



Making Sense of Climate Policy and Carbon Markets

Apple Outlook 2021

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Whats
going on
in carbon?

2021 Climate Actions

President Biden announces a series of climate actions by executive order in January.

Most notable was to rejoin the Paris Accords and a pledge to reduce emissions by 52% by 2030

USDA comment period on climate

Late May release of “USDA 90-Day Progress Report on Climate-Smart Agriculture and Forestry”

August release of IPCC release of “Climate Change 2021: The Physical Science Basis”

UN Food Systems Summit 2021 in New York in September

Congressional action on infrastructure and reconciliation

UN Climate Change Conference (COP 26) in Scotland in November

What are the farm and commodity groups doing?



Setting Sustainability goals



Modifying and reviewing policies and resolutions.



Participating in
Carbon Dialog
processes

FACA
BPC
AGree/Meridian
Keystone

Tipping points

- ▶ Climatically --
 - ▶ 1.5 or 2.0 degrees Celsius on average temperature.
- ▶ Politically --
 - ▶ change in Administrations
 - ▶ change in political power and change in attitudes
- ▶ In the marketplace --
 - ▶ consumer attitudes, preferences and expectations - sustainability or regenerative.
- ▶ Major Markers
 - ▶ 2030
 - ▶ 2050

So what can Washington DC really do about climate change?

- ▶ International treaties, commitments and agreements
- ▶ Regulatory actions
- ▶ Legislative actions
- ▶ Incentive programs for change
- ▶ Taxation as a means of impacting efforts

USDA and Carbon

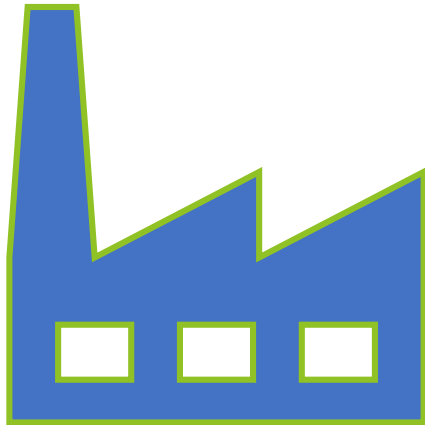
- ▶ Climate hubs
- ▶ Climate models
- ▶ Climate research
- ▶ Climate actions (NRCS) (resiliency and mitigation)
- ▶ Carbon markets (new versus business as usual)
- ▶ Voluntary versus regulatory
- ▶ Procurement preferences?





SUSTAINABLE DEVELOPMENT GOALS





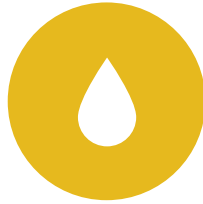
Carbon Markets

Making the simple complex?

