

Submission from the PHA Food and Farming  
Campaign  
Stakeholder Consultations on Climate Change  
Parliament – 22 and 23 September 2015



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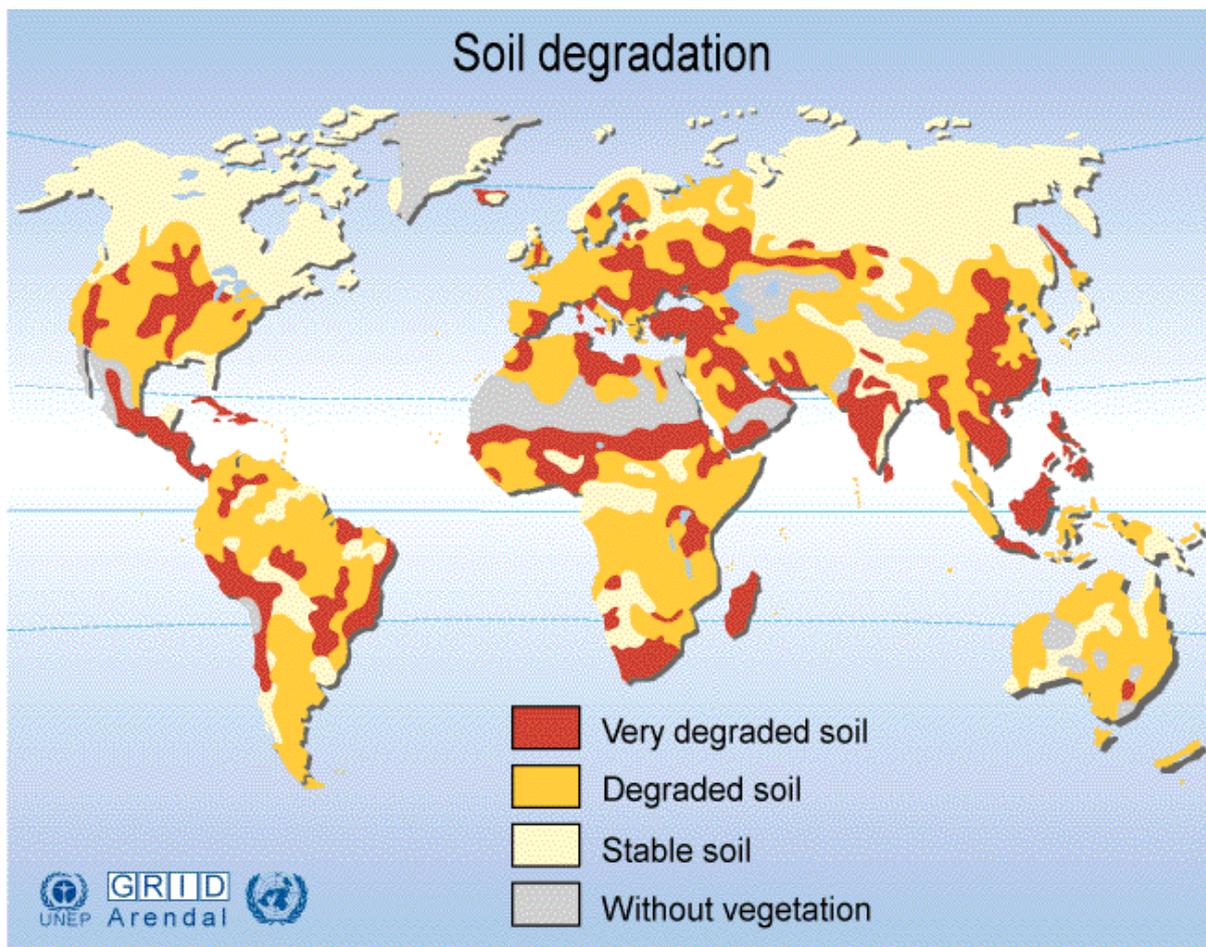
