

Bridge to the Future

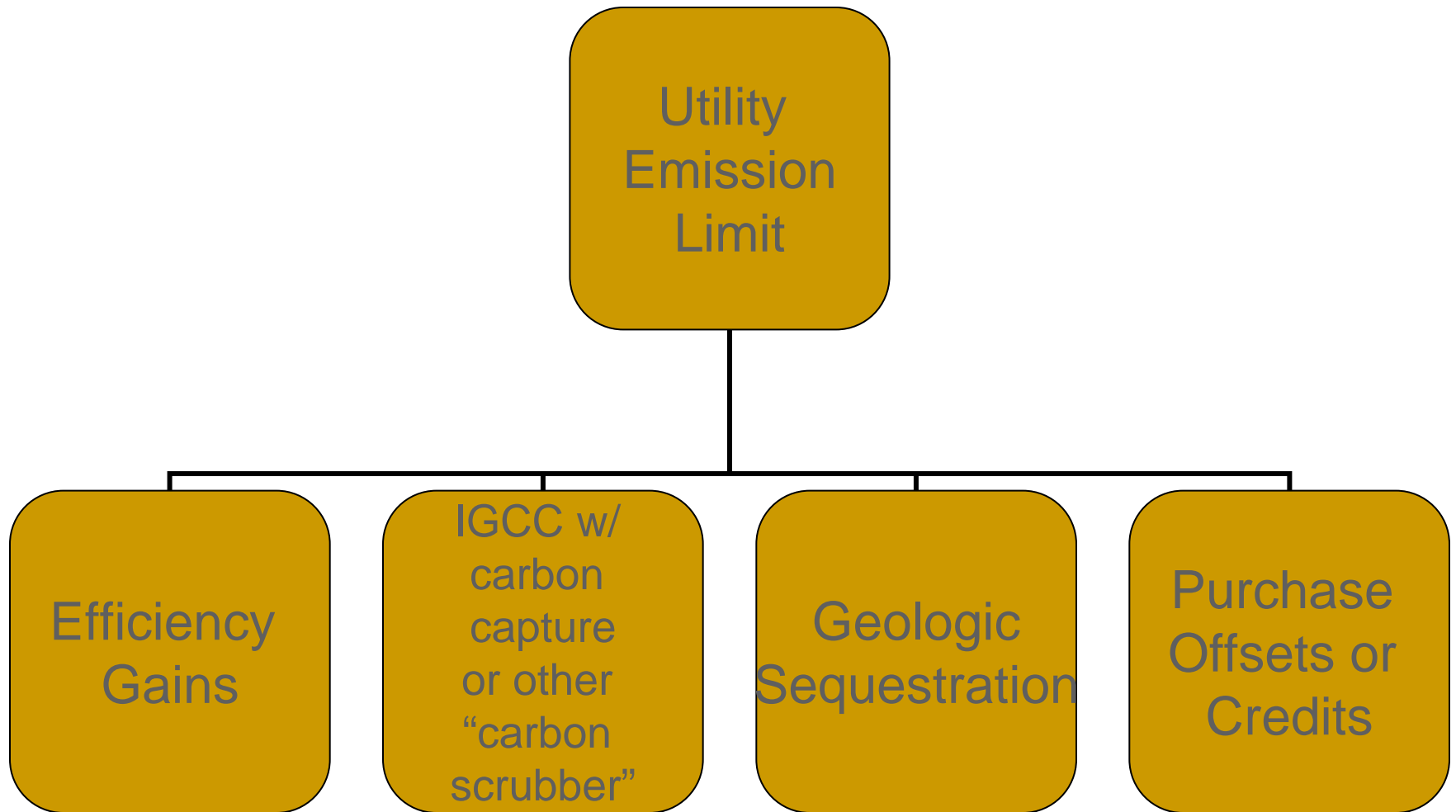
The Capacity of Agriculture to Offset
Climate Change

