Food Systems, Public Health and Climate Change

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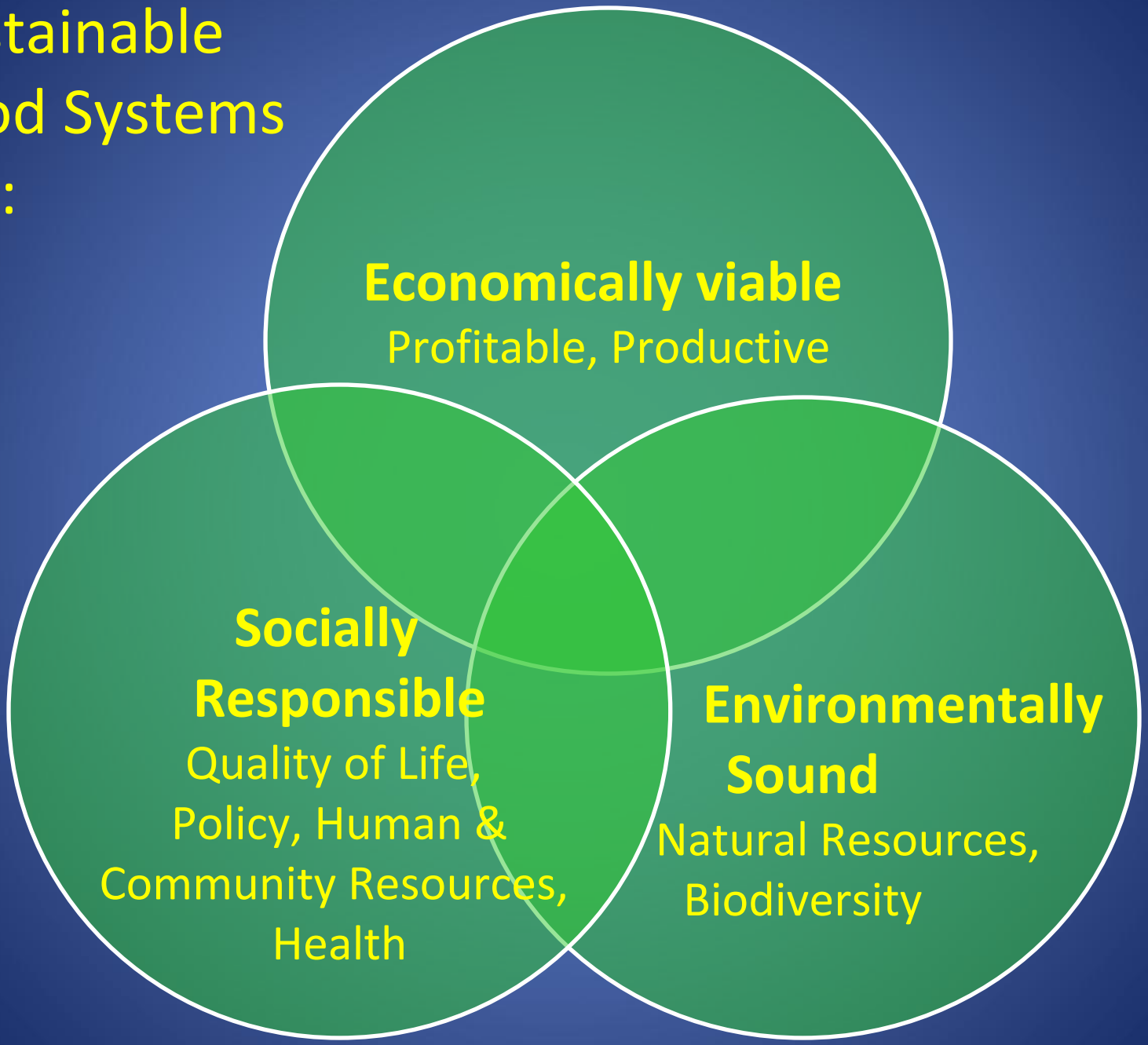
CADENA FARM
ESPARTO, CA
NO PESTICIDES · NO CHEMICALS
ORANGES
50¢
40¢
EA

Overview

- What is a sustainable food system?
- Why are they important? Or Why should you care?
- What are the impacts of climate change on agriculture, food systems, public health?
- How do we respond by integrating public health and sustainable food systems?
- What examples do we have?

