THE GLOBAL EVERGREENING ALLIANCE
PRESENTS THE

EverGreening the Earth Campaign

A global campaign to overcome the climate crisis while alleviating poverty and hunger, and caring for the land

EverGreening
GLOBAL ALLIANCE

green up to
cool down

HIGHLIGHTS:

• A global goal, and a set of six ambitious targets, are proposed to overcome the climate crisis, keep our earth habitable, and improve the lives of people around the planet: The goal is to capture and restore back to the land 20 billion tons of CO2 annually from the atmosphere by the year 2050. Such a level of drawdown will more than offset the remaining anticipated fossil fuel emissions at that time, and it will create a drawdown of an additional 10 billion tons of negative CO2 emissions per year, through evergreening or nature-based storage of carbon.

• Climate change is occurring much faster, is wreaking much more damage, and sooner than was even predicted just a few years ago.

• The acceleration of global warming is nearly unstoppable – unless we act now, and unless we act ambitiously, together, as a global community.

• The latest reports of the Intergovernmental Panel on Climate Change1 (IPCC 2018) clearly state that we must not only eliminate fossil fuel emissions, but we must recapture very large quantities of carbon that have already been deposited in the atmosphere.

• Photosynthetic or evergreening approaches to carbon capture are by far the most promising, practical, and cost-effective ones; and are the ones that have the greatest positive impacts on human livelihoods, resilience and economic development. These measures include: protecting current forests from deforestation, restoring the degraded or already deforested lands, increasing tree cover on agricultural lands through agroforestry, increasing the biomass production and carbon storage of pasturelands, and sustainably producing vast amounts of bioenergy along with carbon dioxide capture and storage.

• This transformational effort to vastly accelerate biologically-captured carbon will entail nothing less than a historic global mobilization.

• The goal will be achieved through landscape restoration processes that care for the land, while benefitting in multiple ways the people whose livelihoods depend on the land. Many of these people are amongst the poorest in the world.

• The EverGreening the Earth Campaign was launched in September 2019 to mobilize the global community to achieve the goal, through concrete actions that will meet the six targets.

• The six targets include: Tripling the current rate of carbon accumulation on degraded farmlands, by increasing tree cover through agroforestry; increasing soil carbon through conservation farming practices on at least 500 m ha of agricultural land; Scaling-up leguminous shrubs on farmlands; deploy carbon capture and storage from evergreen energy generation in biomass power plants; restoring tree cover on 575 million hectares of degraded forest lands and in urban environments; and suppress fire and regenerating a healthy grass-tree balance on 650 m ha of degraded pasturelands.

• A fundamental aspect of the ‘20 by 2050’ goal is to make sure that all of these scaling programs are not just storing carbon and improving the land, but that they are engaging and empowering

communities in the planning, design, implementation and assessment of them; and that the poorest people, and particularly women and children, are benefiting from the interventions.

• The EverGreening the Earth ‘20 by 2050’ Campaign will focus on building global and local awareness and inspiration to action; setting cascading targets to engage citizens, organizations and governments at all levels; building capacity for scaling-up evergreening practices; empowering and implementing the campaign at the grassroots level; and tracking the progress and impact from local to global levels.

• A new global fund is proposed to focus investments on local and grassroots empowerment and engagement in evergreening the land to achieve the 20 by 2050 goal, based on flexible, performance-based outcomes.

CONTEXT:

The fight against climate change has just become much more urgent and critical, and could become the greatest challenge of survival for mankind -- ever. The evidence is clear: climate change is now occurring much faster, is wreaking much more damage, and sooner than was even predicted just a few years ago[1]. Climate feedback loops are now kicking in, such as the defrosting of the permafrost regions, that would make the acceleration of global warming nearly unstoppable – unless we act now, and unless we act ambitiously, together, as a global community[1].

The historic shift from fossil fuels to renewable energy is just getting under way, as countries set more significant targets for zeroing out their emissions by 2050[2]. This process of converting the entire global energy system to renewables will take several decades, or more. Meanwhile, global emissions, and the consequent warming trend, will continue. We are currently on track to greatly overshoot global warming of 2 degrees C, which would have catastrophic impacts on human welfare, livelihoods, the environment, and the global economy[2].

The latest reports by the Intergovernmental Panel on Climate Change[2.3] make two things crystal clear:

1. We must immediately shift from fossil fuel energy to renewable energy sources across the entire global economy, and

2. We must also recapture very large quantities of carbon that have already been deposited in the atmosphere.

…or else the extreme heat waves, severe droughts, and disastrous flooding events that are already causing havoc in many parts of the world right now, will soon be drastically worse.

Therefore, a vast effort to recapture carbon from the atmosphere and store it in and on the land will be essential to avoid this climate catastrophe. The IPCC notes that photosynthetic or evergreening approaches to carbon capture are by far the most promising, practical, and cost-effective ones; and are the ones that have the greatest positive impacts on human livelihoods, resilience and economic development[1,2]. These measures include: protecting current forests from deforestation, restoring the degraded or already deforested lands, increasing tree cover on agricultural lands through agroforestry, increasing the biomass production and carbon storage of pasturelands, and sustainably produce vast amounts of bioenergy along with carbon dioxide capture and storage.

It is now clear what has to be done to adapt to climate change, as well as to save our planet from an accelerating climate catastrophe: Engage the global community in a vast evergreening effort across the globe. The big questions for us today are:

How can we do it in the most effective ways, and at the very lowest cost, and getting the biggest bang for the buck, in time to avoid a CO2 overshoot, and a catastrophic rise in global temperature?

How shall we do it while also ensuring the most synergistic benefits to society, and in particular,

enabling better lives and livelihoods for the least well-off inhabitants of earth: Those who are by far the most vulnerable to the changes that are occurring in the climate?

While governments struggle with the fossil fuel reduction challenge, there is an immense opportunity to ramp up the photosynthetic green carbon capture and storage in landscapes[4,5]. This is imperative. But it is also an effort that is exceptionally cost-effective and can bring enormous benefits to achieve many of the Sustainable Development Goals at the same time.

We must think of this transformational effort to vastly accelerate biologically captured carbon as nothing less than a historic global mobilization: A moonshot endeavor. An endeavor that can and must engage the entire population of the world; with every individual doing their part, as well as every government and every organization, doing its part.

