

The Mau Forest in the Rift Valley: Kenya's Largest Water Tower: a Perfect Model for the Challenges and Opportunities of a Sustainable Development Project?

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Key words: community participation; conservation; sustainable development; capacity building; nature tourism; Kenya national parks and reserves; Land management;

SUMMARY

Cutting of trees has been going on for decades. In those days, the 50's, 60's and 70's school children were expected to regularly bring a tree seedling from home for replanting on the school compound or to be given to the faculty who either planted them on the school compound or took them home. There was a rule that for every tree cut two must be planted. People got arrested if they flouted this rule. Since then things have changed, there is persistent cutting but no replanting. Those who need wood fuel, charcoal and the loggers who want lumber for construction, etc. As a result there is a serious net deficit in number of trees. Forests have been depleted mainly through logging; saw – milling and charcoal burning

Mau forest is Kenya's largest water tower - it stores rain during the wet seasons and pumps it out during the dry months. It used to cover 400 thousand hectares, but 100 thousands of these have been expropriated. The Mau Forest Task Force identified the period between 1996 and 2005 as the worst decade for the forest cover in the country. But during the past 15 years, more than 100,000 hectares - one quarter of the protected forest reserve - have been settled and cleared. Tearing out the trees at the heart of Kenya has triggered a cascade of drought and despair in the surrounding hills and valleys.

"The plunder of Kenya's forests has continued over the years despite pleas to conserve them because of mismanagement, irresponsible and corrupt behaviour of politicians and government officials. This destruction has manifested itself in the form of deforestation, the shamba system, human settlements, cultivation, charcoal production and grazing. In addition to the Mau forests complex, all the other four water towers namely; Mt Kenya, Aberdare Ranges, Mt Elgon, and Cherengani Hills have receded alarmingly."

Nobel Laureate Prof Wangari Maathai. Sept 2009

Government is facing the challenge by deciding to replant the Mau Forest cover, and hopefully use the effort as a model to recover the other water towers. One aspect of restoring the forest is to relocate those who "invaded" it. Some have title deeds and one wonders how these were obtained without the connivance of the Surveyor. The hottest debate in our parliament is whom, how, how much should be compensated. Is the principle acceptable?

Human Rights groups are divided on this one matter of compensation: There are those who favour the idea that as long as someone has a genuine title they must be compensated fair value. These are the groups that sympathize with the families and communities that were resettled into the forest by the Government, ostensibly because they were landless. Yet other human rights groups are opposed to tax payers' money being used to refund those who "raped" the forest.

Kenya has to honour International treaties like the Nile Basin Treaty. Moreover there are internationally recognized best practices. For example the national forest cover has dropped from 12.5% in 1963 to under 2% in 2008 – The internationally accepted minimum cover is 10%. UNEP is based in Kenya and has set standards

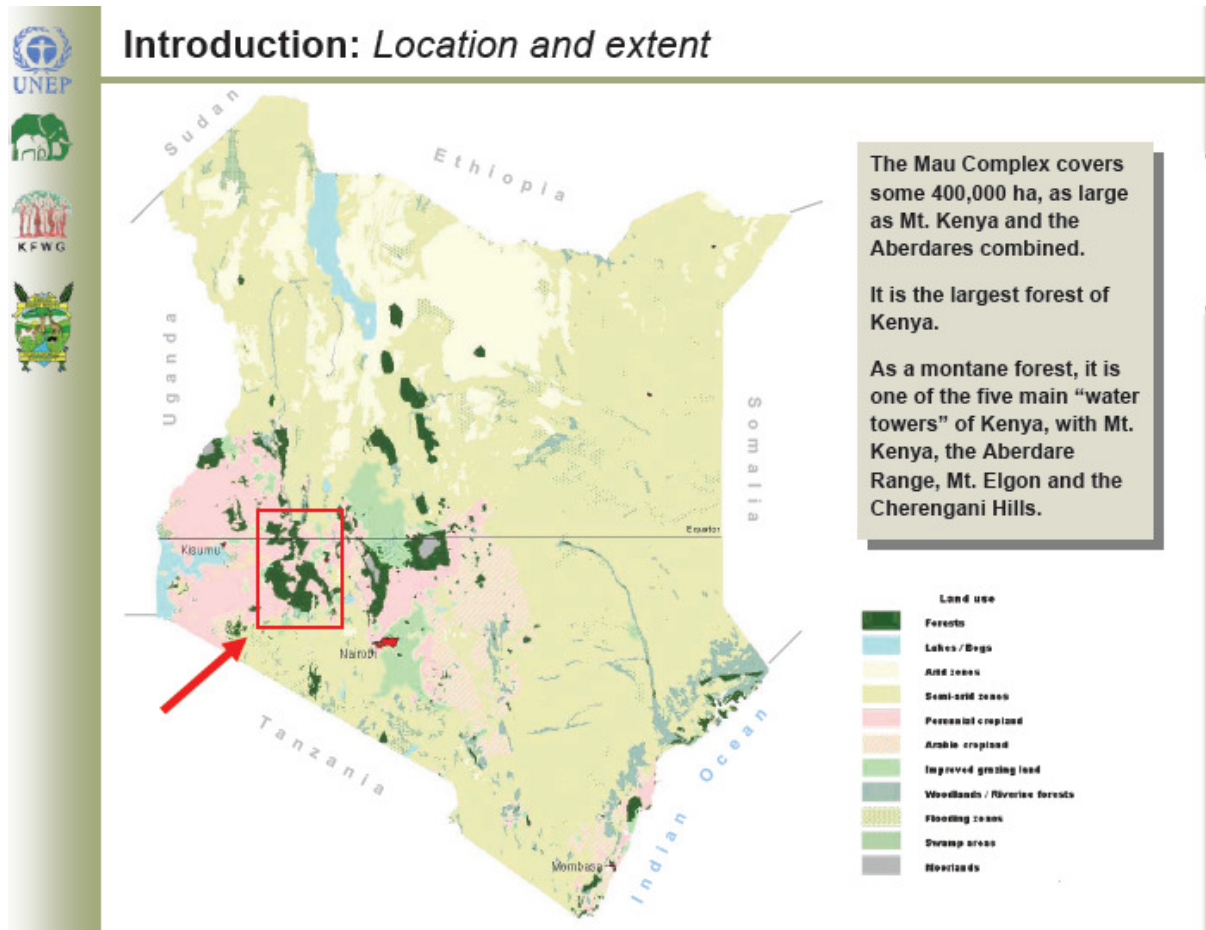
With the plundering have come several outcomes, or shall we say consequences. Some social, some economic, and the most dramatic have been the weather patterns. In this age when climate change and environmental protection for sustainability, virtually dominates every international discussion we must be seen to be aware and to adhere to the best practices worldwide.

The rivers that flow from the forest are drying up, and as they disappear, so too have Kenya's harvests (and food security), its cattle and other livestock farms, its hydro-electricity, its tea industry, its lakes and even its famous wildlife parks.

The finger of blame is being pointed at the settlers in Mau. And the solution, according to a special task force appointed by Prime Minister Raila Odinga, is to uproot the invaders and replant the trees.