Ecosystem Markets



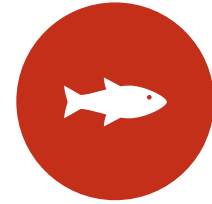
CARBON
MARKETS



WATER
QUALITY



WATER
QUANTITY



WETLANDS

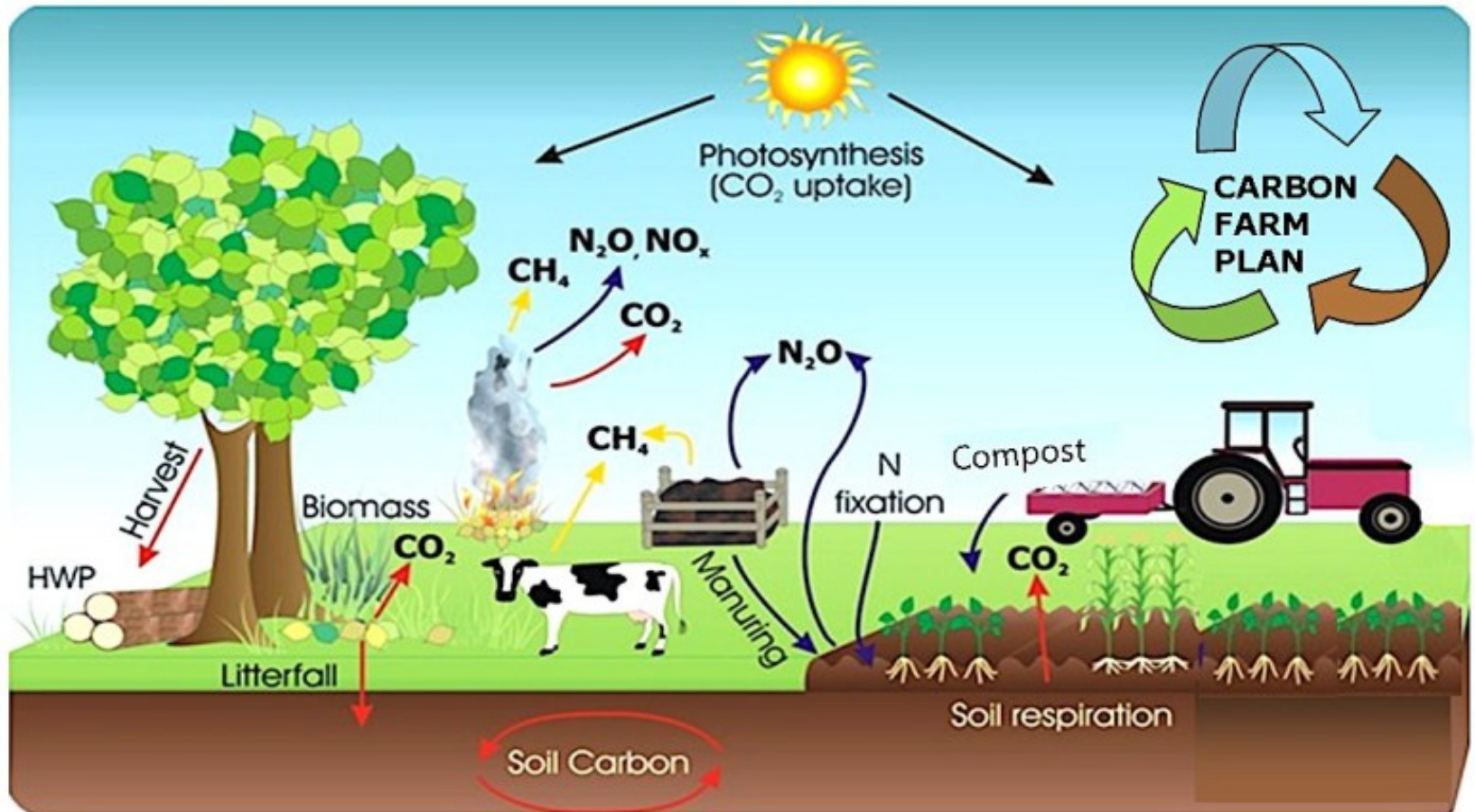


OPEN SPACE



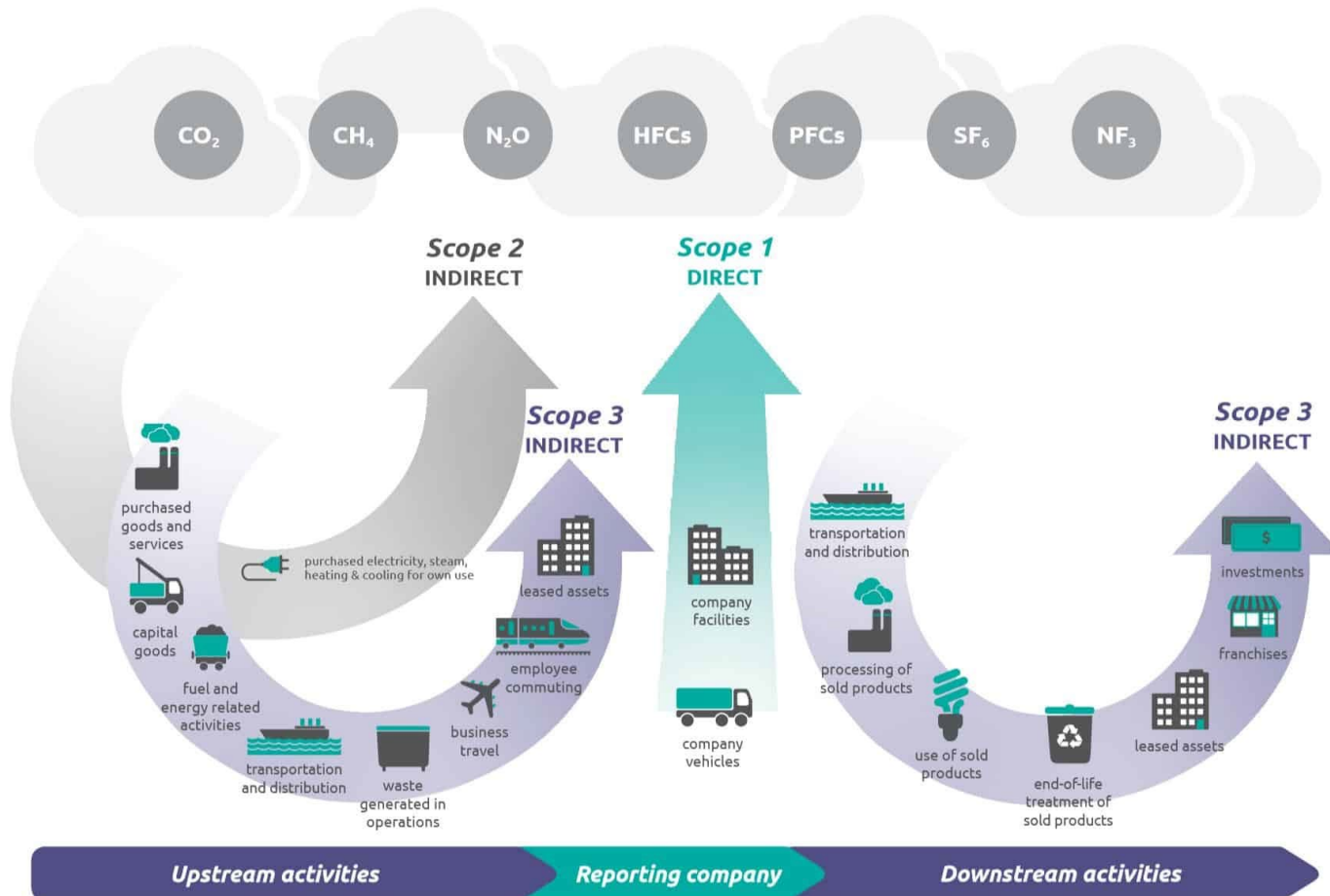
BIODIVERSITY

The Carbon Opportunity for Farmers



Whats in Scope?

Easy as 1, 2, 3



Carbon Markets - The thorny questions

Integrity

Permanence

Additionality

Transparency

Double-
counting

Data

Who sets the rules ?

Gold Standard®

Climate Security & Sustainable Development

- ▶ The Gold Standard

- ▶ Verra (ACR)



- ▶ Climate Action Reserve



CLIMATE
ACTION
RESERVE

- ▶ California Air Resources Board



- ▶ Science Based Targets initiative



SCIENCE
BASED
TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

Efficiency Measures Key to Carbon Sustainability

- ▶ Nutrient Management
- ▶ Precision placement technologies
- ▶ Biotechnology and Breeding advancements
- ▶ Biologics
- ▶ Feed Management
- ▶ Herd Management
- ▶ Energy Management
- ▶ Water management
- ▶ Waste management



Carbon Trading Platforms

Bayer Carbon Program

POWERED BY
FIELDVIEW

NutrienTM

indigoTM

 **ESMC**
Ecosystem Services
Market Consortium

 **CORTEVA**TM
agriscience

NORI


 **CIBO**

TRUTERRATM

 **Soil and Water**
Outcomes Fund

agoro
CARBON ALLIANCE



A Yara Initiative

Knowledge grows

 **FARMERS**
BUSINESS NETWORKTM

What are the assets?

- ▶ Carbon Equivalents (CO₂e)
 - ▶ Soil Carbon
 - ▶ Nitrous Oxide emissions avoided (fertilizer efficiency)
 - ▶ Woody Biomass (trees)
 - ▶ Energy Conservation
 - ▶ Enteric Fermentation emissions avoided
 - ▶ Waste and Manure Methane emissions avoided

Carbon Buyers

- ▶ Truterra -- Microsoft
- ▶ Indigo - IBM, JP Morgan Chase, Boston Consulting Group, Dogfish Head Craft Brewing, Shopify, ABInbev and Barclay's
- ▶ General Mills
- ▶ Cargill
- ▶ Corteva
- ▶ Bayer
- ▶ ADM
- ▶ McDonald's
- ▶ Nutrien

General Observations

Days of denial are behind us.

We can not cost-share our way out of the problem.

Climate challenges need the scalable solutions offered by the private sector.