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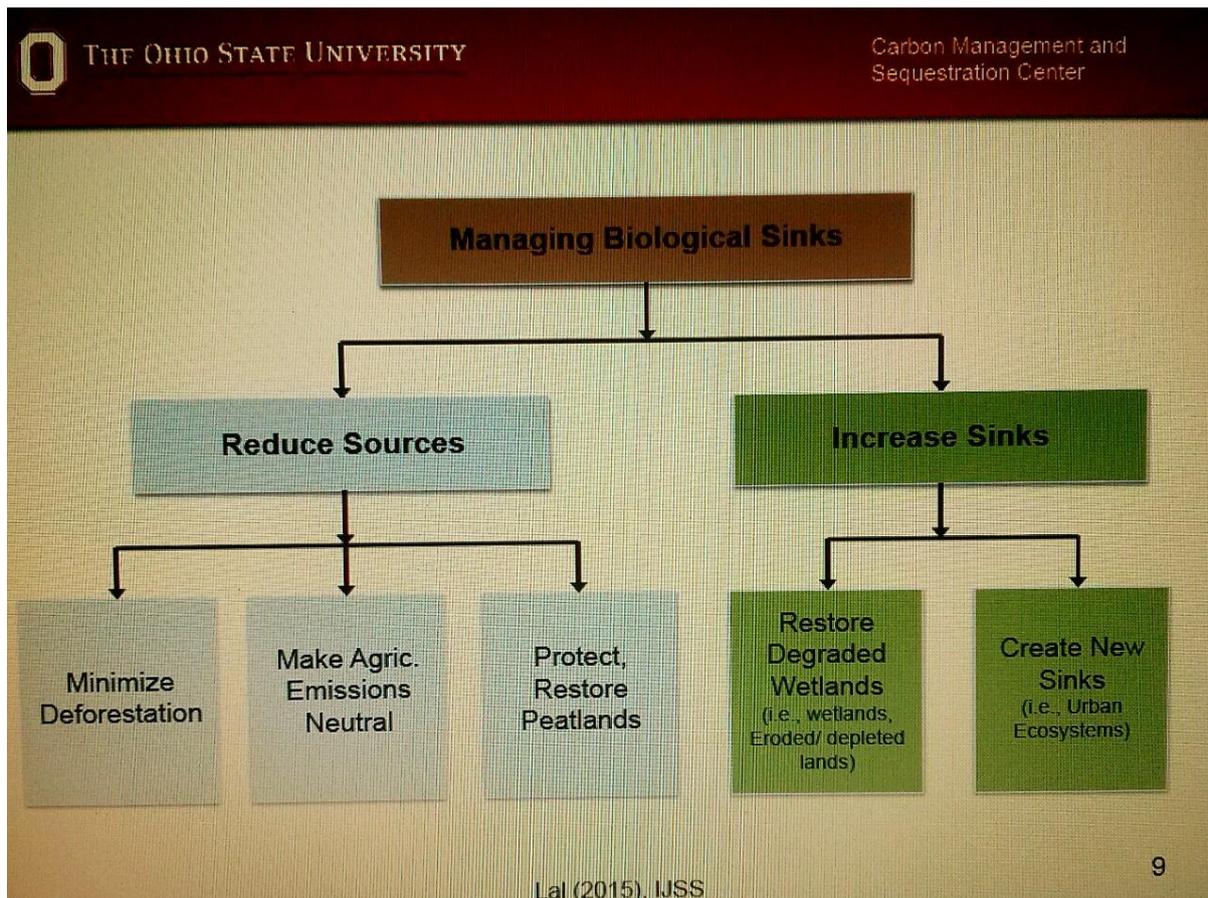
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## AGRO-ECOLOGICAL FARMING AS A SOCIO-ECONOMICALLY BENEFICIAL CLIMATE MITIGATOR