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1.0 NATIONAL DEBATE

In the national debates, a section of Rift Valley Province (North Rift) MPs led by Agriculture minister William Ruto has been at the forefront in opposing what they see as arbitrary eviction of beneficiaries of forest land before the government crafts a compensation plan or an alternative settlement scheme for squatters. Other Rift Valley MPs from South Rift are of a totally different view and are demanding the immediate removal of the forest settlers, whom they blame for their rivers drying up.

The North Rift MPs argue that most of the settlers are victims, having been caught flat-footed in the mire after buying their lands from other parties. Among the Rift Valley MPs, the Mau debate has particularly put Mr Ruto between the hard place and a rock.

Agriculture is one of the sectors that is directly exposed to destruction in the Mau and Mr Ruto himself has been working on a conservation policy that he says will compel farmers to plant at least 10 per cent of their farms with trees in a campaign to grow the country's 1.7 per cent forest cover towards the 10 per cent threshold that the United Nations Environmental Programme (UNEP) recommends.

I recall one MP who recently said that rain does not come from forests, but from the skies. This is a university educated leader who finds himself on a different platform of “live and let die”. He was speaking to the gallery; I suppose and probably had misplaced his thinking cap. It is also possible that the audience was as gullible as he expected. The truth is that some of the people actually had farms that were doing relatively well, but were lured to larger parcels in the forest reserves, and abandoned their original plots, which were then consolidated by the people who lured them away!!

SUSTAINABLE DEVELOPMENT

Sustainable Development, a term commonly defined as “economic and social development that meets the needs of the current generation without undermining the ability of future generations to meet their own needs”. This almost universally quoted definition was produced in 1987 by the World Commission on Environment and Development (WCED), otherwise known as the Brundtland Commission (after its Chairwoman, Gro Harlem Brundtland, Prime Minister of Norway).

Since the mid 1970s, sustainable development has emerged as the preferred way of dealing with the rapid degradation of the natural environment. The first global meeting on this issue, the UN Conference on the Human Environment in 1972, focused mainly on the environmental issues, such as pollution and waste, that were most evident in the wealthy nations, and associated with industrial development and a rapid growth in consumption. Much less attention was given to the needs of lower income countries of the developing world (commonly referred to as the South, because of their geographical position) for stronger and more stable economies, as well as environmental improvement. Although the need to combine development and environment goals was becoming evident, more emphasis was placed on the “limits to growth” arising from shortages in resources such as metals and fossil fuels.

The new concern for what later became labelled “sustainable development” is evident in the Cocoyoc Declaration of 1974, which addressed the issue of how to respect the “inner limit” of satisfying fundamental human needs within the “outer limits” of the Earth’s carrying capacity. But it was the World Conservation Strategy of 1980 that launched sustainable development into the international policy arena, stressing the importance of integrating environmental protection and conservation values into the development process. The Brundtland Commission then paved the way for the UN Conference on Environment and Development (UNCED), otherwise known as the Earth Summit, in Rio de Janeiro in 1992. This conference approved a set of five agreements:

1) *Agenda 21*—a global plan of action for sustainable development, containing over 100 programme areas, ranging from trade and environment, through agriculture and desertification, to capacity building and technology transfer.

2) *The Rio Declaration on Environment and Development*—a statement of 27 key principles to guide the integration of environment and development policies (including the polluter pays, prevention, and precautionary and participation principles).

3) *The Statement of Principles on Forests*—the first global consensus on the management, conservation, and sustainable development of the world’s forests.

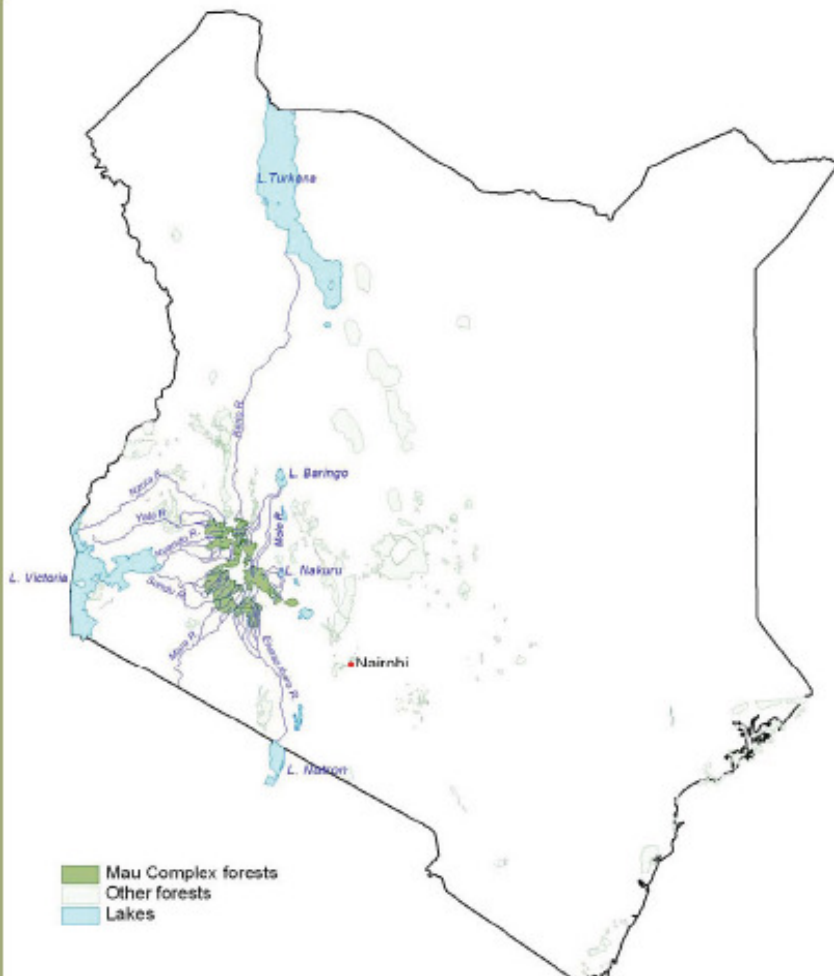
4) *The Framework Convention on Climate Change*—a legally binding agreement to stabilize greenhouse gases in the atmosphere at levels that will not upset the global climate.

5) *The Convention on Biological Diversity*—a legally binding agreement to conserve the world’s genetic, species, and ecosystem diversity and share the benefits of its use in a fair and equitable way.

Kenya is a signatory to these protocols and should be seen to adhere to them. There have been excellent steps taken towards wildlife conservation. The creation of Kenya Wildlife Service (KWS) in 1989, as a successor of the Wildlife Conservation and Management Department within the Ministry of Tourism and Wildlife was a clear indication of the seriousness with which the Government embraced wildlife conservation. Poaching was nipped in the bud. Game hunting had already been banned. Excellent focus. This was not however replicated in the twin conservation of forests, until twenty years later (2009) when the Kenya Forests Service was established under an act of parliament. Twenty years of vandalizing of our forests. Government cannot escape culpability. The Forests Department was a Department in the Ministry of Environment and Natural Resources and was therefore party to the mismanagement and resultant destruction, not only of Mau Forest, but all the other four towers.