Laura Sands

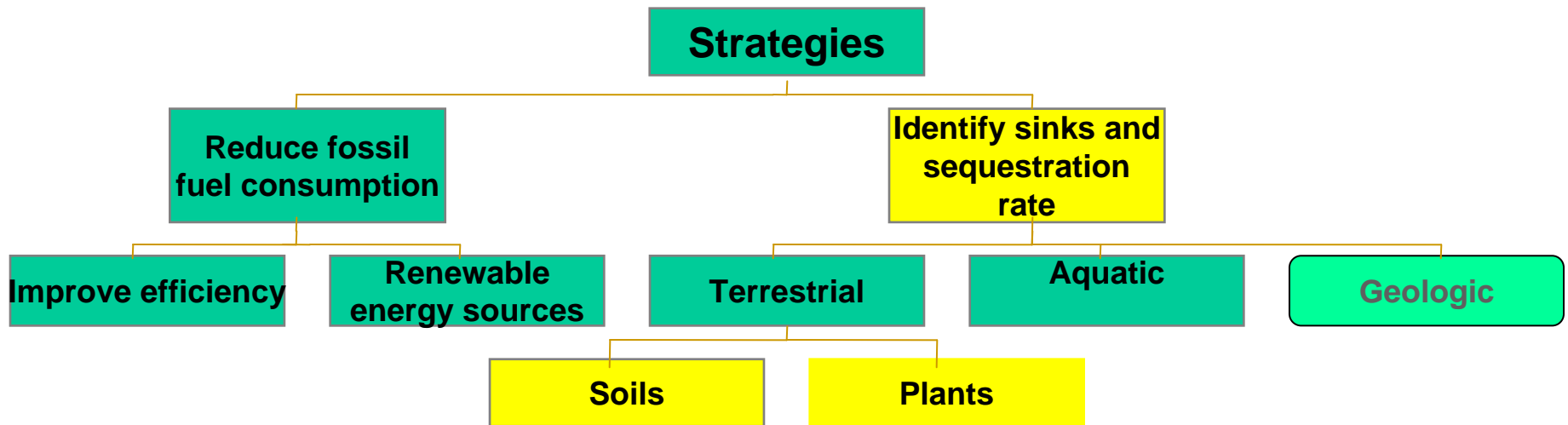


THE CLARK GROUP, LLC

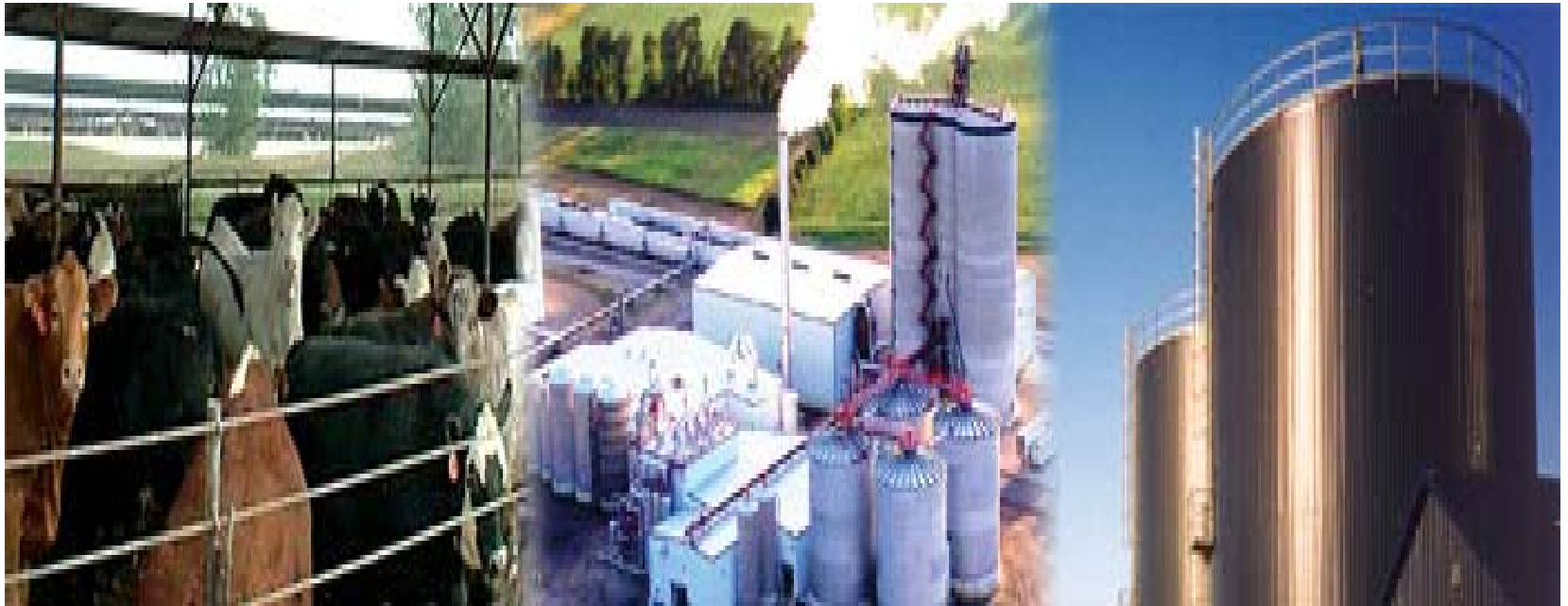
Markets Offer Flexibility



Strategies to Reduce Atmospheric CO₂



