandan Foresters were instructed by their Cabinet to declare 20% of the whole forest estate as a full Nature Reserve. Which 20% they asked? Uganda planned and undertook a concerted field level biodiversity assessment of their 66 biggest reserves. It took three years. They have now selected their 20%, and a further 30% of the forest for people products. They are now marking the less steep parts of the remainder for sustainable timber use.

We have forests even richer in Biodiversity than Uganda, but we do not yet know which are the richest bits. We have ten Forest Reserves on the Pares, 21 on East Usambara, 19 on West Usambara, eight on the Ulugurus (two are very big), and some 19 or 20 Forest Reserves on the Udzungwa etc. Internally they are very varied. We too in Tanzania, need

forestry survey, we too must prioritise².

To end this discussion, I want to discuss the **forests**, and to discuss **forestry**. Forests are made by God. Forestry is a system designed by man for looking at forests. Forestry is the practice of planning, conserving, managing and using the Forests. Forestry is the interface between people and the forests. Foresters for years were obsessed by the trees, and people were ignored. The last ten years have seen a great change in forestry, in that there is a realisation that you cannot exclude people from the forest resources—at planning or managing or using levels. The Government of Tanzania has recently espoused the cause of involvement. Joint Forest Management (JFM) and Community Based Natural Resource Management (CBNRM) are developing approaches. I am proud to be associated with two Tanzanian NGOs, the Wildlife Conservation Society of Tanzania, and the Tanzania Forest Conservation Group, which campaigned for such a move³.

Participatory management does not happen overnight, it too needs careful thinking and planning. The participatory approach will not be easy, but surely it is the way ahead! I return to the Indian situation and stress that in India the realisation that JFM was a necessary strategy took some 20 years to crystallise. There was a slow realisation phase followed by a slow building of capacity and management methodologies. This capacity required the re-training of field staff to accept this transfer of responsibility, re-training of local institutions to accept the new role, new research and extension packages. New problems arose over equity, conflict between stakeholders etc., but it is working. Government and community partnerships, supported by international (*e.g.* Ford Foundation), national and local NGOs helped make it work.

We now have a policy that emphasises community participation. Unfortunately we still await the strategies and partnerships to operationalise it. **Empowerment** of people and building capacity to use that empowerment are immediate bottlenecks. Managing forests—which is the practice of forestry, requires more than just the forest trees. We need a holistic approach, we must work at the total system “The Forest in its people setting”. For example, the **Uluguru Mountains** (with Dar es Salaam downstream) should be the focus of attention, not for example Bunduki Forest Reserve! The whole Uluguru mountain system, with its forests and its people and its agriculture and its hydrology require input. We have begun to do that, through starting NGO and donor efforts. This is seen by CBD as the way forwards—‘the Ecosystem approach’.

Today we talk about ‘Sustainable Forest Management’. That was the theme of the 1997 World Forest Congress in Turkey. I quote from the opening speech from the Head of Forestry in FAO: “**A Sustainable Forest Management** concept and strategy is needed if we are to meet the demands on our forests in the 21st century. Achieving such a capability will need a broad holistic viewpoint, (not the present constrained sectoral view), with a framework that unites both science and social consciousness. This will require three distinct dimensions:

- “**An Environmental Dimension** that aims at the perpetual maintenance of resources.
- “**An Economic Dimension** that looks at the production of commodities and services.

² In the East Usambara Mountains a forest survey NGO, Frontier, has undertaken a detailed survey of the individual Forest Reserves.

³ It was the NGO movement, principally the WCST, which hosted the 1996 workshop in Dar es Salaam “Putting Environment on the Political Agenda” at which both H.E. The President and the Ministry of Natural Resources and Tourism (via the Principal Secretary) stated that communities must be involved.

- “**A Social Dimension** that involves people in decision making around forest management and the distribution of the benefits of forestry.

“Foresters cannot achieve these dimensions on their own. Foresters will have to join forces with other agencies including with local people”. We have seen the start of such cooperation on the Uluguru Mountains. We are looking at **integrating conservation and development** (in today’s jargon-filled world—ICD Projects). Such projects are not easy! There are many lessons to be gathered from other initiatives. The need for adequate participation is one of them. The start to integrated conservation and development is a **vision** or a **goal**. Some of that vision is found in the opening statements to this conference by H.E. The Vice President. Some of that vision is in the recently approved Forest Policy⁴. We must spread that vision. We must disseminate it. We must operationalise it as a **working strategy**.

The policy process will be followed by revised laws. We look forward to modern laws. The past Centralised Command and Control strategy spelling out “Thou shalt not...” is over. We want partnerships, the laws should spell out responsibilities for the partners. That forest-people vision and its strategies must link to the Water sector and to the Agriculture sector. A sustainable forest means sustainable people lifestyles. Sustainability in a country with a 2.8% per annum population growth rate, and a desperately impoverished government, will not be easy to achieve. Strategies should lead to specific management plans and to actions. Here we can have the management plan for Bunduki FR, including linkages to the people around Bunduki. There would have to be the Action Plan for the People around Bunduki as well!

This will take resources; this will need capacity. We heard today from our political leadership that the Eastern Arc forests are a national conservation priority. We see today the great national and international interest in the Arc. I am sure we can find resources as a partnership. There is urgency, we do not have much time. There are huge pressures and forest is still being lost. We have not been the fastest in the past ten years: new forest reservations are still stuck; new concepts take forever to approve (the Nature Reserve for Amani took ten years). Turning rhetoric into action as at Pugu took years.

But, with political will, with technical direction, with stakeholder involvement and with donor support, WE CAN DO IT! There is donor support. There are promises of more. This year 1998 the Global Environment Facility (GEF) started the process of developing a conservation support programme for the Eastern Arc. A programme to be developed in consultation with partners.

The Eastern Arc Mountain Forests form a Global Hotspot, internationally recognised for its importance for conservation. It is located in Tanzania, and so Tanzania has accepted responsibility for its conservation through the Biodiversity Convention. The West (the countries who can afford to conserve, and who do seek conservation goals much more than we do) have accepted responsibility to meet some of those costs of conservation. Government in Tanzania must build linkages to international support mechanisms. The local people of Tanzania still pay much of the costs of conservation. We in Tanzania must look at how to build partnerships there as well.

It is not my purpose to say what we should do next, we have the whole workshop to chart out the next steps. It is also not the purpose of this paper to set out the scientific detail of the Arc Forests. That is done elsewhere.⁵ My purpose was to set the scene, that I have done.

⁴ Cabinet approved the Forest Policy in March 1998.

⁵ For example in the detailed book on *The Biogeography and Ecology of the eastern Africa Rain Forests*, edited by Lovett and Wasser (1993). My chapter in that book sets out much of the past history and human-forest interaction.