Mau Complex: critical water catchments



The Mau Complex forms the upper catchments of all (but one) main rivers west of the Rift Valley, including:

- Nzoia River (→ Lake Victoria)
- Yala River (→ Lake Victoria)
- Nyando River (→ Lake Victoria)
- Sondu River (→ Lake Victoria)
- Mara River (→ Lake Victoria)
- Kerio River (→ Lake Turkana)
- Molo River (→ Lake Baringo)
- Ewaso Nyiro River (→ Lake Natron)
- Njoro River (→ Lake Nakuru)
- Nderit River (→ Lake Nakuru)
- Makalia River (→ Lake Nakuru)
- Naishi River (→ Lake Nakuru)

It feeds major lakes, including:

- Lake Victoria
- Lake Turkana
- Lake Baringo
- Lake Nakuru
- Lake Natron

of which three are cross-boundary:

- Lake Victoria (Nile River Basin)
- Lake Turkana (Kenya / Ethiopia)
- Lake Natron (Tanzania / Kenya)

Forests Act, 2005

AN ACT of Parliament to provide for the establishment, development and sustainable management, including conservation and rational utilisation of **forest** resources for the socio-economic development of the country: Recognising that forests play a vital role in the stabilisation of soils and ground water, thereby supporting the conduct of reliable agricultural activity, and that they play a crucial role in protecting water catchments in **Kenya** and moderating climate by absorbing green house gases; AND further recognising that forests provide the main locus of Kenya's biological diversity and a major habitat for wildlife; AND Acknowledging that forests are the main source of domestic fuel wood for the Kenyan people, and that they provide essential raw materials for wood based industries and a variety of non-wood **forest** products; AND WHEREAS **Kenya** is committed to the inter-sectoral development and sustainable use of forestry resources and is committed under international conventions and other agreements to promote the sustainable management, conservation and

utilisation of forests and biological diversity:

Maasai Mau: *forest destruction*





Nabutola/ National Ass. Of Kenya Olympians (February 2010)

1.1 The Heart Of Kenya

- Mau forest is the largest in Kenya, and to put it in perspective, it is the size of the Aberdares Mountain Range and Mount Kenya combined.
- More than 12 million people (Kenya's population is about 40 million as per the census of 2009) depend on its 12 major rivers.
- Plus eight wildlife reserves - including the Maasai Mara, the Serengeti and Lake Nakuru
- But already, a quarter of its 400,000 hectares have been destroyed by farmers and loggers

Yet among environmentalists there is some relief that, at last, Kenya has woken up to a disaster that has been brewing for decades. The fuse for all these disasters was lit in Mau.

1. The Mau Forests Complex forms the largest closed canopy forest ecosystem of Kenya, as large as the forests of Mt. Kenya and the Aberdares combined. Being one of the five water towers in Kenya and the single most important water catchment in Rift Valley and western Kenya, it is a natural asset of national importance. Its forests provide vital ecological services to the country, in terms of water storage; river flow regulation; flood mitigation; recharge of groundwater; reduced

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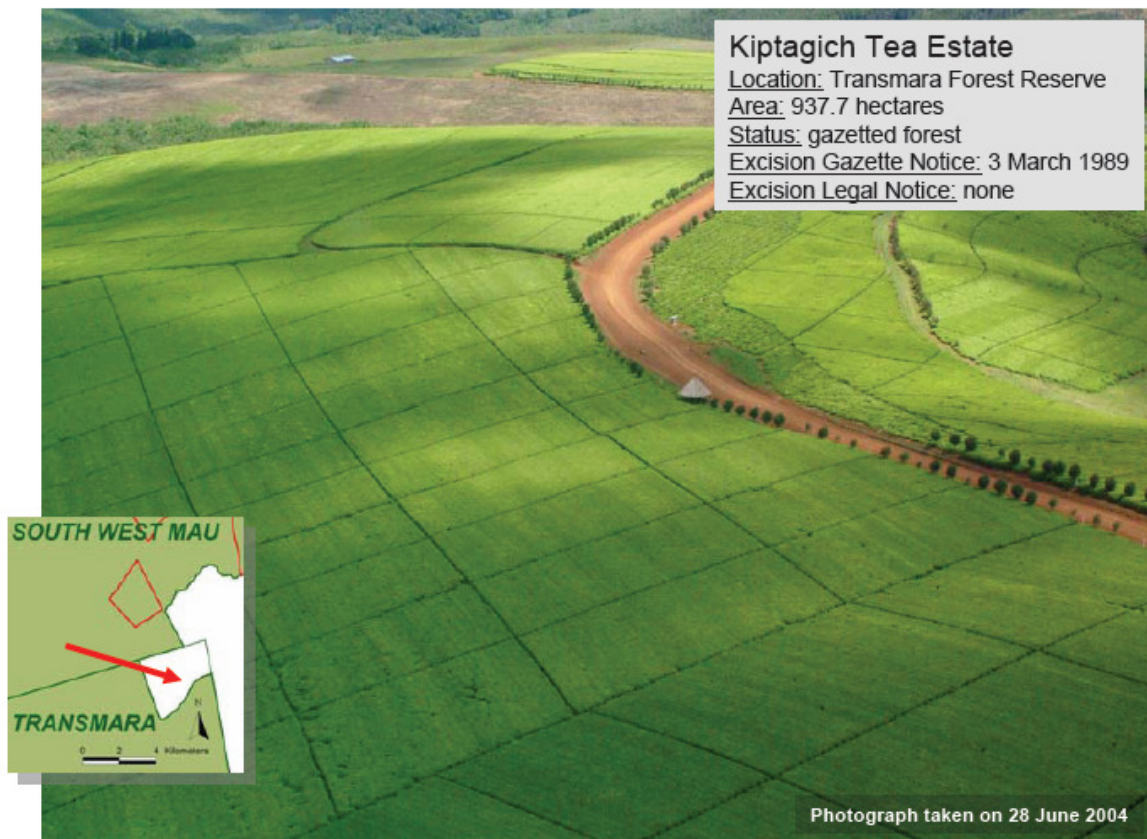
“The Mau forest: Kenya's largest water tower: a perfect model for a sustainable development project?”

FIG Congress 2010:

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soil erosion and siltation; water purification; conservation of biodiversity; and, micro-climate regulation. Through these ecological services, the Mau Forests Complex supports key economic sectors in Rift Valley and western Kenya, including energy, tourism, agriculture, and industries. The Mau Forests Complex is particularly important for two of the three largest foreign currency earners: tea and tourism.

