

**Prof Wangari Maathai's**  
**keynote address during the**  
**2<sup>nd</sup> World Congress of Agroforestry**  
Nairobi, Kenya  
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The Chair,  
Your Excellency, the President and Commander- in- Chief of the Armed Forces of Kenya, Hon. Mwai Kibaki,  
Government Ministers and Senior Civil Servants,  
Dr. Achim Steiner, UN Undersecretary General and Executive Director of UNEP,  
Dr. Dennis Garrity, Executive Director of ICRAF,  
Your Excellencies,  
Honourable Delegates and participants,  
Ladies and gentlemen,

It is with great pleasure that I join you , on the opening day of the 2<sup>nd</sup> World Congress of Agroforestry. This key global event is organized by two institutions that I have a close and special relationship with – the World Agroforestry Centre and the United Nations Environment Programme. .My affiliation with these two organizations goes back to their beginning when the world decided to honour Kenyan and Africa and established the headquarters here in Nairobi.

One of my fond memories is of visiting the World Agroforestry Centre and planting a seedling that was presented to me in a biodegradable casing. I immediately wanted to replace the plastic containers distributed by the Green Belt Movement for its tree planting campaign with such biodegradable casings. This would make a big contribution in reducing flimsy plastic bags that are also used to package goods. They end up as waste that we later see on trees and hedges, in rivers and soils, at dumpsites and even in the stomachs of domestic animals. The Green Belt Movement urges the government to increase the gauge of flimsy plastic bags so that the industry produce bags with a thicker gauge that make it possible to re-use, recycle and reduce. This is the 3R campaign. Without laws to demand the thicker bags from the industry, millions of flimsy plastic

bags continue to be thrown into the environment. We have been impressed by the government of Rwanda, which, perhaps taking a cue from the 3R campaign, embraced a no-flimsy plastic policy in Rwanda. It has already made the country cleaner and safer from diseases like malaria associated with filthy waste and stagnant water.

In respect of the 3R campaign, allow me to introduce to you a Japanese concept known as *Mottainai*, which embraces not only the 3Rs, but also urges respect, gratitude and utilization of resources without wasting or over-consuming. The mottainai concept is embedded in Japanese tradition and faith based practises. Japanese children learn to be respectful, grateful and accountable to future generations even as they grow up. Such intergenerational responsibility is important and should guide our political and socio-economic decisions.

It is partly this sense of responsibility and accountability that makes both UNEP and ICRAF special. They value knowledge and capacities that fill crucial technical and scientific gaps. It is important that they be accessible and that the knowledge they gather and package be distributed to those who need it. Partnering with these organizations around the Billion Tree Campaign has been especially inspiring. UNEP has provided the leadership and has been the engine that has continued to drive the campaign with unbelievable commitment and success. The World Agroforestry Centre has provided the science and technical expertise in understanding, testing and promoting the right trees for the right place. The Green Belt Movement provides the grassroots link and advocacy, and, as you probably know, HSH The Prince of Monaco and I are honoured to play the role of patrons. I wish to thank both organizations through their leadership led by **Dr. Achim Steiner and Dr. Dennis Geritty**.

Now, over the next couple of days, you will be discussing topics that are critically important to the development of Agroforestry science. These are important discussions which will focus on 1) Food Security and Livelihoods, 2) Conservation and Rehabilitation of Natural resources and 3) Policies and institutions. These areas need immediate and determined attention.

Faced with the challenges of climate change, environmental degradation, food shortages, worsening poverty and the global financial downturn, it is ever more important that we redouble our efforts to protect and rehabilitate the environment, reduce emissions of greenhouse gases, and provide

especially the smallholder farmers around the world with sustainable ways of increasing their production and meeting their livelihood needs.