During this, the 50th anniversary of humankind's success in first landing a man on the moon, it is useful to recall that when the goal of doing this was announced by President John F Kennedy in 1961, no one knew how to do it; and the technical and financial resources to accomplish it were not available. Despite this, the goal itself galvanized comprehensive action, and success was indeed achieved before the target date of 1970.

What we need today is a truly global commitment to a clear global goal. This time it's not a moon shot, but an 'earth shot'. We need an audacious goal, and a set of ambitious targets, to overcome the climate crisis, keep our earth habitable, and improve the lives of people around the planet. These goals and targets may seem unachievable from our present vantage point. Yet, they can be achieved if the global community embraces the vision, commits to these targets and mobilizes all people and institutions to achieve them. This is why the launch the EverGreening the Earth Campaign is proposed.

> "We do these things, not because they are easy, but because they are hard."
> - President John F Kennedy (1961)

The goal of the EverGreening the Earth Campaign is to:

Capture and restore back to the land 20 billion tons of CO2 annually from the atmosphere by the year 2050

This brief describes the specific targets to achieve that goal, and the basic elements of an EverGreening the Earth Campaign, to mobilize the practical knowledge, grassroots energy and experience, and the investments that will enable us a global community to achieve that goal.

2050 is still three decades away. Which seems like a long time from now. But trees take time to grow, and we need to start today to achieve such a goal. If we do, we should be able to be drawing down at least an additional 5 billion tons of CO2 in new tree cover by 2030, and 10 billion tons of CO2 by 20406.

What would achievement of the 20 by 2050 goal signify?

Currently, the annual level of CO2 emissions on our planet is approximately 36 billion tons. The net gain of CO2 in the atmosphere is about 16 billion tons of CO2, since the land, forests and oceans currently absorb about 20 billion tons of the CO2 that is emitted every year.

Fossil fuel emissions compose about 80% of the total emissions of 36 billion tons of CO2, or about 29 billion tons. These could conceivably be reduced by perhaps 2/3 by 2050, through a monumental fossil fuel reduction effort. (It is extremely unlikely that they could be completely eliminated by that date.) However, if we can succeed by 2050 in reducing annual fossil fuel emissions by 2/3 from their current levels, that still leaves an annual emissions rate of about 10 billion tons of CO2.

The goal is to ramp up carbon storage on the land by biologically capturing and storing an additional 20 billion tons of CO2 per year by 2050. The world needs to embrace this goal. The targets discussed below show how it can be done, and how it can build upon the important current land restoration efforts that are already being implemented.

Such a level of drawdown will more than offset the remaining anticipated fossil fuel emissions of 10 billion tons of CO2 annually. It will create a drawdown of an additional 10 billion tons of negative CO2 emissions, through biological or nature-based storage of carbon.

This significant annual drawdown, or sucking of CO2 from the air, will begin to reverse the enormous accumulation of CO2 in the atmosphere; and during the succeeding decades, it will begin to drive an eventual cooling of global temperatures.

‘20 by 2050’ is an audaciously ambitious goal. But the experience gained to date from many evergreening and land restoration successes shows that it is entirely plausible and achievable.

We aim to achieve it through landscape restoration processes that care for the land, while benefitting in multiple ways the people whose livelihoods depend on the land. Many of these people are amongst the poorest in the world. These aspirations are well-aligned with the United Nations Decade on Ecosystems Restoration, which itself will be a huge source of momentum for making a great start during the critical 2021-2030 period.

The '20 by 2050' goal is composed of the following set of six drawdown targets:

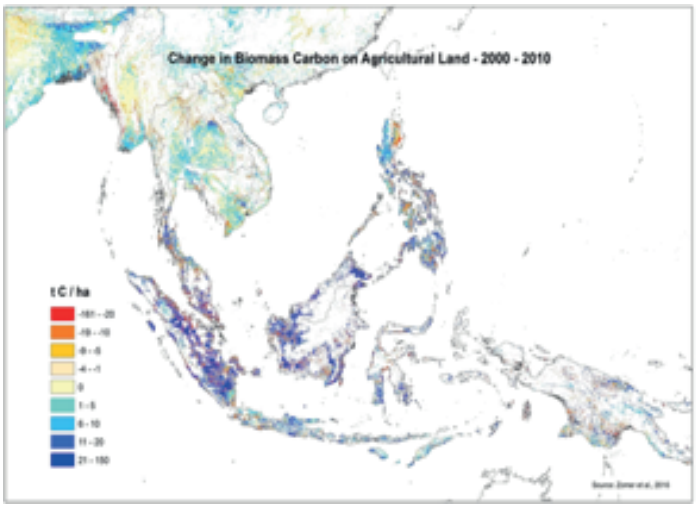
TARGET 1: Triple the current rate of carbon accumulation on degraded farmlands, by increasing tree cover through agroforestry, which will store at least 2.5 billion tons CO2 per year.

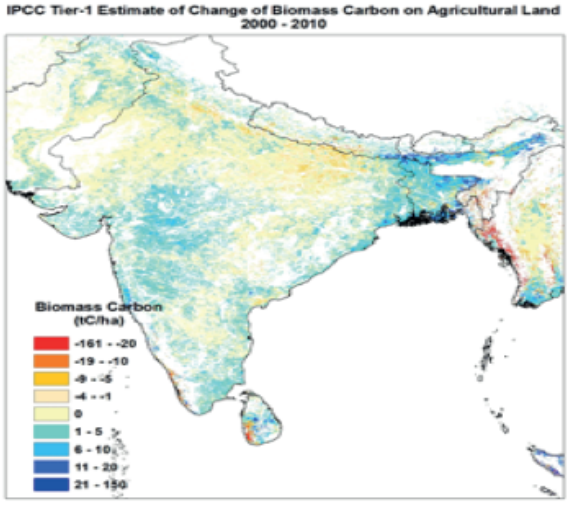
This target builds up from the current rate of 0.74 billion tons CO2 that is additionally stored annually by the expansion of trees on farmlands.[8]

There are 1.4 billion hectares of arable croplands in the world. Few people realize the enormous role of trees in these agricultural systems. Nearly half of agricultural land already has greater than 10% tree cover and it is increasing[8]. This is a huge area of tree cover occurring in agriculture; and it is increasing, and storing more carbon, every year. During the decade of 2000 to 2010, there was a 2 percent increase in tree cover on agricultural lands globally. The more humid tropical regions have the highest tree cover on agricultural land. These include Southeast Asia, Central America, eastern South America and central and coastal West Africa. The percentage of agricultural lands covered by trees now exceeds 45 percent in many areas of these regions.[8]

Tree cover is now between 10 and 30 percent on the agricultural lands in parts of South Asia, sub-humid Africa, Central and Western Europe and in Brazil. Some may believe that agricultural land and crop production is not compatible with having many trees. But this is obviously not the case. During the decade 2000 to 2010, the spread of additional tree cover on farmlands caused an increase of more than 2 billion tons of carbon on agricultural land, or a 4.6 percent increase in biomass carbon. Agricultural land is rapidly gaining carbon through increased tree cover. The key areas of the world where agricultural carbon stocks have increased most rapidly are Brazil, India, China, SE Asia, and parts of Africa.