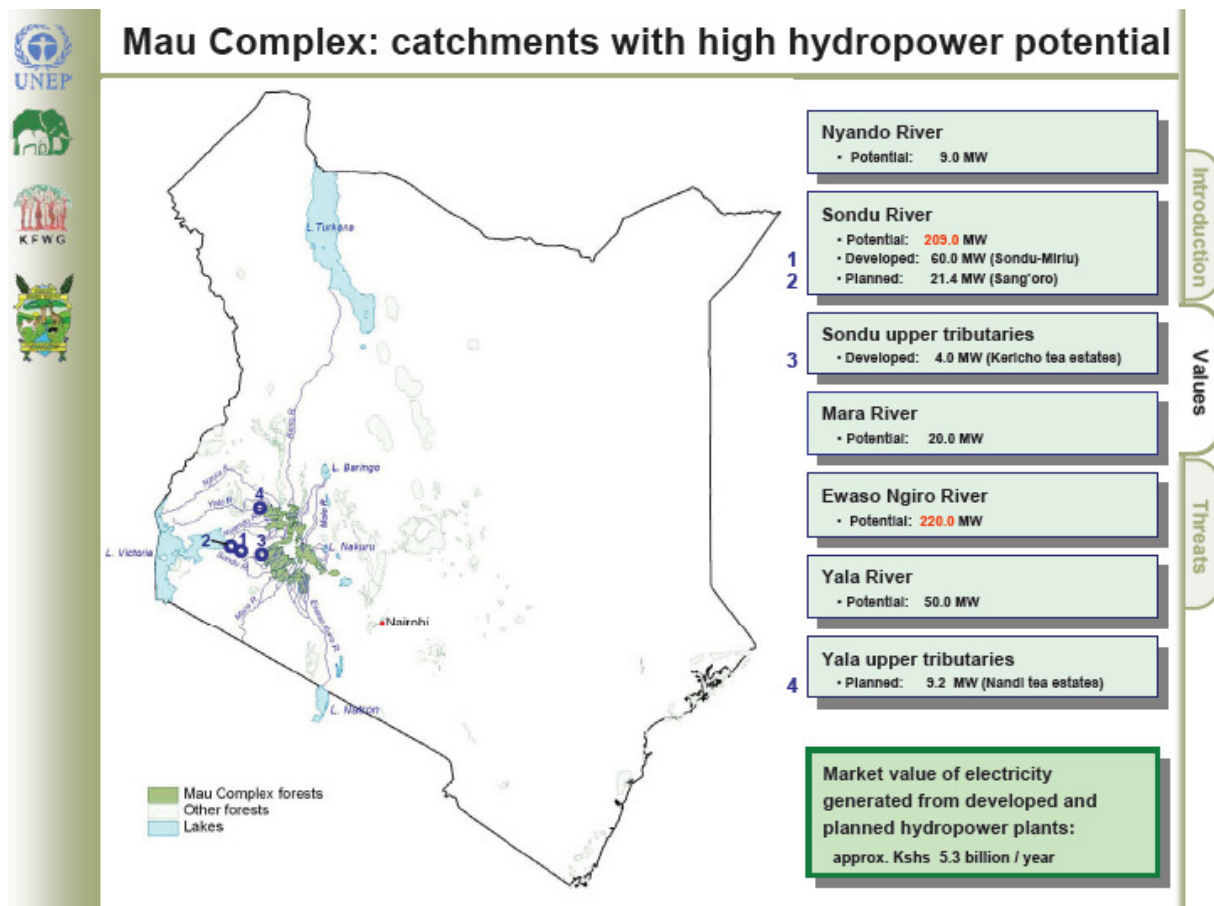
Transmara FR: *Private tea estates*



2. The Mau Forests Complex is strategically important in terms of water catchments not only for Kenya but also for the region. Its forests form the upper catchments of 12 main rivers that drain into five major lakes: Baringo, Nakuru, Natron, Turkana, and Victoria. Three of these lakes are international water bodies: Natron (Kenya / Tanzania), Turkana (Kenya / Ethiopia) and Victoria (Kenya / Tanzania / Uganda). Considering that five of these 12 rivers flow into Lake Victoria, the Mau Forests Complex is important to the River Nile Basin water resources.

2.0 LEGAL IMPLICATIONS

Even as the government grapples with the replanting of one hundred million trees, in the Mau Forest, it has to contend with the fact that it is the one which decided to excise the forests with, ostensibly, the aim of settling landless Kenyans. Some of these had land where they came from but were lured by the possibilities of larger parcels, in virgin territory. . They gave up their original pieces and moved to the forests. They were issued with title deeds. Of 20,000 families living in the forest, it is estimated that about 1,962 have genuine title deeds. But how genuine are they, given that they were issued on a false premise of public land for public use, converted to private use? There are arguments arising from both sides of this debate, and both are very compelling and urgent. These are ordinary Kenyans that may not have had the advice needed to make informed decisions.



3.0 ECONOMIC COROLLARY

The communities who settled into the forests have, over the years made it their home and source of livelihood. They cut the trees and utilize them for a living. They need it for wood fuel, charcoal selling to the cities and towns and for construction purposes. Then there are the saw miller and other logging companies. These commercial entities harvest trees en masse. There does not appear to have been a “fall back” position when the trees ran out. They just

kept harvesting and harvesting, deeper and deeper into the forests. There seemed no way to stop them, or even check their methods, worse little attempt was made to replenish the receding flora and fauna.

3.10 The rivers have potential for 518MW hydro electricity - 41% of Kenya's total
In all, the forest provides an economic benefit of more than 20 billion shillings (£166m) per year (UNEP)

3.1 Trouble In Paradise

Wildlife tourism - another pillar of Kenya's economy - is wilting in the heat. Lake Nakuru, the birdwatcher's paradise, is disappearing. The rivers that feed it have run dry. They come from Mau. “ **It is a lake you can literally walk across** ”

And in the Masai Mara National Game Reserve, the river which hosts the world famous "crossing of the wildebeest" has fallen to its lowest ever level..

3.2 Cattle Die

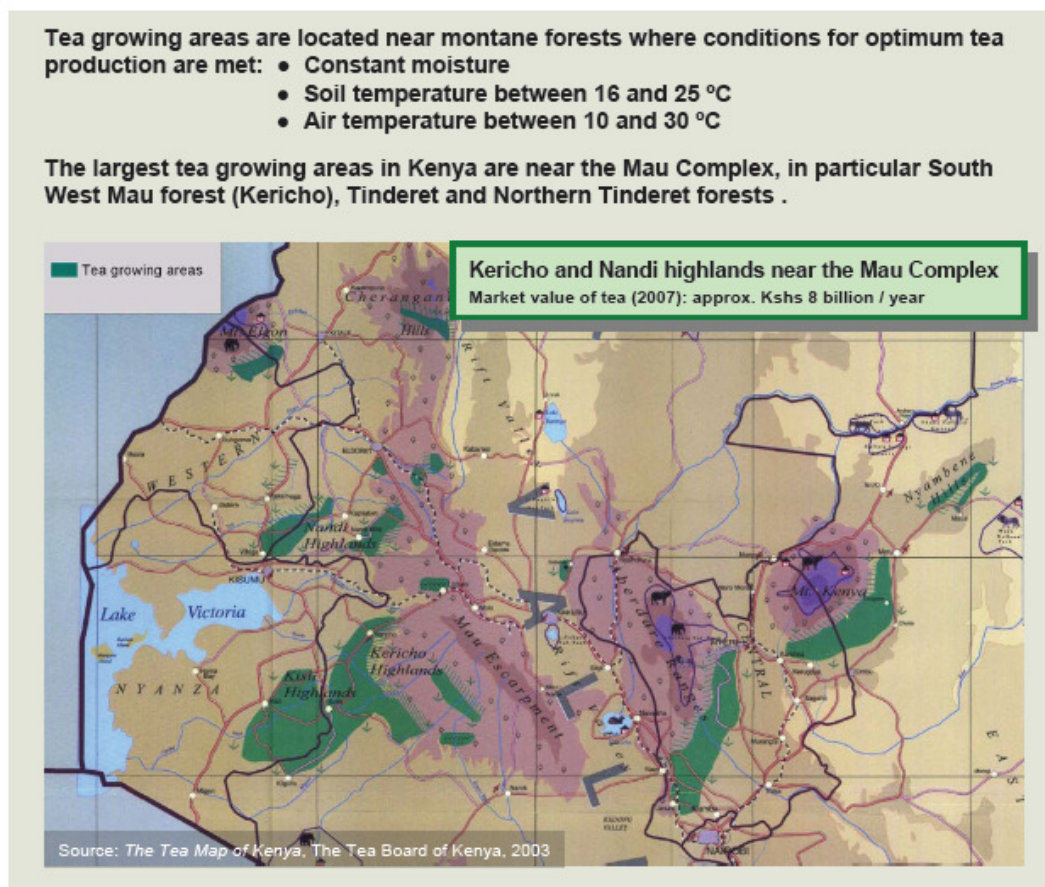
Narok County - the breadbasket of Kenya - was a barren dustbowl in April, the wettest month of the year. The government declared a "national emergency" with 10 million Kenyans facing starvation. Cattle keeled over and died, in their millions. And as the drought worsened, the Kenyan government was forced to bail out farmers by slaughtering their weak animals for just 8,000 shillings (\$105; £65) a head. Most African communities cherish their livestock, but for the Maasai it is a far greater value proposition.