Waste-to-Energy



THE CLARK GROUP, LLC

Lots of “charismatic benefits”

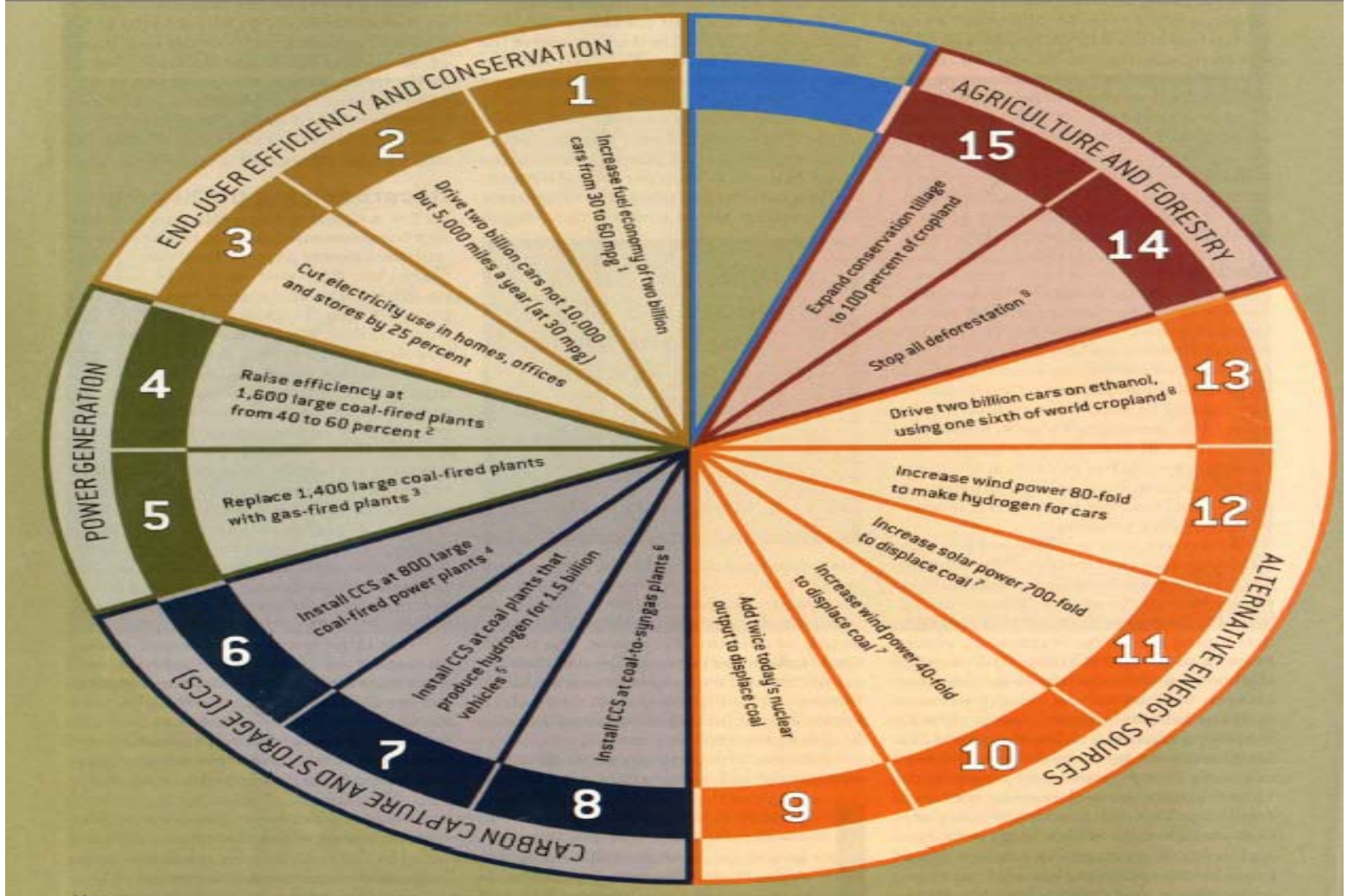
- Improved water quality
- Soil fertility improves
- Less runoff and erosion