Farmers are converting portions of their land to trees because they earn more income per hectare by combining trees with their annual crop production. They also see the benefits of trees in protecting their crops from dessicating winds, scorching temperatures, and soil loss. Their crops are also benefitting from increased soil organic matter, and improved water retention for drought resistance, thus increasing their food and nutritional security.



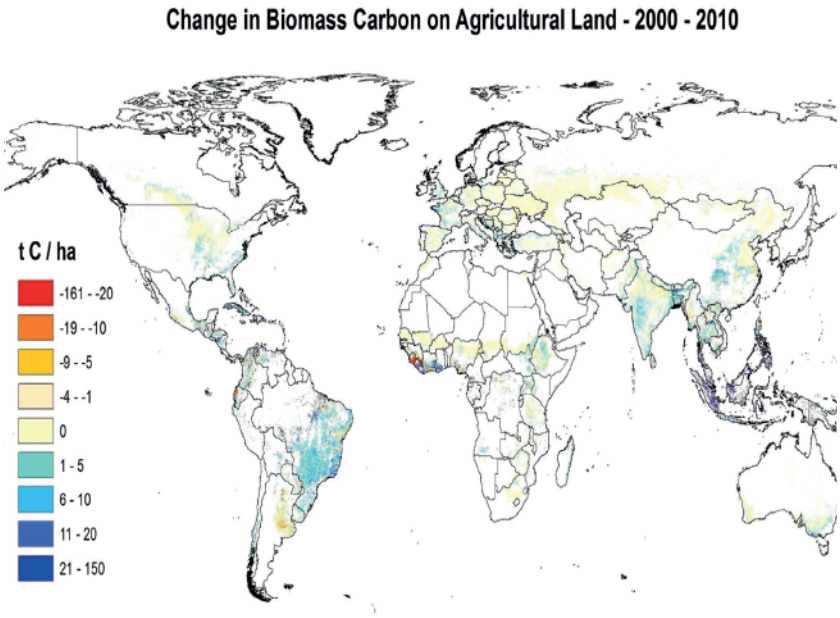


Agroforestry is now annually offsetting agricultural greenhouse gas (GHG) emissions by about 0.74 billion tons CO2 equivalent. These carbon offsetting gains through agroforestry carbon stocks can be further accelerated because they are low cost and generate high income, livelihoods and resilience benefits for the farming population, particularly in the tropics. The Climate Smart Agriculture movement, with its secretariat based at FAO, is promoting these practices. There are many ways to dramatically increase carbon stocks in agriculture[9]:

• Establish trees on all field and farm boundaries, and in alleyways and on contour lines, especially fruit, nut, and timber trees
• Expand farmer-managed natural regeneration of trees on farmlands (FMNR), where trees fertilize and protect crops, particularly in the drylands (see figure below)
• Support a major increase in perennial crops for food production, such as coffee, cocoa, nuts such as cashews, walnuts, and many others, oil crops such as shea, and food and drink emulsifiers such as gum Arabic, etc
• Expand the area of farm woodlots, and
• Establish fertilizer and fodder shrubs & trees throughout crop fields for increased crop and livestock production.

Farmers will be induced to accelerate the establishment of trees on farms as market demand for wood, fruits, nuts, and many other tree products expands around the world; and more and as more businesses focus on the aggregation, processing and marketing of more nutritious foods. Subsidy programs, such as those being implemented by the European Union, can also be a major incentive for the expansion of agroforestry. The longer term outcome of the accelerated increase in expanding tree cover on agricultural lands will be a more perennialized agriculture. An agriculture that is more diverse, robust, agroecological, and productive, compared to the farming systems that we have today.

The target is to triple the current rate at which tree cover is increasing in agriculture, from 0.2% per year to 0.6% per year, and thereby to capture and store an additional 2.5 billion tons CO2 per year by 2050.



Biomass carbon on agricultural land has been increasing in many parts of the world due to increased tree cover, particularly in the tropics. The annual increase averaged 0.74 bt CO2 during the 1st decade of the century. The evergreening target is to triple the rate of annual increase in tree cover by 2050. Source[8]: Zomer et al 2016.

THE PARKLAND RENAISSANCE ON NIGER FARMLANDS

Millions of farm families in Niger have adopted farmer-managed natural regeneration of trees on their croplands during the past two decades, adding hundreds of millions of trees to the landscape on over 7 million hectares10 (Reij and Garrity, 2017). This practice is spreading throughout the Sahelian zone of Africa, where it is estimated that FMNR is now practiced on over 21 million hectares. A regional project funded by the European Union, and implemented by many Alliance members and partners, is encompassing eight African dryland countries, and is expanding the spread of evergreen agriculture over an additional one million hectares. Adoption of this and other forms of evergreen agriculture is accelerating in eastern and southern Africa, and in Asian countries11 (Garrity et al, 2010).

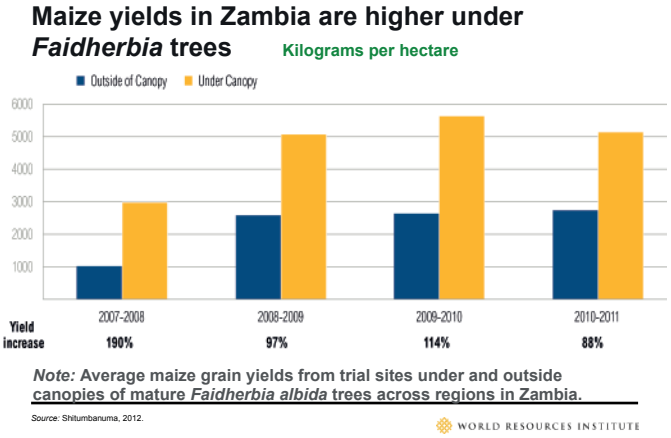
Agroforestry systems that increase productivity and income are found in more temperate areas as well as in the tropics. Two examples are: Wheat production with Paulownia trees are cultivated on 6 m hectares in China (left) and wheat production with walnut trees in France (right).