The overall theme of this Congress is *Agroforestry, which is the future of land use*. For the last three decades, the Green Belt Movement has urged citizens to plant appropriate trees on small holders farms. Recently the Minister of Environment advised farmers to get rid of eucalyptus from riverside areas, while the Green Belt Movement has been campaigning to have them, and indeed the *Shamba* system, banned also from gazetted forests that also serve as watershed areas. The value, role and contributions of Agroforestry and protection of endemic habitats, in light of current global environmental challenges, cannot be over-emphasized. It is encouraging that FAO statistics indicate that the planting of trees on farms is increasing even as trees in forests are decreasing due to deforestation.

Promoting rain water harvesting and planting appropriate trees on farms would make a huge positive impact on the environment and related global problems. In this connection I wish to commend the Minister of Environment in Kenya, who recently adopted a suggestion that was originally suggested during the constitutional conference in Kenya to make it a constitutional requirement that 10% of all land be put under appropriate trees. This translated to about 25 trees per ha irrespective of species and format of planting. Such an initiative would reduce risks and diversify options for farmers. However, unless markets, policies and institutions are put in place, such ministerial directive can be turned around by a future leadership. All of us -scientists, extension workers, policymakers, academicians, students and civil society- have a vital roles to play in addressing, and providing practical and sustainable solutions for this challenge.

On Food Security and Livelihoods, I remember growing up in the Central highlands of Kenya at a time when complete lack of food was rare and isolated. This was partly because the community had diversity of foods some of which, like cassava, sweet potatoes, arrowroots and perennial food crops like bananas and sugar cane served to cushion communities during droughts and crop failures. There were also wild fruit trees to supply tasty and nutritious fruits, wild vegetables, honey and roots. There were two monsoon rain seasons that gave the land adequate water to grow enough to eat and store in granaries, which were part of the infrastructure of every household. Today a significant sign of food insecurity is the disappearance

of granaries and diversity of food crops at household level. Farmers have been encouraged to plant cash crops like tea, coffee and sugar cane on every piece of their available land, leaving no space for tree farming and growing of food crops. Even when available such land is allowed to lose top soil and water through soil erosion, becoming degraded and unable to support food crops. Therefore, when rains fail and drought strike, such as is happening in Kenya, there is not only an ecological, but also a human disaster. Agroforestry science and practises should respond to such challenges and reduce the suffering.

I mentioned *Mottainai* in Japan above, but in many of the world traditions people developed mechanisms that allow them to reduce their vulnerability. For example, amongst the Kikuyu community here in Kenya, hungry vulnerable groups and travellers were permitted to feed off the farms as long as they did not carry any of the food away. One was required to sit down and eat and satisfy hunger, but not carry away. It was a common law that people obeyed to prevent death from hunger. For these groups there was a special granary of God (*ikumbi ria Ngai*), which was supplied by the public. As members passed by from the field with a harvest (magetha), they would throw some of it into the granary of God. This was a good sign of community sense of responsibility to others and very much an equivalent of the biblical tithes or 10%. Such common laws and coded wisdom, like the local biodiversity, is largely being replaced by greed, selfishness and complete lack of sense of community good. We more likely to be our brothers' killers, rather than our brothers' keepers!

One of the promising areas of research in agro forestry is the domestication of wild fruit trees. By selecting superior trees from the wild - tree maturity times can be shortened and fruit appearance, yield, taste and nutritive value can all be greatly enhanced. Smallholder farm families in some countries in Africa are applying this approach and are benefitting from planting these domesticated varieties of highly nutritious fruit trees in their small plots. Some small-scale farmers in Western and Southern Africa, are diversifying into higher value enterprises that involve production, processing and commercialisation of fruits from indigenous fruit trees and their products. By linking farmers and communities to markets, their capacity to learn and adopt new innovations is enhanced. These families and communities are in urgent need of the knowledge science generates, and the policies and practices governments and technocrats help legislate

and implement. The goal is assist farmers produce sufficient crops, and sustain their livelihoods in a changing climate.