The United Nations Environmental Protection Agency classifies the soil in South Africa as “very degraded”. Why would we as farmers be giving information to a climate change committee on soil? Well, it is not widely understood that good soil, with a high carbon content, acts as a major carbon sequester. And that commercial farming practices (which destroys soil organic matter, instead of building it), those used across South Africa, utilise farming methods that prevent our soils from acting in this capacity – on a massive scale.

### 1. Where do soils fit into the climate change picture?



### 2. How does commercial agriculture contribute to climate change?

Modern agriculture, food production and distribution are major contributors of greenhouse gases: Agriculture is directly responsible for 14 per cent of total greenhouse gas emissions, and broader rural land use decisions have an even larger impact. Deforestation currently accounts for an additional 18 per cent of emissions.

In this context, a **historical perspective** needs to be considered: Dr. Rattan Lal, Professor of Soil Science at Ohio State University, has calculated that over the last 150 years, 476 billions of tonnes of carbon has been emitted from farmland soils due to inappropriate farming and grazing practices, compared with ‘only’ 270 Gt emitted from of burning of fossil fuels. A

more frequently quoted figure is that 200 to 250 Gt of carbon have been lost from the biosphere as a whole in the last 300 years. Whatever the correct figure, these reductions of 'living carbon potential' have resulted from

- de-forestation
- bio-diversity loss
- accelerated soil erosion
- loss of soil organic matter
- salinisation of soils
- coastal water pollution and
- acidification of the oceans

**Land use changes** can also significantly contribute to climate change. Large scale changes such as deforestation, soil erosion or machine-intensive farming methods may all contribute to increased carbon concentrations in the atmosphere. Soil erosion by water, wind and tillage affects both agriculture and the natural environment. Soil loss, and its associated impacts, is one of the most important (yet probably the least well-known) of today's environmental problems.

<http://www.worldfuturecouncil.org/2326.html>

### 3. Soil Organic Carbon (SOC)

"Soil organic carbon (SOC) is the carbon stored within soil, and it plays a vital role in the health and productivity of the soil. Typically agro-ecosystems are depleted of their SOC by 25 to 30 percent in well-managed soils and by 70 to 80 percent in poorly managed soils. The critical SOC concentration in the surface 8-inch layer (20-cm depth) is about 1.5-2.0 percent. Many smallholder farmers are already grappling with current levels at 0.1 percent or less in well-known hotspot areas. Such soils already have low adaptability against severe droughts because crops don't always have sufficient water storage capacity coupled with shallow rooting depths. In such systems, soils with depleted SOC, may only be cultivated with minimal inputs. As a result, the soil can only produce small yields. In contrast, sustainably managed soils can be a major sink of atmospheric CO<sub>2</sub>, produce high agronomic yields, and support growth and development of a farmer, and the community"

<http://globalfoodforthought.typepad.com/global-food-for-thought/2013/10/commentary-climate-resilient-agriculture-starts-with-soil-protection-1.html>

#### 4. Soil as Carbon Storehouse – THE New Weapon in Climate Fight

The degradation of soils from unsustainable agriculture and other development has released billions of tons of carbon into the atmosphere. But new research shows how effective land restoration could play a major role in sequestering CO<sub>2</sub> and slowing climate change.

[http://e360.yale.edu/feature/soil\\_as\\_carbon\\_storehouse\\_new\\_weapon\\_in\\_climate\\_fight/2744/](http://e360.yale.edu/feature/soil_as_carbon_storehouse_new_weapon_in_climate_fight/2744/)

#### 5. The benefits of Soil security - Prof Rattan Lal

Improving soil health has a range of benefits for both farmers, consumers and the environment. Professor Rattan Lal from Ohio State University says policies that incentivise putting carbon back into the soil can help with climate change mitigation and adaptation. Professor Lal was in Australia for the Centre's 2012 Agriculture and Environment Research Symposium on soil security. He begins by discussing why it is important to return carbon to soil.

<https://www.youtube.com/watch?v=mTb63CDJ5sA>

#### 6. Be aware of and protect agricultural policy from “Climate Smart” and other commercially driven “isms” – that are neither climate friendly, nor socio-economically beneficial.

“Climate-Smart Agriculture” may sound promising, but it is a politically-motivated term. The approach does not involve any criteria to define what can or cannot be called “Climate Smart”. Agribusiness corporations that promote synthetic fertilisers, industrial meat production and large-scale industrial agriculture – all of which are widely recognised as contributing to climate change and undermining the resilience of farming systems – can and do call themselves “Climate Smart”. CSA claims to include all models of agriculture. However, it lacks any social or environmental safeguards and fails to prioritize farmers’ voices, knowledge and rights as key to facing and mitigating our climate challenges. It therefore actually threatens to undermine agroecological approaches as defined by practitioners, while endangering the future development and upscaling of such approaches.