TARGET 2: Increase soil carbon through conservation farming practices on at least 500 m ha of agricultural land, and thereby store an additional 0.4 billion tons CO2 per year.

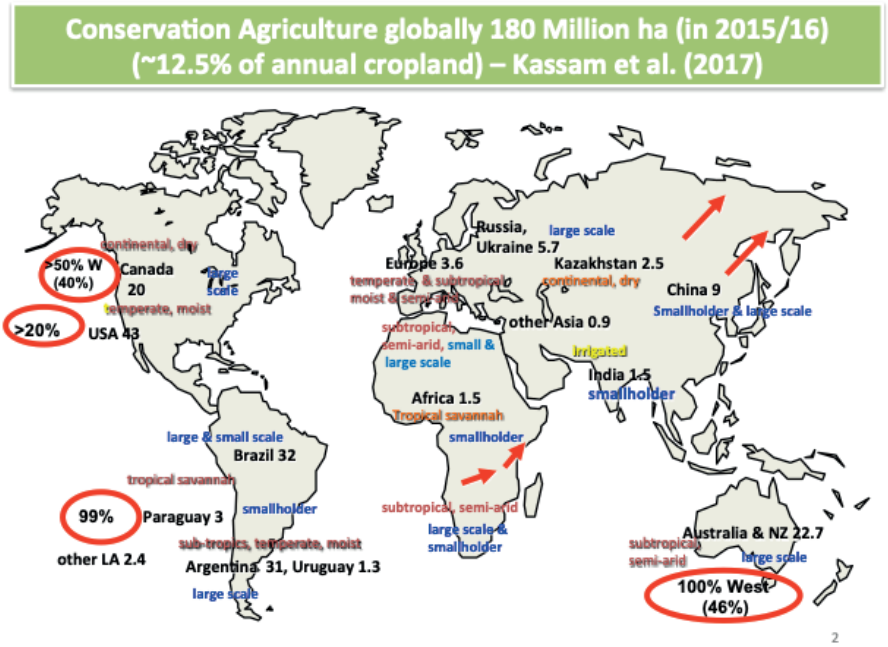
Conservation agriculture is currently being practiced on 180 million hectares worldwide on smallholder and larger commercial farms[12], or on about 13% of global croplands. These practices have a significant potential to increase the level of stored soil carbon year-on-year, by about 0.2 tons CO2 per year[15]; particularly through reduced or zero tillage, growing cover crops, rotating crops, incorporating leguminous trees, shrubs, and annual species, and a number of other agroecological practices.

These practices are highly beneficial to farming. They protect the soil from erosion, enhance soil fertility, improve soil moisture, and increase crop yields. They are excellent interventions for farmers and the land in their own right – but they can also contribute to greater global carbon storage. Through improved soil fertility and and soil moisture storage, they also make farmers less vulnerable to drought, so they are also a climate adaptation practice. These innovations are being promoted by a global movement to expand conservation agriculture; it is supported by FAO[13] and the 4 per 1000 Initiative[14].

The target is to continue expanding the coverage of conservation agriculture from 180 m ha to reach 500 m ha by 2050. The adoption of these practices would then be contributing an additional 400 million tons of CO2 storage in agricultural soils[16].



Conservation agriculture has spread to over 180 million hectares worldwide during the past several decades, and its further uptake is accelerating. Our target is to expand its adoption to 500 million hectares by 2050, inducing the annual storage of 400 million tons of CO2 in agricultural soils – with many co-benefits to farmers livelihoods, resilience, and the health of the land.



TARGET 3: Scale-up leguminous shrubs on farmlands to 350 m ha, in order to store an additional 2.5 bt CO2 per year[25], while increasing crop and livestock production and producing wood fuel for cooking fuel and biomass energy.

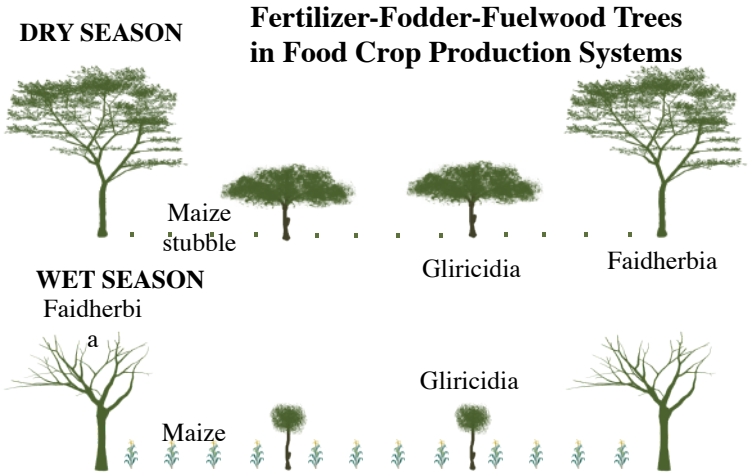
The IPCC urges a massive conversion of agricultural land to the production of bioenergy crops (up to 600 m ha)[1]. But that would critically intensify the competition for land between bioenergy and food production.

Fortunately, there are alternative and practical ways by which we can vastly increase carbon, through photosynthetic carbon capture and storage, that would not require the conversion of agricultural land at all, and that would actually increase crop production[11].

The methods have been developed, and fully commercialized at scale[17]. They involve the incorporation of leguminous shrubs into crop fields. This is currently being done by millions of farm families in many countries throughout the tropics[11,18,19].

The foliage is used to fertilize the crops and provide fodder for their livestock, while the wood produced is used for energy. The shrubs increase soil moisture, soil fertility, and crop yields; and they buffer crop production from the droughts and higher temperatures that are now occurring due to climate change[20,21,22]. They store about 3-6 t CO2 per hectare per year in the soil and roots[18,23,24].