3.3 Tea Fails

In western Kenya, the tea plantations of James Finlay, which feed on the rivers of western Mau, have seen their yields cut to 80%. And the town of Kericho experienced water rationing

for the first time in a generation.

Values: Major micro-climate regulators for crops



4.0 SOCIAL CONSEQUENCES

Many families are being separated as they are relocated to various parts of the country. Some have been reported to have moved to “internally displaced persons” camps. They are not happy to have their normal daily lives interrupted, rudely, I might add. Their cultures are compromised. In the African context, a community is made up of closely related family members almost always from the same blood stock. With society opening up and allowing their members to relocate, as they look for means of livelihood, their patterns of life are changing. Many individuals move into cities and towns but there is a place they call home, as opposed to the house they lease or even the one they have on mortgage. Deep rooted time honoured cultural practices like circumcision are embraced. Even female circumcision has not been entirely eliminated. So despite the many seminars and workshops, a significant number of girls still sneak off to get “the cut”.

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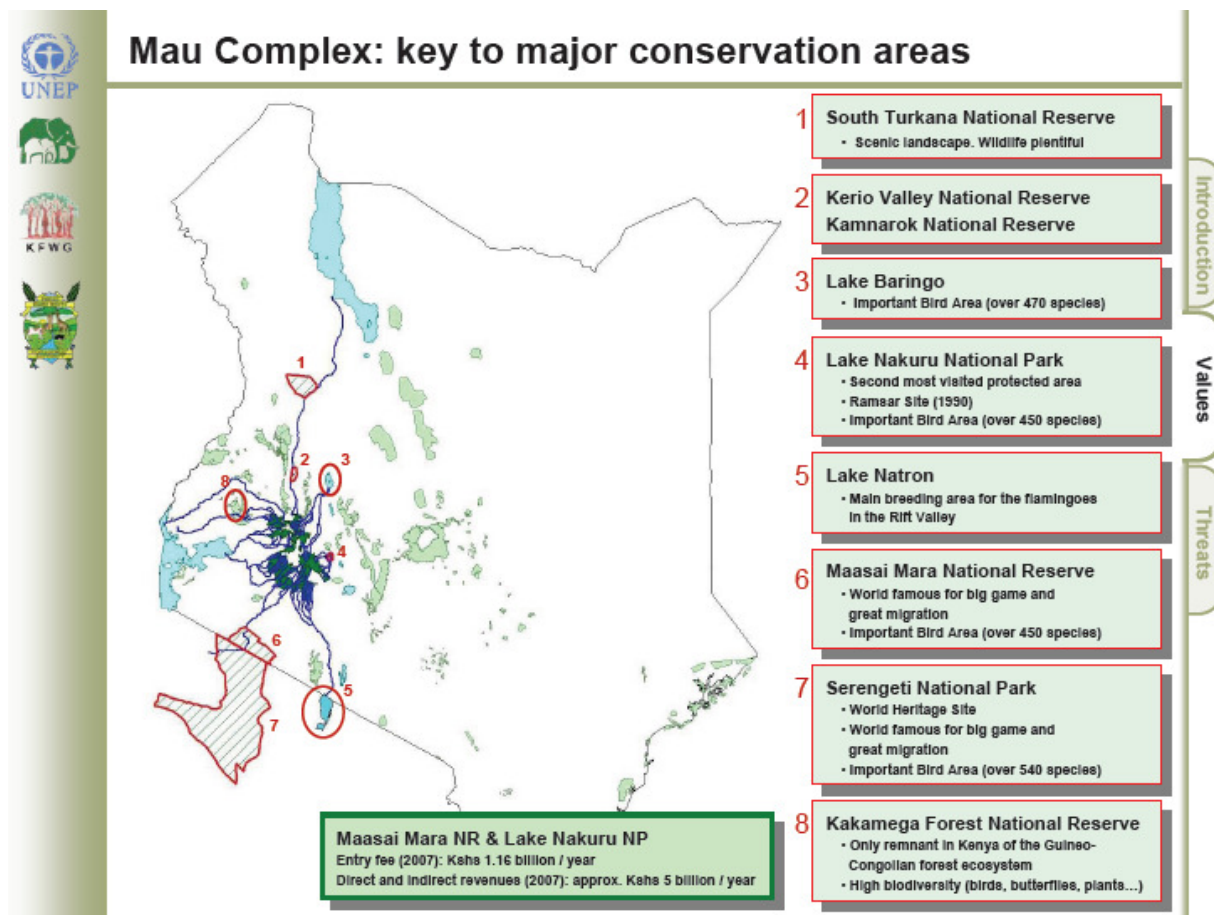
“The Mau forest: Kenya’s largest water tower: a perfect model for a sustainable development project?”

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5.0 THE OGIEK FACTOR

These are communities whose only home is the forest. They have lived like this for centuries. It would be callous to ignore their special circumstances. There are those who argue that their traditional ways of life are out of tune with modern life but who is to tell, which is the lesser evil? They live of the forest resources but they do not deplete them. They live amongst the trees and animals in harmony, as one. The government has made concessions for these communities to continue living in the forests, but there are human rights to be considered. They too need social infrastructure like schools, hospitals, roads, etc. Above all they deserve the chance to practise their own form of development. They may not necessarily require the western based style of living. *See the bee hive*



6.0 GOVERNANCE CHALLENGES

One of the major factors at play is governance standards. How decisions are arrived at and how they are implemented or not implemented. To be recognized and appreciated, by being

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involved and participating in the decision making processes are, to me, the biggest single factor in human dignity. It does not stop there. If decisions are being made that concern or affect an individual citizen or a community, then they deserve the right to know what the score is. For that principle to be meaningful the affected persons must be made aware and educated enough to participate actively in that governance process. Not infrequently, people wake up and find that government has decided for them. This is particularly so, of the so called development projects that are imposed onto the people. In the end they do not have ownership and then the benefactors wonder why they do not appreciate them and why they fail to meet the intended objectives.

Equally challenging is the tokenism approach where one or two from the community are chosen arbitrarily and claimed to represent the people. Civil servants and politicians are notorious for this.