For sure, some African farmers are benefitting from research on sustainable ways of improving soil productivity. In rural Malawi, for example, lack of food security is directly linked to declining soil fertility, with nitrogen being the main limiting factor. I am informed that funded by Irish Aid and coordinated by the World Agroforestry Centre, in partnership with a consortium of national institutions, the Malawi Agroforestry Food Security Programme has enabled thousands of families to increase food production and enhance nutrition by improving soil fertility and restoring degraded farmland. This has been achieved by encouraging farmers to use new agroforestry technologies that increase productivity while reducing the use of chemical fertilizers.

I was happy to hear that research on *Faidherbia Albida* in Southern Africa is yielding very promising results. *Faidherbia albida* is an excellent nitrogen fixer and source of fodder. It sheds leaves during the rainy season and retain them in the dry season so that it does not compete with crops for light. Research with *Faidherbia albida* conducted in Zambia over several years shows mature trees can sustain maize yields of as much as 4 tonnes per hectare as opposed to 1 tonne per hectare in traditional systems. This is an area where donor agencies should be encouraged to upscale. This was also supported by the African Union Ministers of Agriculture, Land and Livestock, who at their meeting in Addis Ababa in April called for a scaling up of conservation agriculture and agroforestry. They also called for the development of a climate change adaptation framework for African agriculture. If the principles of agroforestry are to be applied to several countries in Africa through a massive up-scaling with real impact, it will require training and a huge extension effort with serious donor commitment.

As we work with farmers in Africa, we are also learning about constraints to adopting environmentally sustainable ways of farming. We have especially learnt to recognize and respect rural livelihood priorities and focus on providing not just a scientific solution but a 'stream of benefits, one of which is Agroforestry tree planting. This especially with fertilizer trees, which improve the soil, provide fruits, medicines, fodder, timber, shade and beauty, not to mention the benefit to the ecosystem, pollination, biodiversity, and protection of watersheds, rivers and wetlands.

It is now critical that we expand existing proven and integrated tree-based practices such as combining conservation agriculture with agro forestry — what we might call "evergreen agriculture". This would make it possible to achieve environmental benefits and sustainable food security and livelihoods. To achieve this will need sound decision support mechanisms from researchers — supported by policymakers for effective implementation — that builds on knowledge, partnerships and capacity. It also involves providing start-up inputs of quality seeds, nursery, training and extension materials, payment for environmental services and other financial stimuli for farmers. Extending the lessons to other countries will require strong partnerships with donors, national research and extension systems, civil society organisations and the private sector. I believe all those groups are represented here, and I am sure you will use your time together to forge the strong partnerships that are so critical to our cause.

Scientists, even as you select trees for fruit, medicine, fodder and soil services, select them also for climate change. I know the World Agroforestry Centre is considering the effects of climate change, adaptation and vulnerability in its research. This ties up closely with other Centre research on how seed sources and tree ecology will be affected by climate change, and the evaluation of the carbon value (sequestration) of different Agroforestry species.

Here in Kenya we have been involved in long term campaigns to urge farmers and government alike to respect and protect, conserve and restore biodiversity in forests so that we can benefit from environmental services they provide. Also, to ensure that practises that maximize on carbon sequestration are embraced. Therefore, continue to be strongly opposed to the idea of re-introducing the very destructive *shamba* system into our gazetted forests. This system, notwithstanding claims that it is coming back in an improved format, it is a system that destroys biodiversity and reduces the capacity of forests to harvest rain water, retain it and releases it gradually through rivers and streams. The *shamba* system causes forests to lose the capacity to control rainfall patterns and climate as forests are turned into commercial farms and grazing grounds mostly covered by Kikuyu grass. The presence of this Kikuyu grass also encourages grazing by farmers close to the forests, who often keep more animals than their land carry support and therefore depend on grazing in the forests.

Once forests are opened up in the name of the shamba system, there is no capacity or even the will to police and protect forests. Even if foresters gained the will and the desire to protect forests, the political will to support with resources and infrastructure need to protect forests is not available. It will only take the next political leadership ready and willing to use forests as they have been used in the past, to dish out forests and settle their friends, supporters and tribesmen. Nobody will be able to keep away charcoal burners, poachers of trees and wildlife, marijuana growers, human settlements and other destructive activities that often lead to forest fires. With the increasing population and the challenges of climate changes it is suicidal to succumb to pressure from pulp and building industries and re-introduced a system that was largely responsible for the destruction of forests in the past. It is extremely unwise to use the source of water as farmlands for commercial trees to keep private or unviable public companies in operations.