These systems of evergreen agriculture are currently being scaled-up in many countries in Africa. There is an estimated 200 million hectares of cropland on this continent alone where evergreen energy could be deployed to the benefit of rural farming populations[18]. They are a bioenergy solution with no trade-off between energy and food. Rather, they are a ‘trade-in’ that provides dramatic increases in the production of both food and bioenergy, on the same cropland area.



Leguminous shrubs are planted in maize fields by small-scale farmers in Africa. They are cut down to the ground before the crops are sown, providing rich biofertilizer to the crops and high-protein livestock fodder. The shrubs gradually begin to regrow by the time the maize is harvested (as seen here). They continue to grow during the dry season and produce their woody biomass while there is no crop growing in the field. This evergreen food-energy system could produce enormous quantities of biomass for power generation and carbon capture and utilization or storage in the tropics, with no competition between bioenergy and food production. Our target is to scale-up these systems to 350 million hectares by 2050 to store an additional 2.5 billion tons of CO2 in the soil, while enabling an additional 2.5 billion tons of carbon capture from the flue gas of biomass power plants.

TARGET 4: Deploy carbon capture and storage from evergreen energy generation in biomass power plants, and achieve negative emissions of 2.5 billion tons CO2 per year.

Carbon dioxide capture methods for power plants are currently being developed and refined. It is likely they will begin to be deployed in fossil-fuel and wood-based power plants within the next decade. Power plants that use the wood that is harvested from the leguminous shrubs as their feedstock, grown along with crops on agricultural fields (see Target 3 above) could then capture and store the effluent CO2, or use it in a great variety of useful products, including biochar and concrete.

Investment in such a electrical power solution for rural areas, particularly in the tropics, would bring energy to hundreds of millions of people that currently have none, while also capturing CO2 from the atmosphere. This game-changing method of carbon capture and storage (CCS) would therefore be much more socially and economically beneficial, and entail much lower net costs, than the methods of direct air capture (DAC) that are currently being given so much attention. Their deployment will provide an additional capture of 2.5 billion tons of CO2 from the atmosphere[26] every year by 2050.

EverGreening the Degraded Forest Lands

Target 5: Restore tree cover on 575 million hectares of degraded forest lands to capture an additional 8.5 billion tons CO2 per year27,30.

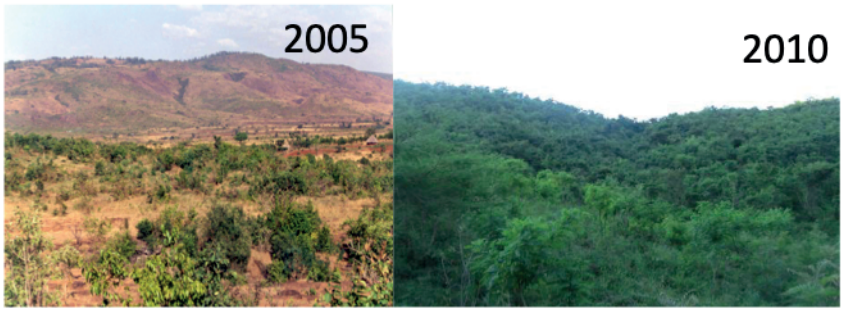
There are 4 billion hectares of forest land in the world; but much of that forest is now mostly deforested, severely degraded, or even treeless. Recent analysis shows that 1.7 billion hectares of this forestland is, in fact, treeless land, on which at least a trillion new trees could be re-established5.

The target is to restore 1/3 of this degraded forest land (575 m ha) to healthy forest by 2050; primarily by deploying simple, cheap and effective practices, particularly through assisted or enriched natural regeneration of trees (ANR) by local communities in the tropics[27].

This is done through mobilizing communities to protect regenerating forest areas, and pruning and thinning of the trees to create a more optimum and productive stand of trees, along with, in some cases, the enrichment planting of useful trees. The regenerated trees will provide them with a more abundant supply of tree products deemed most useful to the communities that are engaged in these practices, for enhancing their livelihoods. This has already happened on a scale of millions of hectares in Ethiopia and hundreds of thousands of hectares in Tanzania[27].

Planting trees can also play an important role in these restoration efforts, but fortunately, we know that assisting the natural regeneration of useful trees in these degraded lands is far less costly, it is much more practical to deploy, and it can produce many benefits, more quickly, for local residents.

Watershed Closures on millions of hectares in Ethiopia



Shinyanga Tanzania - Community-based regeneration of woodlands and grazing lands covering approximately 500,000ha in 934 villages. Awarded the UNDP Equator Prize.

Assisted natural regeneration of trees on degraded community forest lands has been successful on millions of hectares in Ethiopia and Tanzania. The regenerating indigenous tree cover is thinned and pruned to provide optimal tree growth and fodder supplies, while higher value fruit and timber species may be introduced to enrich the value of the native tree cover and provide greater nutritional and livelihood benefits to the local populations.

This target builds on a number of current international commitments, and national commitments, that countries across the world have made in relation to forest landscape restoration. These include the Bonn Challenge, whose goal is to restore 150 m ha by 2020; the New York Declaration on Forests, that aims to restore 350 m ha by 2030; the African Restoration Initiative (AFR100), which is supporting the restoration of 100 m ha of degraded lands,; and the 20x20 Initiative in Latin America. The UN Convention to Combat Desertification (UNCCD) is leading efforts to realize Land Degradation Neutrality in many countries, and the Convention on Biological Diversity is also engaged in addressing ambitious targets for habitat restoration. These commitments reflect serious political will, but the pathways to their successful implementation at scale are still very much a work in progress.

Engaging the Urban Population

Recent research has documented that there are currently three trillion trees in the world28, and the area of forests is about half of what it was before humans began deforesting the planet. But people can also mobilize to recover a major part of that deforestation, by re-establishing trees across the globe. In fact, if every one of the 7+ billion humans were to plant, or to finance the planting of, just 10 trees per year, we could re-establish 1 trillion trees to evergreen the earth in 15 years, and 2 trillion trees in 30 years – by 2050.

Ethiopia has shown the way: by mobilizing its 105 million citizens across the country to plant 350 m trees in a single tree-planting day[29] in August, 2019. It is now planning to continue mass-planting trees year-round, to enable vast tree-covered landscapes of the country to recover. This inspiring accomplishment shows what all countries can do when they set ambitious targets and commit to achieving them. And it shows the way for inspiring a personal commitment by everyone on the planet to contribute to evergreening the earth.