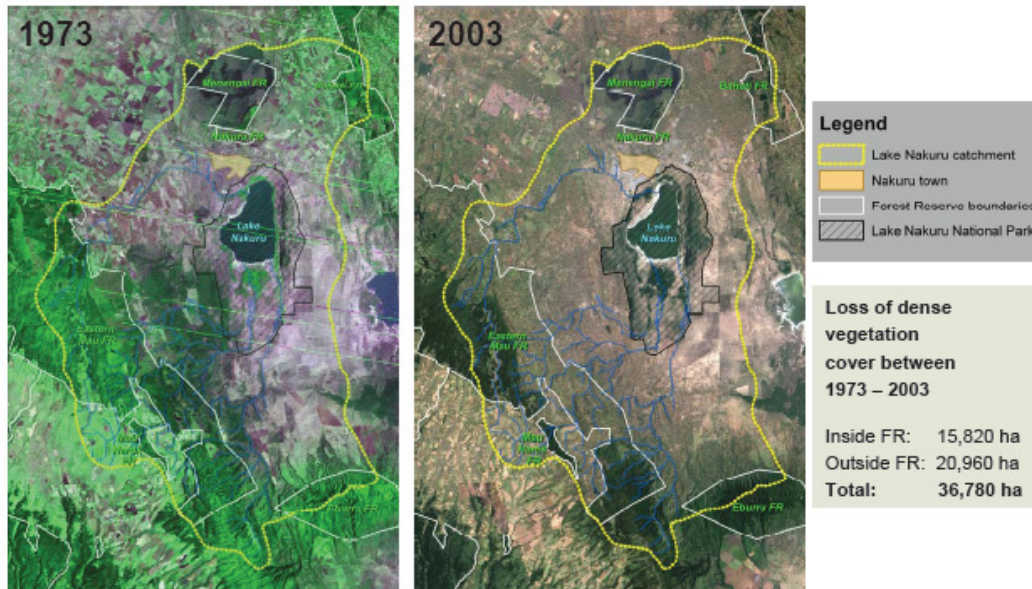
The imminent relocation from the Mau would not have left such bitterness amongst those affected if a different more humane approach had been adopted. The execution of the decisions though urgent and important was done badly. It is not as if the forests just disappeared overnight. Elsewhere in this paper, we have discussed the period that was most notable, between 1996 and 2001, but the destruction of the forests began way before independence in 1963, and accelerated when political expediency took the place of pragmatic scientific conservation, 33 years after that. .

The basic yardsticks for good governance are: accountability, transparency and openness, rule of law, participation; equity and inclusiveness; efficiency and effectiveness; consensus based; responsiveness.



Eastern Mau FR: 2001 excisions affect Lake Nakuru

The 2001 excision in Eastern Mau impacts tremendously on the catchment of Lake Nakuru. Between 1973 and 2003, 36,780 hectares of dense vegetation cover were lost in the catchment of Lake Nakuru, representing a loss of 49 % of its total dense vegetation cover. Boreholes are already drying (Egerton University) and rivers becoming seasonal (Njoro).



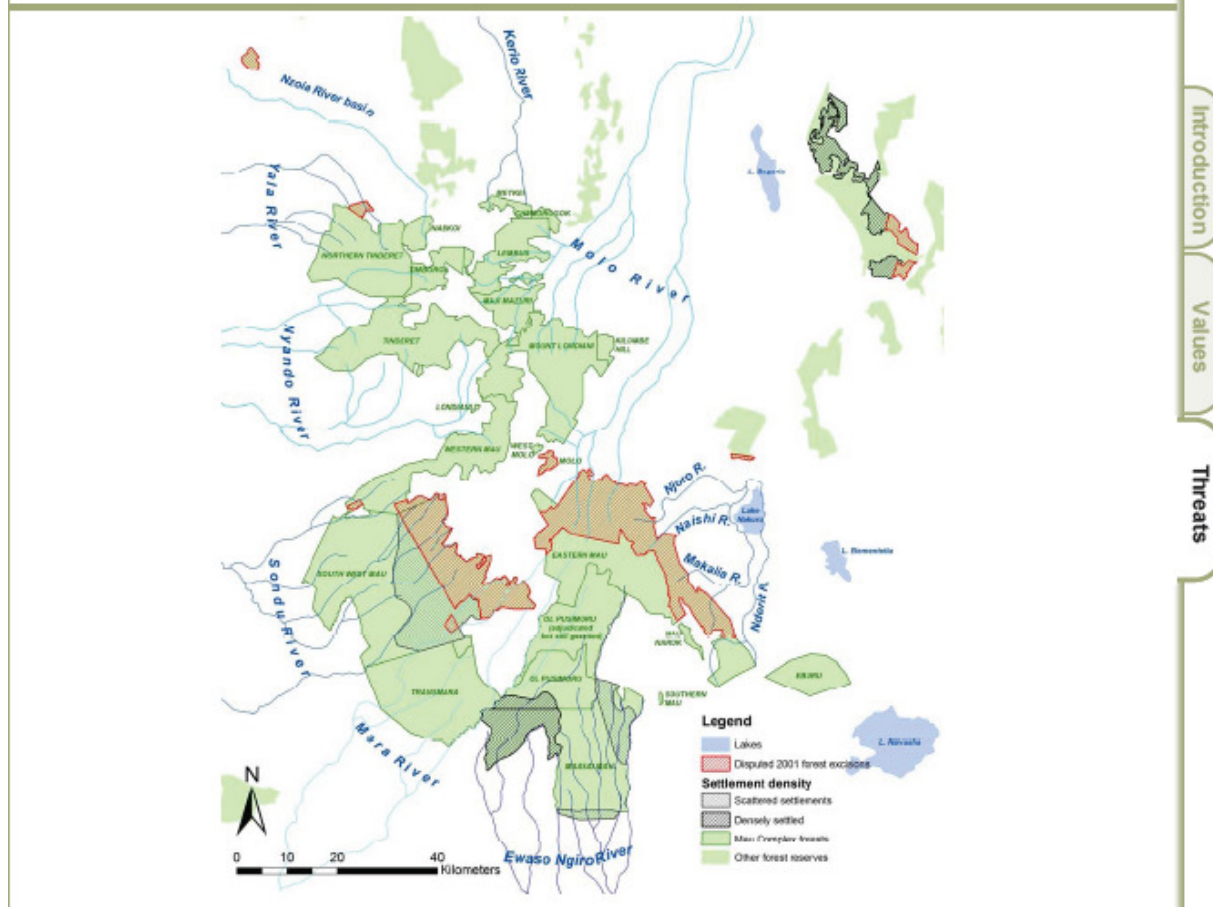
Sources
 - Landsat MSS and ETM Images. False colour composition
 - Forest boundaries: KIFCON project, Forest Department

Introduction
 Values
 Threats

7.0 HUMAN WILDLIFE CONFLICT

Water scarcity has brought wild animals and farmers into conflict. Deaths, injuries and compensation claims are at record highs in Narok, according to the Kenya Wildlife Service (KWS). Traditionally the communities who lived around game reserves and national parks were allowed to graze in the protected areas. This mutual arrangement was a variation of what had been practised for centuries. As human populations increased the land available remained the same. Land adjudication as per Swynnerton Plan of 1954, which was further embedded into our laws by the enactment of the Land Consolidation Act (cap 283) and Land Adjudication Act cap 284, were designed to marginalize the majority of the people. No interventionist strategies were in place to ensure that conservation of biodiversity is not done at the expense of the communities' interests. The communities had lived side by side with wildlife and co-existed quite comfortably. They hunted only for subsistence. Then the colonial era arrived and with it game hunting as a sport, with guns and other weapons of mass destruction. This new phenomenon changed, forever, the way things were done. Roaming free was inhibited. Large tracts of land were set aside purely for wildlife protection but for whom against whom?