Capacity for GHG Reductions



THE CLARK GROUP, LLC



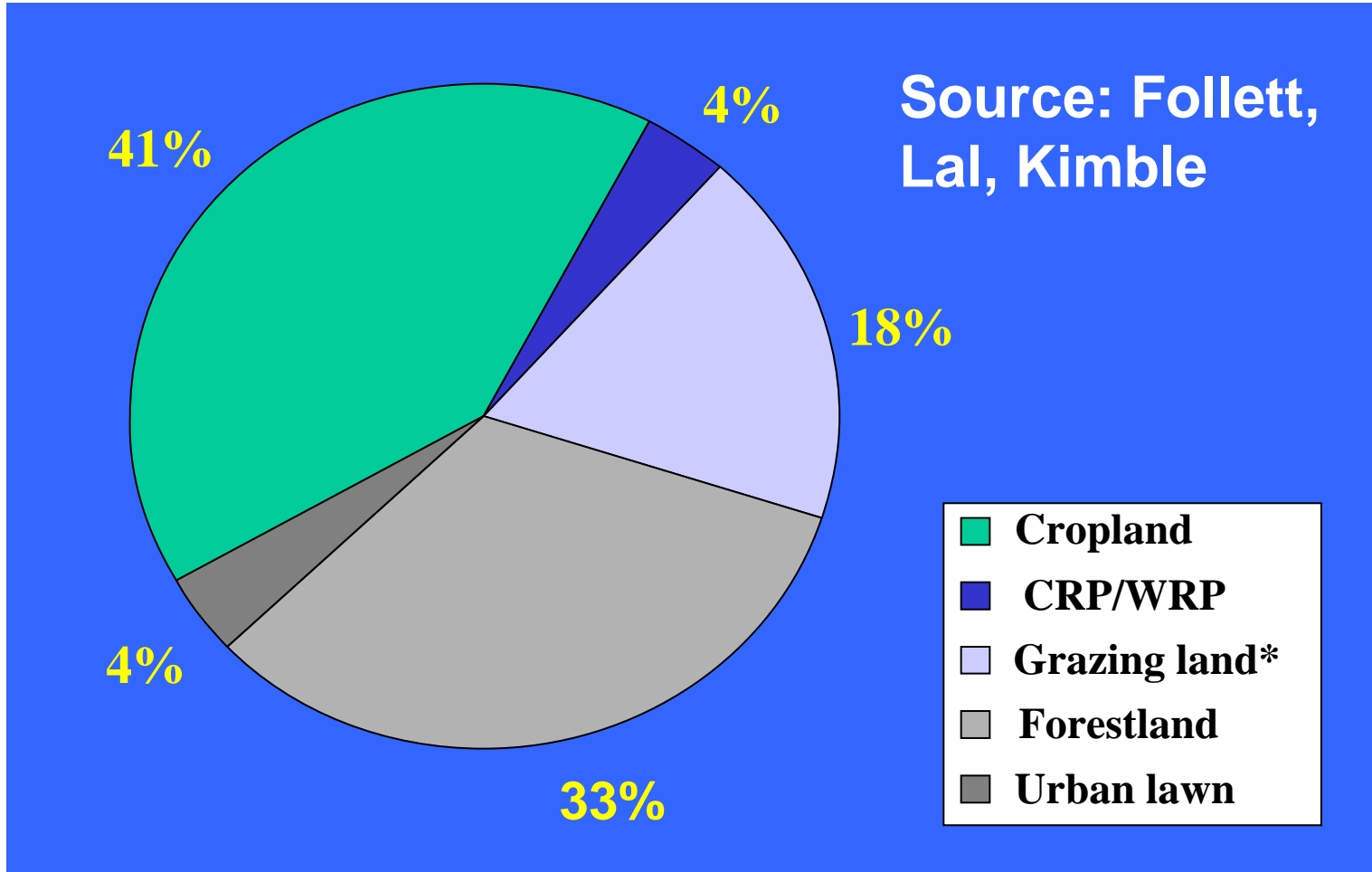
THE CLARK GROUP, LLC

Many Ways to RAPIDLY
Bring Carbon Credits to
the Market

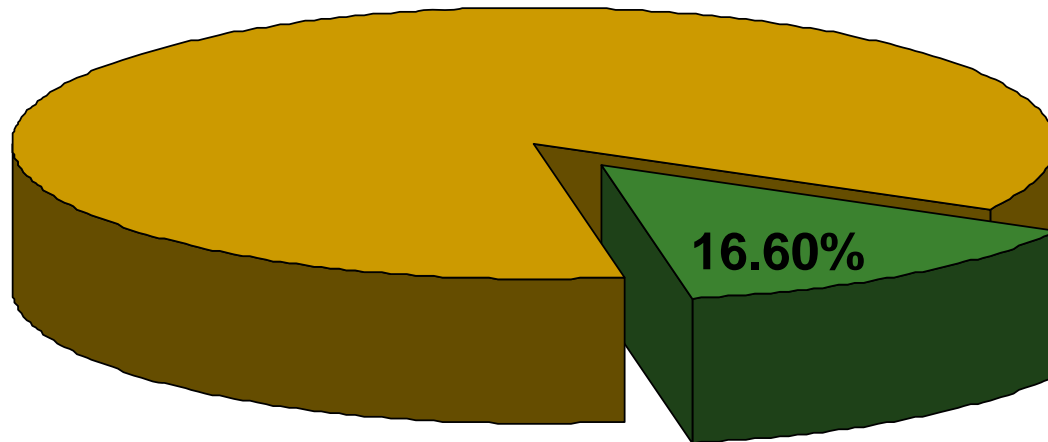