Climate challenges present more opportunities than threats for modern technology and efficiency tools.

Carbon markets are unlikely to include apples unless the industry takes decisive action.

What are the threats to the apple sector in a carbon economy?

Sustainability -- Surveys move from chore to criteria for doing business.

Consumers ask questions about the carbon footprint for the apple chain, and there aren't good, crisp answers.

The EWG "Dirty Dozen" expands to include a carbon metric.

Conservation programs aren't developed that are inclusive of the unique apple industry needs.

Carbon markets aren't developed for apples and other permanent cropping systems.

What are the opportunities for US Apple?

Research and models are developed that tell the apple story on carbon sequestration, food waste and the carbon footprint.

USDA financial resources for conservation are made more workable for the apple production sector.

Ecosystem markets are developed on carbon, water and biodiversity that are an additional revenue stream for apple producers.

Consumer support for apples and apple products remains strong, and apples are considered part of a sustainable agriculture production system.

What can
you do to
tell the
apple story
on climate?

Create

Create Sustainability reports.

Establish

Establish sustainability goals for the industry.

Utilize

Utilize Life Cycle Analysis and modeling to establish your ecosystem footprint.

Consider

Consider conducting a materiality assessment.

Use

Use your story telling to enhance your industry reputation and maintain your strong consumer image.

Potential next steps for the sector



Thank you



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USDA Carbon Bank

Create from existing CCC authorities?

Reverse Auction to determine price?

\$20/Ton of CO₂e?

Support attempts to create voluntary markets as it creates market demand.

Could use various USDA authorities for securing carbon.

Key question - Carbon retirement or a carbon reserve?