Threats: 2001 forest excisions and illegal encroachments



8.0 HUMAN TO HUMAN CONFLICT

"We are looking at securing the livelihoods and economies of millions of Africans who directly and indirectly depend on the ecosystem. If the destruction of Mau shall continue I can assure you that a lot of people will suffer." "And the implications go beyond the environment. This has the potential to create insecurity as people squabble over dwindling resources."

The prime minister was speaking at the United Nations - appealing for donations of \$400m (£250m) to "rehabilitate" Kenya's water supply. If he does not act, he foresees a struggle for water and land which could escalate into a bloody civil conflict. Because in the valleys downstream of Mau forest, farmers like Peter Ole Nkolia are running out of water, cattle, and patience.

"Those people up there need to just move, what you are going to see here in Narok is just the skeletons of cattle - and maybe people.," says Mr Nkolia, a cattle farmer as he stands by the carcass of a dead cow.

“Worse still, the water from the Mau Forest quenches the thirst far beyond Kenya: "This is no longer a Kenyan problem," said Mr Odinga. "Tanzania and Egypt are feeling the heat from the Mau.

- Its rivers feed Tanzania's Serengeti National Park, one of that nation's finest protected areas that generates millions of dollars annually through nature tourism.
- The same rivers keep the fishermen of Lake Victoria afloat. Fishing business on the lake generates about Kes. 16 billion annually and employs more than ten thousands directly. And more than thrice that number indirectly..
- When you consider that Lake Victoria is the source of the Nile, you begin to grasp the scale of the crisis the Kenyan government is facing.

9.0 ECOLOGICAL AND ENVIRONMENTAL RAMIFICATIONS

But can deforestation really be to blame for all these catastrophes? After all, there have always been cyclical droughts in Kenya. The trouble is that these droughts are becoming more frequent, more severe and less predictable. Particularly since 2001 - the year when 60,000 hectares of Mau were allocated to settlers and cleared.

"It rains a lot in Kenya - but only in the rainy seasons. Then you have four long months with not a drop, so you need a buffer zone - a way to ration the rain water and release it slowly into the rivers in the dry season. That buffer is the forest. If you remove this ecosystem, you reduce the moisture reservoir. Which means that in the dry season... 'Hakuna maji'. No water." explains Christian Lambrechts, from the Nairobi-based UN Environment Programme (UNEP).

The biggest challenge of all facing Kenya is the ecological one - the coordinated replanting of 100,000 hectares of indigenous forest - more than 100 million trees. It will take decades to restore the canopy - years in which Kenyans will continue to suffer from the double-whammy of local land degradation and global climate change.

“I keep telling people... if you destroy the forests, the rivers will stop flowing... "I keep telling people, let us not cut trees irresponsibly... especially the forested mountains," she says. "Because if you destroy the forests, the rivers will stop flowing and the rains will become irregular and the crops will fail and you will die of hunger and starvation”.

Prof Wangari Maathai, Green Belt Movement

OBSERVATIONS AND CONCLUSIONS

1. Majority of the People don't know and they don't know that they don't know. No effort is applied to ensure this situation is reversed.

2. The forests are a major, I would say, the only source of sustainable livelihood. The current approach is not sustainable, we are harvesting a lot and re-investing (in the form of replenishment) precious little..
3. We do not have laws and or policies that encourage peri urban development. This would have formed a natural buffer zone against rural – urban migration that is leaving the rural areas without able-bodied and youth stocks of labour. Everybody has gone to cities or towns in search of “greener pastures”
4. There is a breakdown of the social fabric, with the incessant westernization. Community values are challenged
5. Government on its own has severe weaknesses. In any case Government has not been known to change status quos without intervention from outside. There is inept use of scarce resources. That is why the situation became what it is today; it was under the direct supervision of government that most of the forest resource was taken away. It is not therefore expected to achieve much on its own. In any case Government’s role is to govern and it should in all fairness leave business to the private sector, who have the risk appetites, the technology, the capital and the entrepreneurial spirit to see things happens the way the should.
6. There has been poor environmental conservation, and much less extension services to the farmers, who should have been motivated to plant more trees. Indeed in the 60’s; 70’s and 80’s the government forests department propagated and sold tree seedlings at a song, but not many people knew. That information was for the chosen few.
7. Tree harvesting has not been matched with planting. The setting up of a paper factory in Webuye should have been matched with an equal effort to plant forests everywhere. Trees were being ferried from far away when the people in the neighbouring villages should have been encouraged to plant. There were many road accidents as the logs were ferried the factory more than 100 kilometres away. The roads too were damaged when ideally they should have used the railway system as I saw in Sweden and Finland.
8. The majority of Kenyan households continue to use fire-wood as fuel for cooking and this is a physiological need. Those who are a little ahead use charcoal. Both of these practices affect the forest. Tax on kerosene should have been done away with as we develop solar wind, ocean power and other forms of energy.
9. Civil society organizations have lost faith, trust and confidence in government, and they prefer to channel their donations through Rotary and Lions Clubs, both well known for philanthropic works. They do not however have the network and outreach of government.
10. There is an abundance of semi skilled and unskilled labour, amongst the youth of Kenya that could be employed to man the trees re-planting. Out of a total population of 40 million, about 60% are youth. Most of these are well educated, and IDLE. In terms of security, that is bad for business as it easily sparks social unrest.

11. On the other hand there are one hundred million trees to be planted and maintained. I see this as an excellent opportunity, where the demand for jobs is more than matched by the supply of labour. What is needed is to organize these youth into cells back in the villages to be the first line of civil defence in the event of emergencies or disasters.
12. The cooperatives movement is as old as Kenya itself and dates back to our traditional practices of community joint efforts. No effort have been applied to see to it that this movement is allowed to grow and take a life of its own without government interference.

13. WHAT IS TO BE DONE?

FACING THE CHALLENGE BY BUILDING THE CAPACITY

1. Empower The People

- a. Introduce civic education and where it exists enhance it so that people are aware of their rights, duties and obligations as citizens
- b. Improve basic education so that it is more in tune with the changing times. Invest in entrepreneurship education as a way to better run cooperatives as well as more mentorship and apprenticeships programmes in vocational skills
- c. Form cooperatives and conduct massive cooperatives education so as to encourage the entrepreneurial spirit into the communities
- d. Conservation enterprises
 - i. Ecotourism
 - ii. Cultural based arts and crafts

2. Make Laws About Tree Planting And Harversting

- a. The communities can be encouraged to develop tree seedlings nurseries, with the help of the private sector and the civil society
- b. Create incentives for the community to look after the trees.
 - i. Educate the people to recognize the value of the forests and trees, and to set up commercial tree farming around the forest so that they can get charcoal and their wood fuel from there instead of from the forests
 - ii. The children from the communities could be encouraged to adopt a tree, and be made aware that their school fees at university will come from the trees they are helping plant and sustain.