THE CLARK GROUP, LLC

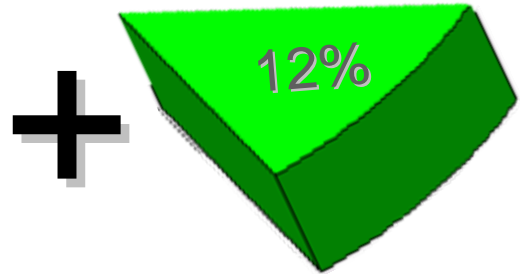
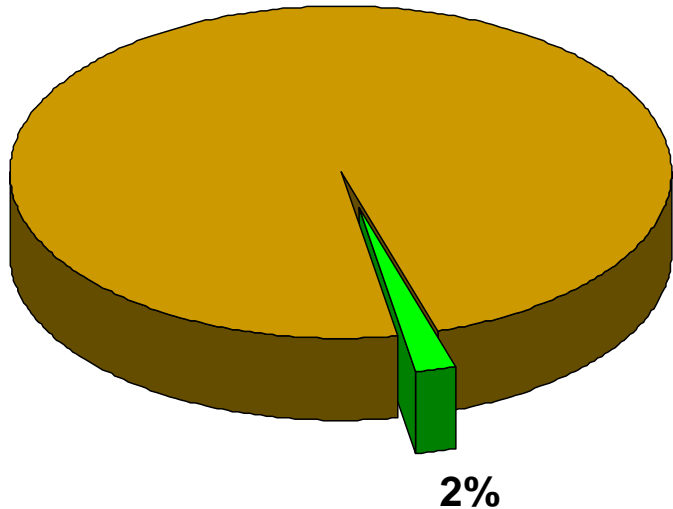
Soil C sequestration potential of different US land Categories (% of 322 MMT C/yr)



