



Upon this handful of soil our  
survival depends

*Sanskrit text 1500 BC*

Improved soil carbon, soil health and soil fertility under grassland and cropland as well as integrated systems, including water management

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*We might say that the earth has the spirit of growth;  
that its flesh is the soil.— Leonardo da Vinci*

*To be a successful farmer one must  
first know the nature of the soil. —  
Xenophon*

*Despite all our achievements we owe our existence to a six-inch  
layer of topsoil and the fact that it rains — Farm equipment  
association of Minnesota and South Dakota*

## Context

*The nation that destroys its soil destroys itself.* — Franklin D. Roosevelt

*Heaven is under our feet as well as over  
our heads.* — Henry David Thoreau

*While the farmer holds the title to the land, actually it belongs to  
all the people because civilization itself rests upon the soil.—  
Thomas Jefferson*

## The Challenge We Are Facing



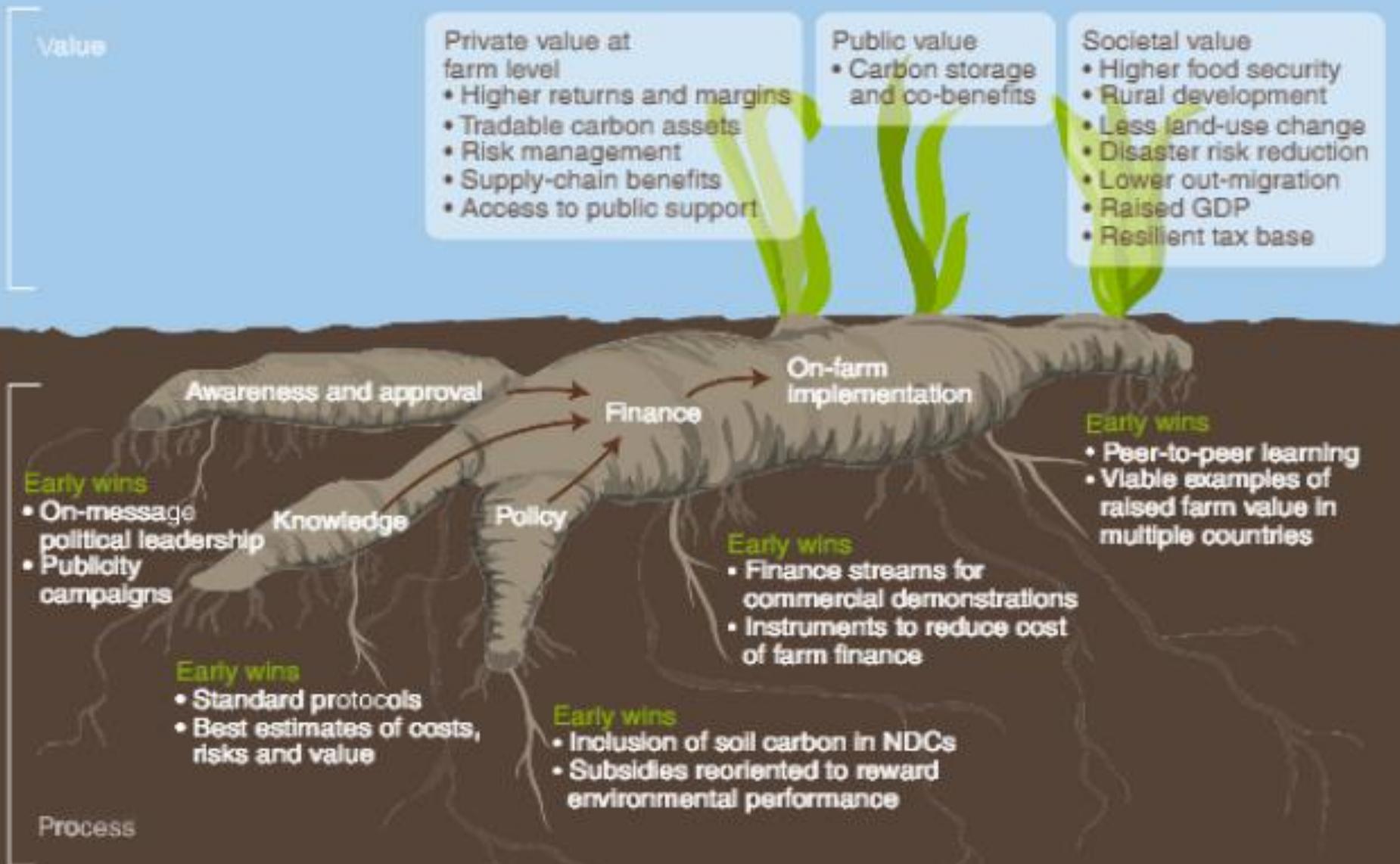
Agriculture is highly vulnerable to climate change.