Settlements occupy 130 m ha of the total land area of the world[2]. Cities and towns are already leading in many aspects of climate change mobilization. And they are organized through such networks as Local Governments for Sustainability (ICLEI). Increasing tree cover in urban environments has enormous potential for carbon capture, while improving the urban environment in many ways.

Urbanites can do their part by planting trees, and protecting regenerating trees, in their neighborhoods and open spaces; by helping to finance tree-growing by others, and by collaborating with the surrounding rural communities to restore degraded lands.

The Trillion Tree Campaign (www.trilliontreecampaign.org) enables individuals and groups and projects to register their tree planting successes on line, so that they can be tracked at the global level. This initiative is managed and run by young people, with 40,000 young ambassadors spreading the message in over 100 countries.

EverGreening the Degraded Pasturelands

TARGET 6: Suppress fire and regenerate a healthy grass-tree balance on 650 m ha of degraded pasturelands. This will be done by pasturelands managed natural regeneration (PMNR), to store an additional 3.60 billion tons of CO2 per year[31].

There are currently 3.4 billion hectares of permanent pastures in the world. Much of this land is burned every year: This includes about one billion hectares burned annually in Africa alone. Burning is commonly implemented to regenerate pasture regrowth, but it reduces soil carbon reserves and it severely degrades the land over time. Burning can be replaced by more holistic systems of planned grazing that regenerate the health of the land, build up soil organic matter, and increase pasture productivity[32].

Pastureland-managed natural regeneration will be deployed to restore a healthy balance of grass, trees, and bushes, enhance fodder production, and create a more moderate microclimate to improve animal welfare and productivity. Successful silvopastoral models are now being practiced in many countries, including the United States, Colombia, Brazil, Tanzania, and Zimbabwe[33].

Our target is to regenerate 20% of the world's degraded pasturelands by 2050 by expanding the scale of these successful systems, and continue on to restore the remaining 80% during the second half of the 21st Century.

Trees in pasture lands are a critical source of dry season fodder in semiarid pastoral systems (above), and are a source of shade and protection from wind in more temperate grazing systems (below), increasing livestock productivity substantially. There is enormous potential for increasing tree cover to create more resilient grazing systems on the 3.4 billion hectares of permanent pastures in the world.

Empowerment, Low Costs & High Benefits to Local Communities are Paramount

A fundamental aspect of the '20 by 2050' goal is to make sure that all of these scaling programs are not just storing carbon and improving the land, but that they are very low in cost compared to other mitigation options, and that they are engaging and empowering communities in the planning, design, implementation and assessment of them; and that the poorest people, and particularly women and children, are benefiting from the interventions. Without attention to these social, economic and environmental issues, efforts to rapidly increase tree cover are likely to prove ineffective in the long term[7].

The practices must also enhance biodiversity, and reverse land degradation, while contributing to the achievement of many of the Sustainable Development Goals. The positive co-benefits and synergies of the interventions will be considered as fundamental, and equally important, impacts

of each of the above six evergreening action targets.

Robust evidence, and the experience from previous large-scale successes with each of the six types of evergreening practices highlighted above, indicates that their cost per hectare for implementation[10] are generally less than $50, and that the cost per ton of CO2 captured is less $2. These costs are exceptionally modest, particularly considering the multiple co-benefits to society and the environment that are achieved right along with the carbon accumulation. They are outcomes that we want to achieve regardless of their ultimate impact on carbon capture and the climate. They are truly no-regrets solutions.

Zeroing-Out Deforestation

Tropical deforestation and peatland degradation currently contribute a combined 10-15% of global CO2 emissions4. This amounts to about 3-4 billion tons of CO2 emissions per year. There has been considerable investment in avoiding further deforestation, particularly through the United Nations REDD+ program[34]; and there has been some modest successes achieved. But totally stopping deforestation, especially in the Global South, has proven much more challenging than anticipated.

The EverGreening the Earth Campaign will be collaborating vigorously with global and national avoided deforestation efforts – for there are many synergies to be gained by linking evergreening land restoration to reducing the destruction or conversion of tropical forests.

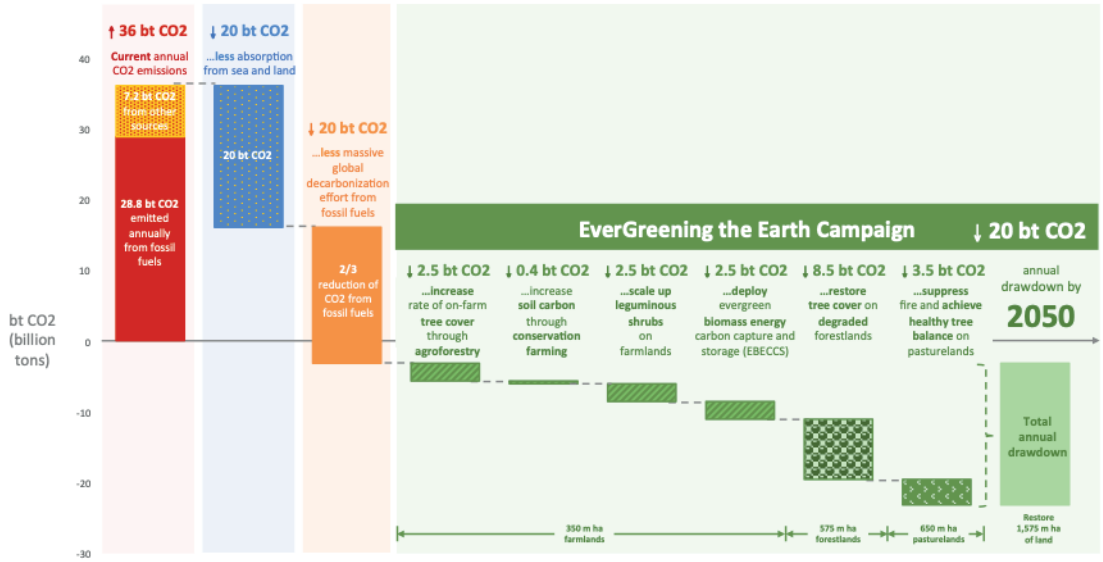
Agroforestry and assisted or enriched natural regeneration of degraded forest lands, as proposed in the targets above, will enable farmers to improve soil fertility, adapt to rising temperatures, drought, and increase their overall yields on existing land[9]. These practices will be key to sustainable “ecological” intensification of agriculture. They will significantly reduce pressure on farmers to expand the land under farm production to cope with declining yields. And they will also increase the productivity of lands outside of the protected natural forests, and produce the tree products currently harvested from protected forests.