322 Million Metric Tons of Carbon/Year = 16.6% of Total U.S. Emissions in 2004



Represents % of Reduction needed to get to 1990 emission levels

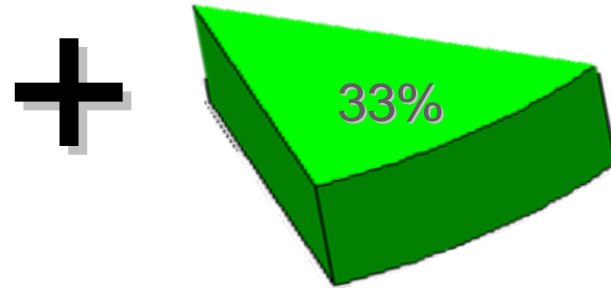
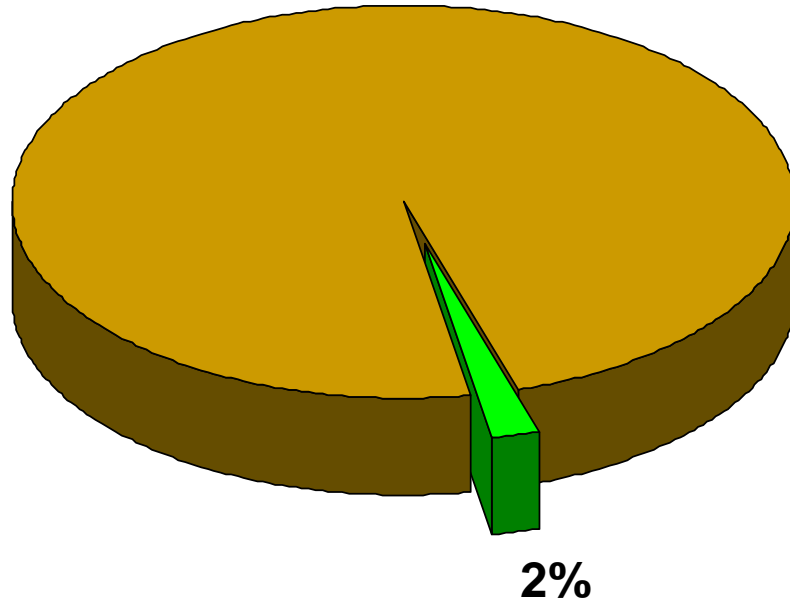


Ag and Forest GHG Reductions at \$10/Metric Ton of Carbon

- Total GHG Emissions (2011)
- Waxman Reductions Starting in 2011

Ag/Forest data: McCarl & Schneider (2001)

Represents % of Reduction needed to get to 1990 emission levels



Ag and Forest GHG Reductions at \$50/Metric Ton of Carbon

- Total GHG Emissions (2011)
- Waxman Reductions Starting in 2011

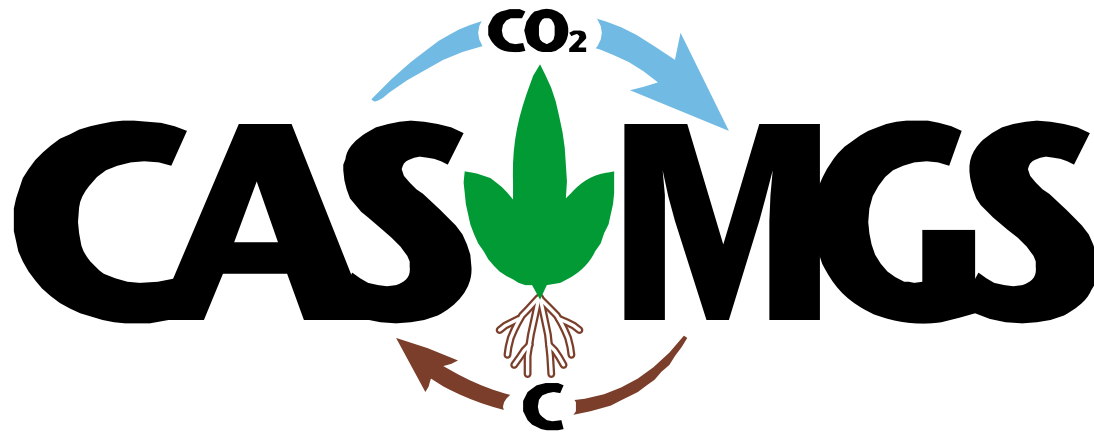
Ag/Forest data: McCarl & Schneider (2001)



Measurement



THE CLARK GROUP, LLC



Consortium for Agricultural Soils Mitigation of Greenhouse Gases

Kansas State University

Iowa State University

Montana State University

Ohio State University

Texas A&M University

National Labs

Colorado State University

Michigan State University

University of Nebraska

Purdue University

Pacific Northwest



THE CLARK GROUP, LLC



Money in
the bank.

From keeping
carbon in
the ground.

HARNESSING FARMS AND FORESTS IN THE LOW-CARBON ECONOMY: HOW TO CREATE, MEASURE AND VERIFY GREENHOUSE GAS OFFSETS

Published by Duke University Press

A project of the Nicholas Institute for
Environmental Policy Studies, Duke University

Edited by Zach Willey, Ph.D., Senior
Scientist, Environmental Defense; and
William Chameides, Ph.D., Dean, Nicholas
School of the Environment and Earth
Sciences, Duke University

With contributing authors and advisors from
Texas A&M, Colorado State, Rice, Princeton,
Kansas State and Brown Universities, and
other experts



A NEW ECONOMY IS COMING. A LOW-CARBON
ECONOMY, WHERE KEEPING GREENHOUSE GAS
EMISSIONS OUT OF THE ATMOSPHERE CAN
PUT MONEY IN THE BANK.