3. Public Private Partnerships

- a. The Kenya Private Sector Alliance (KEPSA)

- b. The National Association of Olympians of Kenya (NAKO)
- c. The NCBDA (Nairobi Central Business District Association (NCBDA))

All the above mentioned organizations are willing to partner with government for desirable and practical public policy outcomes. Indeed there is a PPP policy at the Treasury of Kenya but it has not been marketed in a way that attracts and encourages partnerships. It is still stuck in bureaucracy. Too much paper work is required to do too little. There is merit of course in paper work, but it should never be the dominant factor in transactions.

3.01 A. The discipline of games

Kenya is known the world over for its sporting prowess. Sports success is only achieved through teamwork, commitment, personal discipline, hard work and dedication, always at great personal sacrifice, spiced with enthusiasm. The fruits of this labour are self evident. There is glory in the country, at least for a while, and recognition all over the world, and above the healthy bank balance and a mortgage free house or two or ten.

The involvement of NAKO is a sure way of getting Kenya's best sports women and men to engage with the youth, through mentorship and coaching programmes that enable our heroes to impart discipline and tenacity among our youth, most of whom prefer to watch TV or sleep all day, and party all night. They could use this energy to plant and then maintain trees.

4. Offer Alternative Sources Of Fuel For Cooking

- a. Bio-digesters in schools and amongst the communities. This way the liquid and solid wastes generated from them can be converted into methane gas as a source of safe energy and bio-fertilizers for own use and the surplus sold.
- b. Paper and plastics waste can be converted into white charcoals briskets
- c. In the interim the tax on kerosene must be scrapped. It is annoying to see government pretending to be

5. Land Management Practices: Awf Approach

African Wildlife Foundation advises that the only way to conserve Africa's wildlife is to manage Africa's wild lands, including forests. Not small pockets of land, not even national-park-sized swaths of it, but vast landscapes that range for hundreds, even thousands, of miles.

To do this, we need to involve, educate and equip local people to practice sustainable land management – and reap economic benefits. We need to lay a foundation of painstaking scientific research to understand the landscape, the wildlife, the people and their complex interactions. We need to build an intricate web of laws, policies and practices that bring stakeholders together – from government departments to villages to safari operators – so that lands are managed intelligently for the benefit of all.

This is hard work. It is long-term work. It is complicated work. But in the end, it is the only approach that will work. African Wildlife Foundation's members, donors and steadfast partners make it possible.

African Wildlife Foundation's Solution: The African Heartlands Programme

All of Africa's lands sustain life. But certain key landscapes are absolutely essential to conservation—thanks to their unmatched concentrations of wildlife and their potential to sustain viable populations for centuries to come.

AWF has done the hard work of identifying those landscapes. They are the African Wildlife Foundation African Heartlands.

Far larger than any park or reserve, an African Heartland combines national parks and local villages, government lands and private lands into a large, cohesive conservation landscape that often spans international borders.

In an African Heartland, people and wildlife live side by side, and the needs of both are balanced. In an African Heartland, African Wildlife Foundation works with stakeholders to design land conservation strategies, protect species through applied research and conservation efforts and empower people through training and economic development. There is need for enhancing soil fertility and soil conservation and these must be taught to the people, by selling the benefits.

In African Wildlife Foundation's African Heartlands, the future of Africa – its wildlife, habitat and people – will be secured. Protecting Africa's species is about more than numbers. True, many declining wildlife populations need to increase their numbers to survive. But equally important, they need an intact habitat where they can thrive without the growing pressures from human populations. Today, wildlife in Africa does not exist in isolation. Most wildlife populations live outside of protected areas, where they live alongside humans. Effective wildlife conservation means recognizing this complex human-wildlife dynamic and implementing programs to address the needs of both humans and animals.

The Challenge

African Wildlife Foundation's strategy begins with conservation of habitat and ecosystems, but conserving land alone is not always enough. For many species, the biggest threat comes from people. African Wildlife Foundation's species conservation explores human-wildlife conflict - from the effects of poaching to patterns of predator attacks on livestock - and builds programs that benefit both humans and animals..

From AFRICAN WILDLIFE FOUNDATION Website 2010

6. Develop Social Infrastructure

The forests look abandoned and the forest rangers seem on their own to do as they like. In these circumstances they are at liberty to do as they wish. They have no motivation to provide good husbandry to the trees. Similarly the communities that live around the forest and even those within it need to be motivated to take care of the trees. If schools, water,

sanitation, hospitals, roads and other social infrastructure were developed for them they would feel that they belong to the larger Kenyan community.

7. **Rainwater Harvesting**

Our rains are seasonal. There is a time when we have plenty, during the long rains of March to May/June and there are times of scarcity (July to September). This pattern is no longer consistent, but it is a pointer to the possibilities for planning in anticipation. Unfortunately, during times of plenty we let the water run off to the drains and into the rivers, taking with it the fertile top soils, through erosion. Of late we get floods, and these sweep away our houses, livestock and ourselves as happened in Eastern Uganda the other day, when more than 300 people died. Then when drought comes we are stuck.

8. **Dams And Pans As Opposed To Borehole Drilling**

Government has embarked on drilling boreholes all over the place. These will deplete the aquifers in the belly of the earth. The better approach would be to build as many dams and pans as our land can accommodate and we have no shortage of land. That way we would have reservoirs that retain water during the rainy season, and this can be used in the dry spells. Moreover with dams and pans, it means that tree planting does not become seasonal but a continuous process, in order to attain the 10% forest cover that will assure regular weather patterns.

9. **Waste Reducing, Recycling, Reusing**

There should be a method of collecting and sorting out the massive paper based waste that should then be recycled or at least reused. This will contain the number of trees to be cut and I believe it is a proactive approach to conservation. The lads in the informal settlements of dandora have developed a method of collecting the paper waste and through a certain process compacting it and drying so that it becomes what they call “white charcoal.” This initiative should be encouraged and up-scaled to other cities and towns.

10. *"Agroforestry is a collective name for land use systems and practices in which woody perennials are deliberately integrated with crops and/or animals on the same land management unit. The integration can be either in a spatial mixture or in a temporal sequence. There are normally both ecological and economic interactions between woody and non-woody components in agroforestry". -[World Agroforestry Centre](#) (ICRAF) 1993*

Agroforestry is an integrated approach of using the interactive benefits from combining trees and shrubs with crops and/or livestock. It combines agricultural and forestry technologies to create more diverse, productive, profitable, healthy and sustainable land-use systems.

In agroforestry systems, trees or shrubs are intentionally used within agricultural systems, or

non-timber forest products are cultured in forest settings. Knowledge, careful selection of species and good management of trees and crops are needed to optimize the production and positive effects within the system and to minimize negative competitive effects.

Agroforestry systems can be advantageous over conventional agricultural and forest production methods through increased productivity, economic benefits, social outcomes and the ecological goods and services provided.

Biodiversity in agroforestry systems is typically higher than in conventional agricultural systems. Agroforestry incorporates at least several plant species into a given land area and creates a more complex habitat that can support a wider variety of birds, insects, and other animals. Agroforestry also has the potential to help reduce climate change since trees take up and store carbon at a faster rate than crop plants. Wikipedia, 2010

I think this should be tried with the tea growing so that tea does not appear to be replacing instead of complementing the reforestation.

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