There is a lot of free land, which companies can lease and grow the trees they want at their own expense and without undermining our water system. Why should the government provide commercial trees at subsidized prices and at the expense of watershed areas? Environmental challenges facing us requires understanding, decisions and practises that will prevent disasters such as we are experiencing here in Kenya. Science can help, but only leaders can make the decisions that citizens should follow. Focus is currently in the Mau Forest Complex but none of five water towers are really save. Smaller forests too like the Marmanet, Samburu area and Kabiru-ini in Nyeri are still threatened with deforestation and land grabbing. The only reason why the Central Show Ground has been moved into the very important corridor for the elephants migrating from the Mount Kenya and Aberdare forests was to have an excuse to grab Kabiru-ini forest. Without the political will and commitment, not only are we endangering our water systems, biodiversity, tourism and agriculture but also, in not such a distant future, pyrethrum, wheat, tea and coffee will also be crops of the past!

As we all know, it is the poor people in developing countries who will bear the brunt of climate change and suffer most from its negative impacts. Climate change is increasing inter-annual rainfall variability and the frequency of extreme events, leading to accelerated rates of degradation of soil and water resources upon which farming communities depend for their livelihoods. The agricultural systems most vulnerable to climate change are

those already affected by unsustainable management, and land and resource degradation. Yet, even as climate changes, food production, environmental services and rural livelihoods must improve, and not just be maintained – if we are to meet the demands of the current exponential population growth rate.

Trees have an important role not only in climate change mitigation but also in reducing vulnerability to climate-related risks. The Green Belt Movement is working closely with institutions such as the World Agroforestry Centre to improve the resilience of farming systems and livelihood strategies of smallholder farmers to current climate variability. Also, long-term climate change is being pursued through the increased use of trees for intensification, diversification and buffering of farming systems. The joint work will contribute to improved and sustained agroecosystem productivity in the face of climate change, as well as enhanced income generation from smallholder carbon sequestration projects. We must halt unsustainable agricultural practices and embrace mitigation strategies. But we can also do simpler things. Here in Kenya we have huge areas of road reserves – large treeless tracts of land on either side of all roads. We could plant indigenous trees there to bring back biodiversity.

In this country, and indeed in many other countries, there is a destructive culture of removing vegetation, including trees and shrubs, from road reserves, riverine areas and local green spaces. The potential of road reserves being large reservoirs of biodiversity, slowing down water run-offs and therefore reducing soil erosion and road destruction especially during the rain seasons, is greatly under-estimated. Indeed the culture of road maintenance encourages clearing of vegetation on road reserves and thereby promotes destructive practises that force the Ministry of roads to have to spend much money repairing roads after every rain season. In areas where land is highly cultivated such as in highly populated areas of Central and Eastern Kenya, road reserves, riverine and local hills are the only areas where wilderness and genetic reservoirs are still available. Protecting the vegetation and maintaining their wilderness is essential for sustainable agriculture especially for pollinators, honey production and food security. Therefore, policymakers need a new education and mindset so that they appreciate and accept that trees and bushes on road reserves are good for the environment, eyes and mental health. The augument that vegetation in cities promotes insecurity is unbelievably simplistic and

misleading: We cannot turn the country into a desert in the mistaken believe that we shall be safer in a concrete desert!

In December 2008, the Africa Bio-Carbon Initiative was launched in Poznan by a group of 26 African countries in East and Southern Africa. The Initiative advocates broader eligibility for bio-carbon in the Kyoto and related regional and national frameworks for climate change. This in turn will contribute to the overarching goal of increasing the benefits for sustainable agriculture and land-use practices, biodiversity conservation, maintenance of environmental services, successful adaptation to climate change. Also, improvements in rural livelihoods - in addition to the delivery of cost-effective and verifiable reductions in greenhouse gas emissions in Eastern and Southern Africa and beyond.