<http://www.ifoam.bio/en/news/2015/09/21/dont-be-fooled-civil-society-says-no-climate-smart-agriculture-and-urges-decision>

COP21 Statement

<http://www.climatesmartagconcerns.info/cop21-statement.html>

7. Help us – URGENTLY - to protect the Philippi Horticultural Area (PHA) from urban development and sand mining: Cape Town's food security, water security and soil security depends on it. The PHA would function as the ideal arena to model this crucial climate change mitigation and adaptation mechanism, for the rest of South Africa. Its unique existence is a low cost method that could neutralise the city's carbon emissions – the country's second-highest consumer in this regard.

South Africa's soils are listed by UNEP as 'very degraded' because of inappropriate farming and grazing practises, mining, deforestation and poor land use management. All life on earth depends on our soils. We get our food, water, building materials from our soils. Good soils also sequester atmospheric carbon through the life and death cycle of plants. Plants capture carbon from the atmosphere and store this in its living body and when the plant dies that carbon is held in the soils. Soils are in this way an important mitigation for climate change.

The PHA address the city's food security and water security and soil security, and is unique in the world as an Urban Agricultural System that could feed and water the city ad infinitum.

The PHA farming community already produces significant food for the city and can further improve our food security if land is protected from sand mining and housing. The 3000 ha PHA farmlands is the natural recharge point for the Cape Flats Aquifer offering farmers water security now, and potable water security for future generations. It's now become increasingly clear the PHA perform the critical function of sequestering excess CO2 in the city. This carbon sequestration function will increase exponentially as farmers improve soil management techniques. "Putting carbon back into the soil can help with climate change mitigation and adaptation" \_ Professor Rattan Lal, Ohio State University, a world expert in soil science

The PHA (3,000 hectares) is currently under direct and ongoing threat from the City of Cape Town, and the Provincial Department of Environmental Affairs and Development Planning who are on an ongoing basis, against all established policy and council protections for the PHA, granting permission for the development and paving over of areas of the PHA into housing. This 572ha development when the City has 11,000ha of alternative land in the city to meet such a need; there is no need to pave over prime agricultural land. The PHA Food and Farming Campaign is currently engaged in legal processes to stop the destruction of the PHA in its unique place in the city. The Rooftop Study (attached) notes:

"Through the research process, the PHA was found to be an area of critical importance. Further, when the current and future challenges that the city will face are considered, the PHA is a key city asset. This understanding exists within the city as the 2007 statement in the heritage brochure demonstrates. While this statement was drafted over 5 years ago, it remains true today:

*The Philippi market garden is still active. It produces tons of vegetables and flowers annually for local consumption and export. It is labour-intensive and, a source of employment for the communities in the vicinity. This distinctive farming landscape is unique in the city. It forms a large green lung within a dense urban environment. It provides a valuable resource for diverse employment opportunities, recreational enjoyment and cultural activities.*  
(CoCT, 2007:2)