The global food system is not fit for purpose already.

Demand for food continues to grow rapidly.

1. What work is your organization undertaking to improve soil carbon, soil health and soil fertility under grassland and cropland as well as integrated systems, including water management?

# Soil Health is a Public as well as a Private and a Wider Societal Good



Our work on Soil Health aims to increase value generation through soils for farmers, as a public good and towards a host of societal benefits.

# We Work with a Range of Actors to Ensure Soil Is on the Agenda

## Key protagonists

### Farmers and land managers

Including farmers' organizations

### Policy and civil representation

Parliamentarians, government agencies, parastatals and NGOs

### Supply chain

Input suppliers, traders, processors, retailers and customers

### Finance

Banks, funds, insurers, philanthropy and development assistance

### Technical and science

Project managers, registries, consultants, researchers and extension services

### International bodies and processes

UNCCD, UNFCCC, SDGs, Global Soil Partnership, WBCSD, Nature4Climate and 4 per 1000

## Priorities to increase momentum

Over-arching political case and vision for action

Stronger business case for public and private investors

More compelling value proposition for farmers and land managers

## Practices

Reforestation  
Land restoration  
Set-aside  
Erosion control  
Perennials

Peat protection  
Grassland protection  
Agroforestry  
Water management  
Avoided drainage

Land-use zoning  
Reduced tillage  
Crop rotations  
Pasture species  
Grazing cycles

Avoided burning  
Retained residues  
Composting  
Organic inputs  
Inorganic inputs

# Example: Large Scale Soil Regeneration in China

## Background:

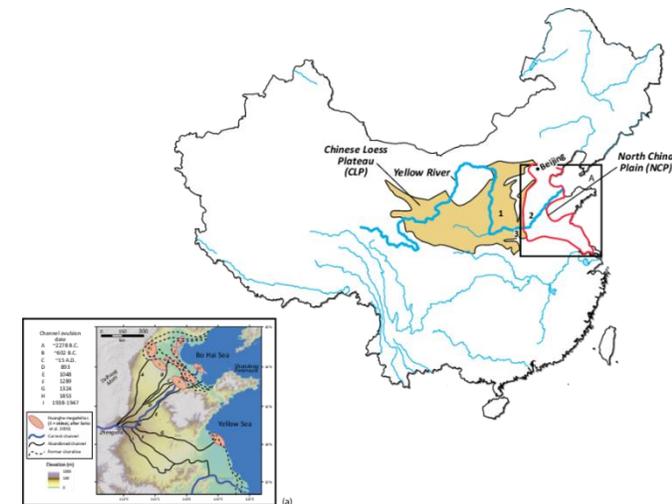
- Centuries of overuse and overgrazing on the Loess Plateau led to one of the highest erosion rates in the world and widespread poverty.
- The People's Republic of China and the World Bank partnered to invest almost US\$ 500 Million in the area.

## Strategy:

- Sustainable farming practices, training and support services were introduced.
- Existing research and development capacity were enhanced for dry-land farming techniques, grassland improvement, orchard management and impact monitoring and evaluation.

## Results

- Farmer incomes grew from about US\$70 per year per person to about US\$200
- Perennial vegetation cover increased from 17 to 34 percent.
- Sediment flow to the Yellow River reduced by over 100 million tons each year
- Per capita grain output increased from 365 kg to 591 kg per year.
- As many as 20 million people have benefited from the replication of the approach throughout China.



2. How does your organization address co-benefits and synergies with multiple objectives when improving soil carbon, soil health and soil fertility?