Sustainable Food Systems are:



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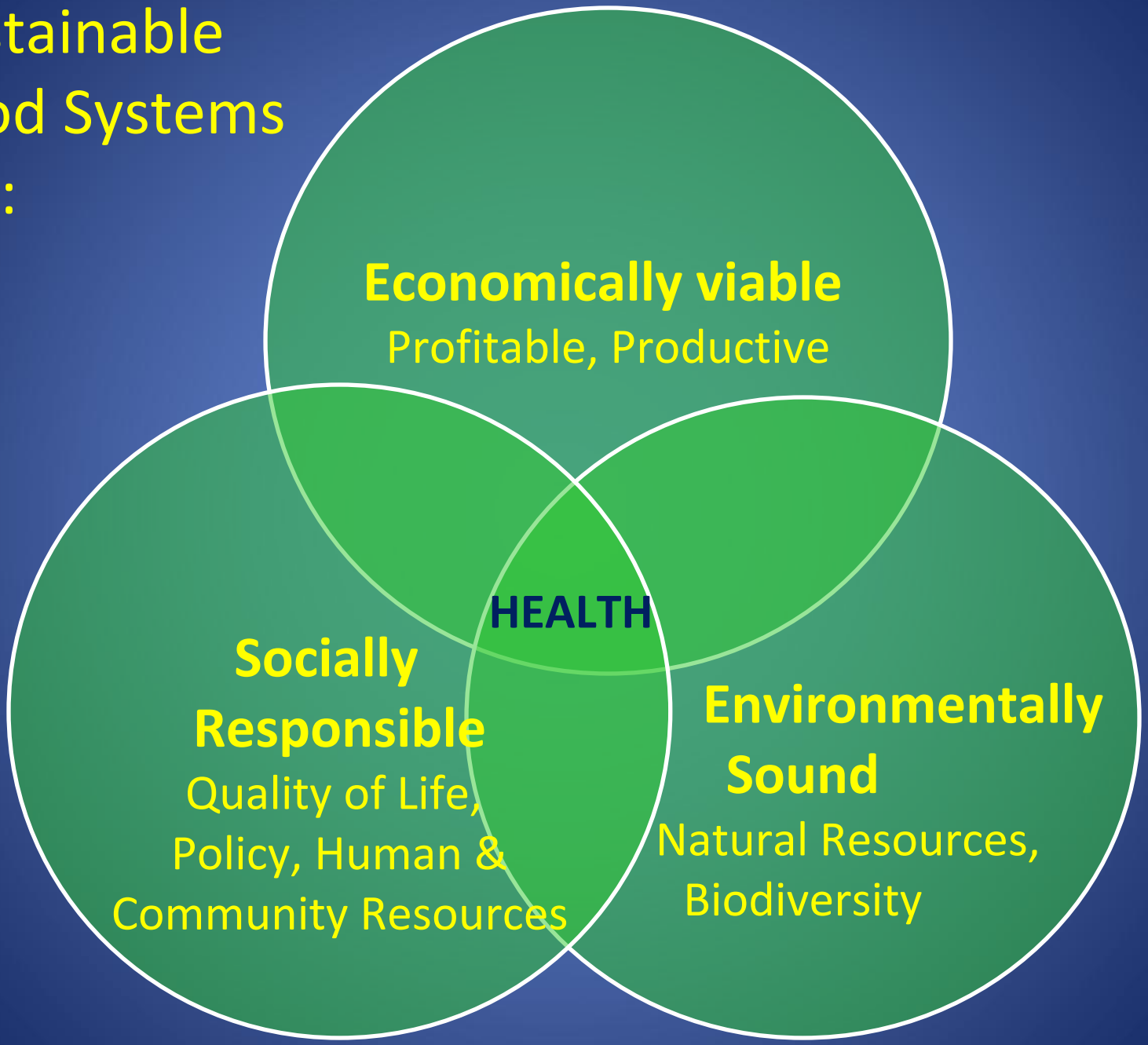