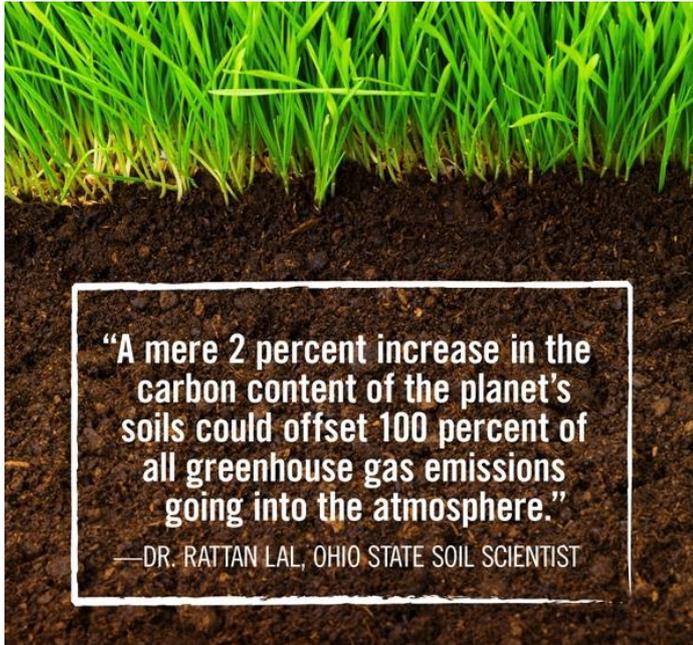
Access to food and water are rights enshrined within the South African Bill of Rights within the South African Constitution (Section 27 1 (b)). As the PHA is enabling a significant flow of food to those in need and thus facilitating, in part, the attainment of the right to food, it takes on other forms of significance. Removal of the PHA from the Cape Town food system may result in claims that those taking these decisions did not act to uphold the right to food. A key factor in the attainment of rights such as the right to food, as with the right to housing is that these rights cannot be addressed at the expense of other rights. Thus, removal of the right to food to enable the right to housing would be argued as prejudicial to the communities concerned. As the PHA is currently producing food, thus enabling the attainment of the right to food, at least in part, its status should remain and other areas sought for housing. “

Of the Oakland City development proposal, which the City of Cape Town turned down, yet the Provincial MEC for DEADP approved using a LUPO provision now ruled unconstitutional (alas not retrospectively) in the Constitutional Court, the late CT city planner Francois Theunissen said in 2008:

*“To me, the fundamental points are simply that:*

- 1. The strategic importance of the two reasons for the original proclamation of the PHA (which lives on, statutorily, through the guideplan’s PHA designation) is currently and crucially valid in societal interest as it was 20 – 30 years ago.*
- 2. That context has nothing whatsoever to do with apartheid buffers or apartheid in general, and the applicants playing of the racial card in this respect would have been laughable had it not been so sickening.*
- 3. It is irrelevant whether or not the land under application is utilised for any of the two usages (namely for glass sand mining or horticultural purposes) that were the reasons for the protection of the PHA having been created, because the big picture question is not how current land owners use the land, but whether or not it is in societal interest to maintain the integrity of the PHA, and*
- 4. If a block of 20% of what remains of the PHA were to be urbanised, the entire PHA will become untenable, and therefore, the question in ones mind (not in an advertising sense, but in the sense of how one applies ones mind, and what one writes in the report) should not be whether one could recommend urbanisation of the land applied for, but whether one could recommend urbanisation of the PHA.*

*I don’t want to sound over simplistic, but this case seems to me to fall under what I like to call the Wilson Principal. President (1913-21) Woodrow Wilson of the USA was fond of saying (this does not work in all aspects of life, but it works in regard to most of the important issues), that there are two sides to any question – the right side and the wrong side. As I have said, this approach is not always valid, but I would venture to suggest that there are two sides to the PHA case now before you: the right side and the wrong side. “*



## 8. Recommendations

The following policy changes are recommended to garner the greatest possible carbon sequestration potential of soil for climate change mitigation and adaptation:

- Change farming practice from ploughing to no till
- Monoculture to polyculture (integrate animal and crops)
- Complex cropping systems (crop diversity)
- Leave crop residue on the land
- Use cover crops in crop rotation to increase soil fertility and increase SOC
- Utilise SOC content development to improve protein content in grazing fields
- Incentivise the above agro-ecological practices – eg tax benefits, carbon credits
- Examine Agricultural College syllabi to include such practices
- Classify farmer practice as “environmentally friendly practice” – or not
- Set targets for percentage of agro-ecological practice especially among small scale farmer development. Such practices are – because they are low-input - sustainable and economically advantageous.

## 9. Extra References

Lal, Rattan, and Ronald F. Follett, eds. *Soil carbon sequestration and the greenhouse effect*. No. 57. ASA-CSSA-SSSA, 2009.

Lal, R1. "Global potential of soil carbon sequestration to mitigate the greenhouse effect." *Critical Reviews in Plant Sciences* 22.2 (2003): 151-184.