# Operational Commitments Underpinning CSA Mainstreaming

## Climate & Disaster Risk Screening

Identify projects' exposure to climate and disaster risks

Includes possible increased risks of soil degradation driven by climate change stressors

## GHG Accounting

Ex-Ante determination of gross and net GHG emissions

Includes quantification of changes in soil carbon stocks through modeling as result of project

## Shadow Price of Carbon

Accounting for carbon externalities in economic and financial analysis

GHG Accounting results regarding soil carbon and other aspects of projects' emission profiles are included in Economic and Financial Analysis

## Climate Finance Tracking (Co-Benefits)

Determine projects' share of climate finance by identifying adaptation and mitigation Co-Benefits

Adaptation and mitigation co-benefits of soil health and carbon related investments are identified and quantified

# SMART Punjab Program for Results: Comprehensive Reform of the Agriculture Policy Framework

## The SMART Program For Results (P4R) of US\$ 300 Million

- Punjab region plays key role in national agriculture, relies on increasingly scarce groundwater resources
- Despite being supported by very high levels of price support, agricultural growth has been minimal in recent years, even dipping into negative territory for the first time in history.
- Program finances a package of policy reforms, investments and institutional strengthening to support economic growth, resilience and inclusiveness.



## Key Result Areas:

- Increased **productivity** crop and livestock smallholder farmers (incl. an overhaul of the Ag research & extension system)
- Increased **value added** (private investments in farm and non-farm MSMEs)
- Improved **resilience** (to climate change and natural disasters), includes:
  - Disbursement Linked Indicator (DLI) on the share of investment classified as CSA
  - Improving farmers' resilience through a crop insurance program, improvements in irrigation maintenance and water service delivery

3. How does your organization set goals and measure progress in improving soil carbon, soil health and soil fertility?

# The World Bank Is Committed to Action on Climate Change and Soils in Agriculture

## Our Commitment:

- In 2018/19, 45% of the World Bank Agriculture Portfolio currently yields adaptation and/or mitigation co-benefits – 2019/20 is on course for >50%
- Until 2025, we will increase the share of projects with Climate Smart Agriculture ‘triple wins’ to 66%
- We will reach at least 20 countries and 10 million farmers with widely available and proven on the ground approaches.

## Case example: Kenya Agricultural Carbon Project (KACP)

- The first **soil carbon project earning carbon credits** under the Verified Carbon Standard was the Kenya Agricultural Carbon Project (KACP).
- Widely regarded as a landmark project for soil carbon sequestration, the project involves 60,000 farmers on 45,000 hectares (ha) by helping them to adopt climate smart agricultural practices.
- The project is working under the 2011 approved cropland focused Sustainable Agricultural Land Management (SALM) Carbon Accounting Methodology (VM0017);
- First credits earned in 2016 - 10,790 VCUs since then.



# Example of a Measurement Tool: SALM Soil Health Measurement Protocol

## Direct Soil Assessments

Sample collection; precise, but more labor and finance intensive.

## Indirect Soil Assessments

Carbon content measured through proxy variable.

## Impact on Landscape

Adoption of SLM techniques shows increase in resilience and productivity.

## Impact on Rural Communities

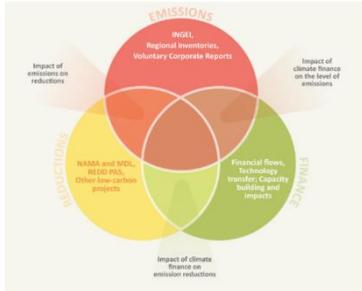
Higher yields, improved land tenure, new revenue streams.

SALM provides a **protocol for quantifying** carbon emissions and removals, encouraging **sustainable land management** by small-scale farmers in developing countries.

4. Which challenges did your organization face in improving soil carbon, soil health and soil fertility, and how could the Koronivia Joint Work on Agriculture, UNFCCC constituted bodies or other actors help to address these challenges

# Priority Actions for the Koronivia Joint Work on Agriculture

## Integration in NDCs



Provide countries with the necessary technical support to raise ambition on soil health related targets for climate change adaptation and mitigation including importantly a stronger integration into NDCs.

## Realignment of Subsidies



Support realigning public support to agriculture producers to promote improved soil health and other related environmental services that are essential for sustainable agriculture.

## MRV



Address technical and procedural bottlenecks around the Monitoring, Reporting and Verification (MRV) of soil health and soil carbon to boost ability to reward farmers for the positive externalities they generate.

# THANK YOU



Blogpost: [Do the costs of the global food system outweigh its monetary value?](#)



THE WORLD BANK

Submission from the CGIAR System Organization, International Centre for Tropical Agriculture and the World Bank, in response to Decision 4/CP.23.

*These are views on*

Improved soil carbon, soil health and soil fertility under grassland and cropland as well as integrated systems, including water management



Submission: [Take a Look at Our Koronivia Submission on Soils \(together with CGIAR & CIAT\)](#)



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