This will significantly enhance the ability to arrange agreements with local communities for successful avoided deforestation. Increasingly, It is also being recognized that the successful protection of natural forests is inextricably linked with strengthening indigenous rights of tenure for forest-dwelling communities[35].

And, if ultimately global success is achieved in zeroing out deforestation by 2050, the planet will benefit from an additional 3-4 billion tons of avoided CO2 loss to the atmosphere.

In any event, if the 20 by 2050 Campaign is successful, the annual capture and storage of CO2 through new tree restoration by 2050 will be 5-7 times the current annual rate of CO2 emissions from deforestation. Thus, evergreening restoration will go a long way towards ensuring that the planet can enter negative emissions territory, even if further deforestation is not entirely stopped.

EverGreening the Earth: The situation in 2050



This abatement curve shows how achievement of the evergreening goal and targets by 2050, along with a 2/3 reduction in annual fossil fuel emissions, and zero deforestation, will induce an annual drawdown of 28 bt CO2 from the atmosphere.

The Elements of EverGreening Success

The EverGreening the Earth '20 by 2050' Campaign will focus on the achieving following outcomes:

1st, Build awareness about the campaign, and the simplicity and do-ability of evergreening practices. The launch of the campaign at the Global Landscapes Forum during Climate Week 2019 in New York, will be the initial phase in fostering awareness by the global citizenry and civil society, businesses, governments, and the NGO community. This will be followed up by a sustained media campaign to continue to widen the circles of awareness.

2nd, Inspire the public and organizations of all types to act and engage. The campaign web site (greenuptocooldown.net) will be the locus for information and dialogue about the campaign, and the action initiatives that will be rolling out at the global, regional, national, and local levels. Guidance will be provided there for how individual citizens, communities, businesses, governments, and all types of nongovernmental organizations can get engaged with the campaign in their particular areas of interest or capacity.

3rd, Set targets – with cascading targets from global to national to subnational to the local level. Targets are a wonderful way of mobilizing action. They beckon engagement and creativity, and they stimulate concrete commitments of resources and hard work. This document has established a set of six global targets. But to be effectively realized, these targets now need to be cascaded right down to the local levels, where they can drive the empowered efforts of communities and

individuals. A framework for identifying these cascading targets will be developed during 2019-2020, and connected with the targets on land restoration that already exist in many countries.

4th, Build capacity within and among organizations and their staff to do more and better evergreening. A decentralized EverGreening Leadership Academy will be established to strengthen the talent based for leading and implementing all aspects of the campaign's vision. This will include a curriculum of online courses to enable the training effort to be truly global.

5th, Empower and implement the campaign at the grassroots level. This is the heart of the campaign, and where the awareness, inspiration, capacity and resources come together to achieve massive scaling-up of evergreening practices across the globe. A detailed global strategy and action plan will be developed over the coming year, to provide a framework for the mobilization of a vast number of activities, many of which will be building on the many current restoration efforts that are already in progress around the world. Task forces connected with each of the six targets will be activated at the global level in 2020 to guide the prioritization and stimulation of concrete action to achieve each target.

6th, Track the progress and impact from local to global levels, using the latest geospatial technologies to precisely quantify and monitor the increase in tree biomass in near real time, and deploy new methodologies being developed with the Gold Standard to determine the carbon being stored for crediting and other offsetting applications. This will be a critical element of the campaign, to enable all participating individuals, communities, implementing organizations, donors, and governments to have ready access to the data on the progress achieved on a continuous basis. A campaign tracking platform will be operating by late 2019 to begin providing this information.

Six Steps to Success

A recent publication36 has distilled the experience that has been gained across many countries and many initiatives in fostering the mass scaling-up of land restoration solutions. These six steps will guide the implementation of the campaign at the ground level:

1. Identify and analyze existing re-greening successes.
This provides a solid foundation for scaling up solutions that are working in specific contexts, based on an improved understanding of the scale and impacts of (farmer-led) innovations that are already taking place. This step will help project implementers to understand what indigenous knowledge already exists, and what motivates farmers. Using what farmers already know, and what they or their peers are already doing is a starting point, gives a greater likelihood of acceptance.

2. Build a grassroots movement and mobilize partner organizations.
The campaign will build the capacity of, and empower, women and men farmers and their communities, to practice spread evergreening solutions. Community ownership is essential. Peer-to peer learning will be facilitated, and training and development of community-based institutions will be supported. Farmers learn best from their peers, and they are more likely to adopt what they see their peers doing. Where suitable groups such as farmers clubs, landcare groups, savings groups and traditional governing structures exist, capacity will be built on

planning, advocacy, marketing and financial management. Where necessary, new groups will be formed and trained. All pertinent stakeholders will be engaged – including women, men, youth, farmers, herders, merchants, faith and traditional leaders and local government. Groups will be assisted to form a vision for the future, and on how to make a plan. Partner organizations will be invited to participate in evergreening workshops, field visits and to select key staff to participate in online training courses.

3. Address policy and legal issues and improve enabling conditions for re-greening.
This will be accomplished by analyzing policy barriers, and adapting more conducive national and county-level policies, legislation, and development interventions. Field visits for policymakers and elected officials will be arranged. Communities themselves which have benefited from evergreening implementation, and which have become passionate campaigners for it, will be capacitated to advocate for the mainstreaming of evergreening in development programs at local and national levels using a citizens voice and action approach.

4. Develop and implement a communication strategy.
The campaign will systematically expand the use of all types of media, to inform stakeholders at all levels, and to disseminate information about evergreening benefits and experiences. Special emphasis will be given to radio programming in the local vernacular, to reach as wide an audience of potential practitioners as possible.

5. Develop or strengthen agroforestry value chains.
Evergreening practices are both foundational and complementary to small-scale farming economic development. Thus, great emphasis will be given to value chain development, which will enable farmers to capitalize on expanding markets for their tree-based products. Product selection will be determined through a value chain assessment, and will be region and country specific, but typically, marketing opportunities for agroforestry-related products may include – honey, fodder, livestock, grains, fruit and vegetables.