Farmers and foresters are ideally positioned
to profit in this new economy. They can
use their land's inherent capacity to store
carbon dioxide. And by adopting improved
agricultural practices, they can reduce

emissions of other potent greenhouse gases like sulfur dioxide and
methane. Under carbon trading, these activities will be converted into
revenue-generating offsets, which can be bought and sold.

Here, at last, is a how-to manual on reducing greenhouse gas emissions
through land-use practices, and verifying and selling the credits.
"Harnessing Farms and Forests" is a detailed technical guide for farmers,
foresters, traders and investors.

Produced by a panel of experts from leading universities, this is required
reading for anyone with a serious interest in these new opportunities.

WWW.NICHOLAS.DUKE.EDU/INSTITUTE/GHGOFFSETSGUIDE

*Extensive free downloads available at the web address listed above. Books for sale at www.dukeupress.edu. Also available at Amazon.com
and select retailers. 240 pages, 39 tables, 30 illustrations. \$60.00*

Market Potential Will
Drive Offset Supply . . .

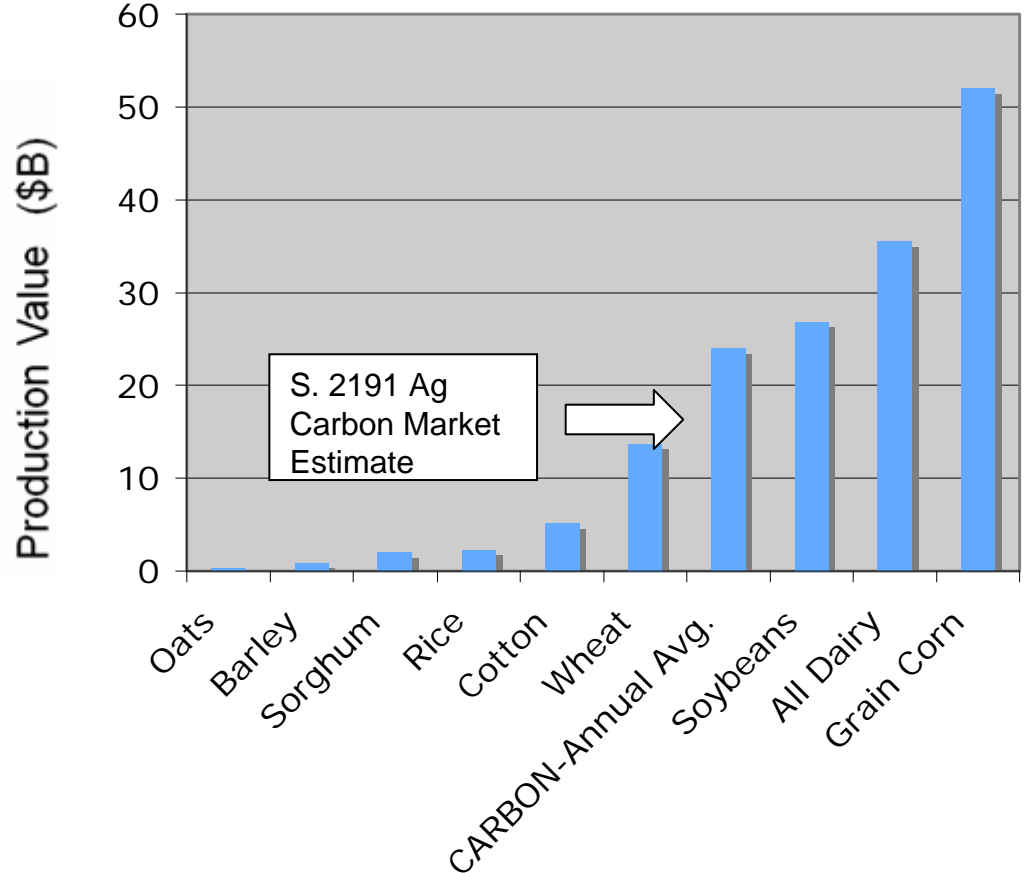


THE CLARK GROUP, LLC

Modeling Indicates Robust Market for Carbon

Up to \$24 Billion Annually from 2012 to 2030—includes both offsets and allowance payments