Not only is Africa most vulnerable to climate change, but there is a strong need to explore development-focused solutions for adaptation with a particular focus of the role of women. The Africa Bio-Carbon Initiative is a shining example of how Africa can come up with a strong vision and clear work plan, similar to Nairobi Framework on Climate Change at the Conference of Parties in 2006. It is now important to build the right alliances to realize the full potential of the initiative. Bio-Carbon is a global issue and it is important to combine Reduced Emissions from Degradation and Deforestation (REDD) with agriculture, forestry and other land uses to create a strong link to adaptation in the ongoing climate change negotiations. African negotiators must form a unified position on these issues – and show how important agriculture is for climate change adaptation and mitigation.

In African countries like Kenya and Malawi, farmers and policymakers are beginning to view agroforestry as an environmentally sustainable way to boost income and production on small farms. Among the most popular applications are those that also efficiently trap and store carbon — fodder trees that provide feed for dairy cows, the fruit and nut trees that produce food, home gardens that supply a multitude of products to enrich diets, and trees and shrubs that produce gums, resins and valuable medicines. The return on investment from these trees can be substantial, but can also take several years to recoup. Subsistence farmers might be more willing to invest in them if they knew that their land and the trees they plant might generate revenue as a carbon credit. Rich countries eager to reduce their emissions through offsets would also benefit.

Africa has long been sidelined in the carbon market. We were told that there was no reliable method for measuring carbon stored in trees or soil, particularly if it is stored on small landholdings, such as the farms typical of central highlands of Kenya. However, since then I am happy to note that in May this year, the Carbon Benefits Project was launched in Nairobi. This multi-million dollar project aims to develop tools that will help boost carbon trading in Africa, specifically targeting village communities in Western Kenya, Niger, Nigeria and Western China – and could become the key to unlocking the multi-billion dollar carbon markets for millions of farmers, foresters and conservationists across the developing world. The Carbon Benefits Project, funded by the Global Environment Facility, is a partnership between UNEP, the World Agroforestry Centre (ICRAF), and a range of other key partners – and seeks to assist local communities execute projects aimed at reducing green house gas emissions. Farming carbon to combat climate change is an exciting prospect and the consortium of partners involved in the Carbon Benefits Project is developing a cost-effective and scientifically rigorous system - making use of the latest remote sensing technology and analysis, soil carbon modeling, ground-based measurement, and statistical analysis. The implementation of these carbon benefits projects should open the door to more environmentally friendly types of agriculture such as agro forestry and conservation farming.

It is important that we negotiate for mechanisms that allow Africans to access and afford low-carbon energy sources. During your discussions here, I hope you will keep in mind the ‘carbon justice’ issue in the debate because Africa accounts for a mere 2.3 percent of fossil fuel consumption. Copenhagen will be a commitment and a partnership like no other, but still, it is individual nations who have the ultimate responsibility to shield their populations from the adverse impact of climate change. Agreements and financial mechanisms will bear no fruits if not translated into workable projects.

The African Union should ensure that African governments work together because climate change knows no borders and countries without forests will be even greater victims of the effects of climate change and will find it difficult to adapt or adopt. A common voice and a common stand is critically important on the road to Copenhagen, and this is an excellent opportunity for us to impact on policy. The prospect of earning revenue from carbon markets can encourage African farmers to more rapidly adopt sustainable and productive practices — much needed in addressing the damaging

effects that agriculture can have on the environment. In the lead-up to Copenhagen, it is critical that Africa comes together in its position on a post-Kyoto climate regime.

Well this has been a long message but I hope a useful one. As I said on these grounds and indeed in many parts of the world before, we know what to do. What we lack is the political will and commitment to legislate what is necessary and implement what is already possible. Do not be overwhelmed. I want to encourage you to be humming birds (the humming bird story).

Thank you.

By Wangari Maathai.