6. Expand research activities.
Additional research must be commissioned to fill gaps in knowledge that will be fed back into the acceleration of the scaling-up efforts. The 20 by 2050 goal will only be achieved through further innovation in developing, refining, and applying effective new technical and economic and social solutions – some of which exist and are being scaled up currently, and some of which have yet to be made fully scalable.

This is an integrated approach. These activities will ensure that governments, communities, local organizations and institutions, and value chain stakeholders have the information, knowledge, capacity, and incentives to continue scaling-up project activities on a sustained basis, and to receiving significant ongoing benefits from their efforts.

Each of the steps in this methodology has a strong empirical basis from the extensive literature on this subject, and from extensive field experience gained through its application on the ground in many countries. The elements are now widely accepted by the rural development, agricultural development, and natural resource management communities.

A Global Fund specifically focused on EverGreening the Earth

The global community has a dedicated fund for investing in the very broad spectrum of environmental issues (The Global Environmental Facility). More recently it established a fund to invest specifically in mitigation and adaptation to climate change, with a major remit to reduce fossil fuel emissions (The Global Climate Facility). These funds, as well as the multilateral and regional development banks, are mechanisms primarily for investing in the environment through national governments. This is a very important conduit, but experience shows that the actions they fund are generally top-down both in program design and implementation, and are thus often quite limited in actually enabling the grassroots empowerment and engagement that is required for successful and sustainable restoration at the local level.

What the world needs now is a fund that is focused like a laser on local and grassroots empowerment and engagement in evergreening the land, based on flexible, performance-based outcomes. This is an urgent imperative, to overcome the limitations of investing primarily through governments. It is imperative because experience shows that the most simple, practical, and low-cost practices to scale-up evergreening practices have been generally ignored or downplayed in importance by governments. Evergreening is all about implementation at the grassroots -- through empowering communities to take charge. Resources must reach the communities to be effectively deployed, and that is often problematic when this is done through governments. Independent, credible monitoring must also be assured.

Grassroots empowerment also leverages local peoples' ingenuity and capacity for innovation. Meanwhile, thousands of businesses can financially support the movement by financing that portion of their emissions reductions that cannot be achieved in the short term through carbon offsets payments that can support grassroots evergreening through the campaign.

Governments have a crucial role in creating enabling environments in which this funding approach can flourish at scale. Governments at local and national level should be very much engaged in supporting this novel investment approach. And they should be engaged in including these targets in their Nationally Determined Commitments to the Paris Climate Change Agreement, and in tracking the successful outcomes of additional carbon stored in their NDC reports.

Such a novel investment approach takes inspiration from the GAVI model that mobilized billions of dollars and the global health community to vaccinate hundreds of millions of children to protect them from common childhood diseases. This was a performance-based investment system, that established clear and highly ambitious targets and did exhaustive quantitative tracking. This is just what the world needs now to achieve the crucial carbon storage goal of capturing 20 billion tons of CO_2 every year by 2050.

What comes after 2050?

‘20 by 2050’ will not succeed in evergreening all of the world’s degraded farmlands, forestlands, and pasturelands by mid-century. In fact, it will reach only a fraction of the total land that could be better cared for, but these lands will then be absorbing vastly greater quantities of carbon from the atmosphere.

The targets for forestlands and pasturelands restoration are only about 20% of the total of these lands that could be reached and regenerated. Thus, there is a huge further potential to carry on after 2050 to rehabilitate, regenerate and restore the remainder of the world’s farmlands, forestlands and pasturelands – and thus, continue to increase the annual land-based capacity to absorb even greater quantities of carbon. Eventually, perhaps by late in the 21st Century, the planet will be tree saturated, and cannot further absorb large amounts of additional carbon dioxide. But the hundreds of billions of tons of additional CO2 that will be sucked out of the air by that time will go a long way toward reversing the most catastrophic effects of global climate change.

Where to from here?

> “You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete.”
> - R Buckminster Fuller

The scientific community has laid out clearly the existential urgency of addressing the climate crisis – and doing so immediately. The EverGreening the Earth Campaign is fostering a new model for doing this, a model that goes beyond the existing ones, a model that can reverse climate change while simultaneously creating a better life for the poor, and for all humans on the planet.

Such a model requires an ‘all-in’, ‘can-do’, optimistic, and collaborative approach – among citizens, communities, organizations, and governments. Let us do this thing –- for the sake of everyone on earth. Let us build and implement this new model together.

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Annex

Mobilizing through the Global EverGreening Alliance

The Global EverGreening Alliance has brought together 25 leading research, technical and development organizations together to harness their collective energies, and to build on their shared vision to restore degraded land, and to improve the sustainability, profitability and reliability of farming, forest, and pasturelands systems. It provides a collaborative platform to support and facilitate massive-scale environmental restoration and sustainable agricultural intensification efforts and for mitigating and adapting to the impacts of climate change at a globally-relevant scale.
The Alliance already works with and through a multitude of member organisations, partners, and governments at the national and sub-national levels across Sub-Saharan Africa, Latin America, and Southeast and South Asia; supporting real collaboration, learning, sharing and harmonization across sectors and borders.

In the global south, farming families and local communities are restoring degraded agricultural, pastoral and forestlands, through the regeneration and/or integration of trees and shrubs and grass. This results in more productive and resilient landscapes and agricultural systems, providing small-scale farming, pastoralist and forest-dependent communities (both women and men) with improved and diversified livelihoods, fostering 'green' rural economic growth, and creating an agriculture sector that produces zero net GHG emissions.

The Alliance's mission is two-fold. First, it is to support the member organizations, interested governments and donors, and vulnerable small-scale farming, pastoralist and forest-dependent communities in developing countries, to restore degraded landscapes and improve the sustainability, productivity, equity and profitability of agricultural systems through the managed regeneration and/or integration of trees into farm, pastoral and forest landscapes.
Second, the Alliance fosters the successful implementation of the EverGreening the Earth Campaign, inspiring and facilitating grassroots movements, municipalities,

farmers, foresters and livestock producers to support and adopt evergreening landcare practices (such as FMNR, PMNR and ANR). The aggregate scale of success will be measured by capturing and storing 20 billion tons of CO_2 per year by 2050. Thus, local communities and farmers will take affordable and effective action to avert the climate crisis and substantively mitigate the effects of climate change; and thereby, also constantly improving the sustainability, productivity and resilience of agricultural, forest and pasture systems around the world.

Footnotes

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