How Carbon Stacks Up with Other Commodities



Crop Values—2007 Summary. USDA-National Agricultural Statistics Service. February 2008. Note: All Dairy Value--U.S. farm sector cash receipts from sales of agricultural commodities, 2004-2008F. USDA-National Agricultural Statistics Service. February 12, 2008. Carbon is based on National Energy Modeling System used by DOE and Congress



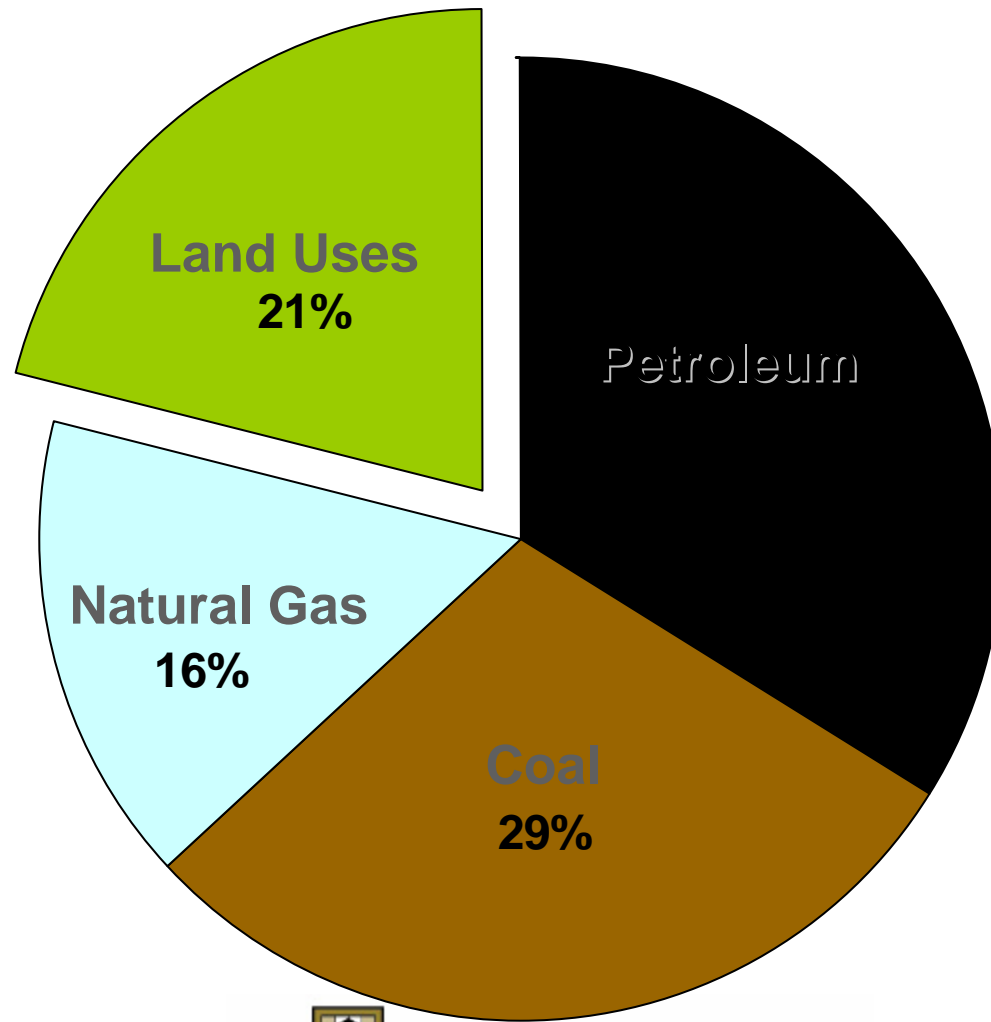
THE CLARK GROUP, LLC

Global Offset Market Would Offer Even More Opportunity



THE CLARK GROUP, LLC

Mean Global CO2 Emissions



THE CLARK GROUP, LLC

Source: Land Use from IPCC (2000);
Fossil Fuel data from US DOE (1999)

Summary

- Models underestimated the market's ability to spur innovation in dealing with acid rain.
- Ag offset potential is likely underestimated.
- We know there are many offset opportunities in agriculture that could be available tomorrow.
- The one thing all the studies show is that when there is a market value in finding GHG reductions, those reductions emerge rapidly.