LEE'S PLAZA WEST
FOOD STORE
BEER WINE DAIRY
Dr Pepper
BELL
PEPPERS
from California
SINGUA
BITTER MELON
GAILON
BABY BOK CHOY
CHINESE EGG PLANT
LO BOK
SHANGHAI BOK CHOY
YU CHOY
GAI CHOY
LONG BEAN
LONG NAPPA
SHORT NAPPA
DAIKON
LEMON GRASS
3 DOZ. KALE
3 DOZ. RED LEAF LETTUCE
3 DOZ. GREEN LEAF LETTUCE
DOZ. BUNCHES SPINACH
DOZ. BUNCHES PARSLEY
3 DOZ. ESCAROLE
3 DOZ. CILANTRO
BITTER MELON
GAILON
SHANGHAI BOK CHOY
YU CHOY
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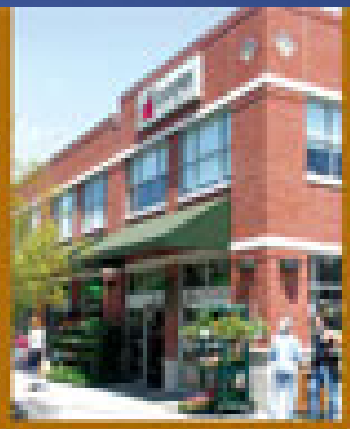
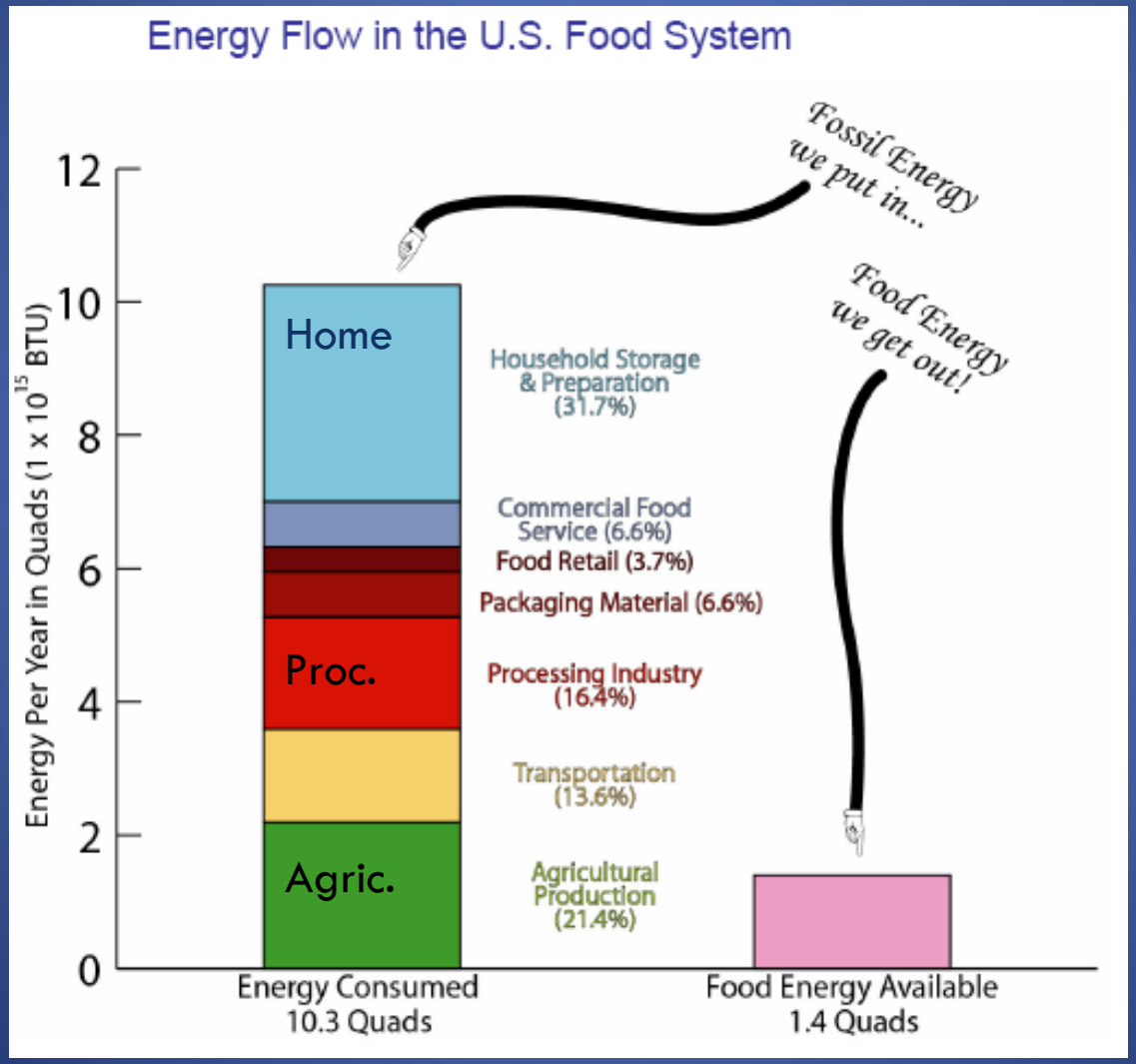
LONG BEAN



The Co-op is Community-owned

our profits go back to our owners and neighborhood.

Net Energy in the U.S. Food System

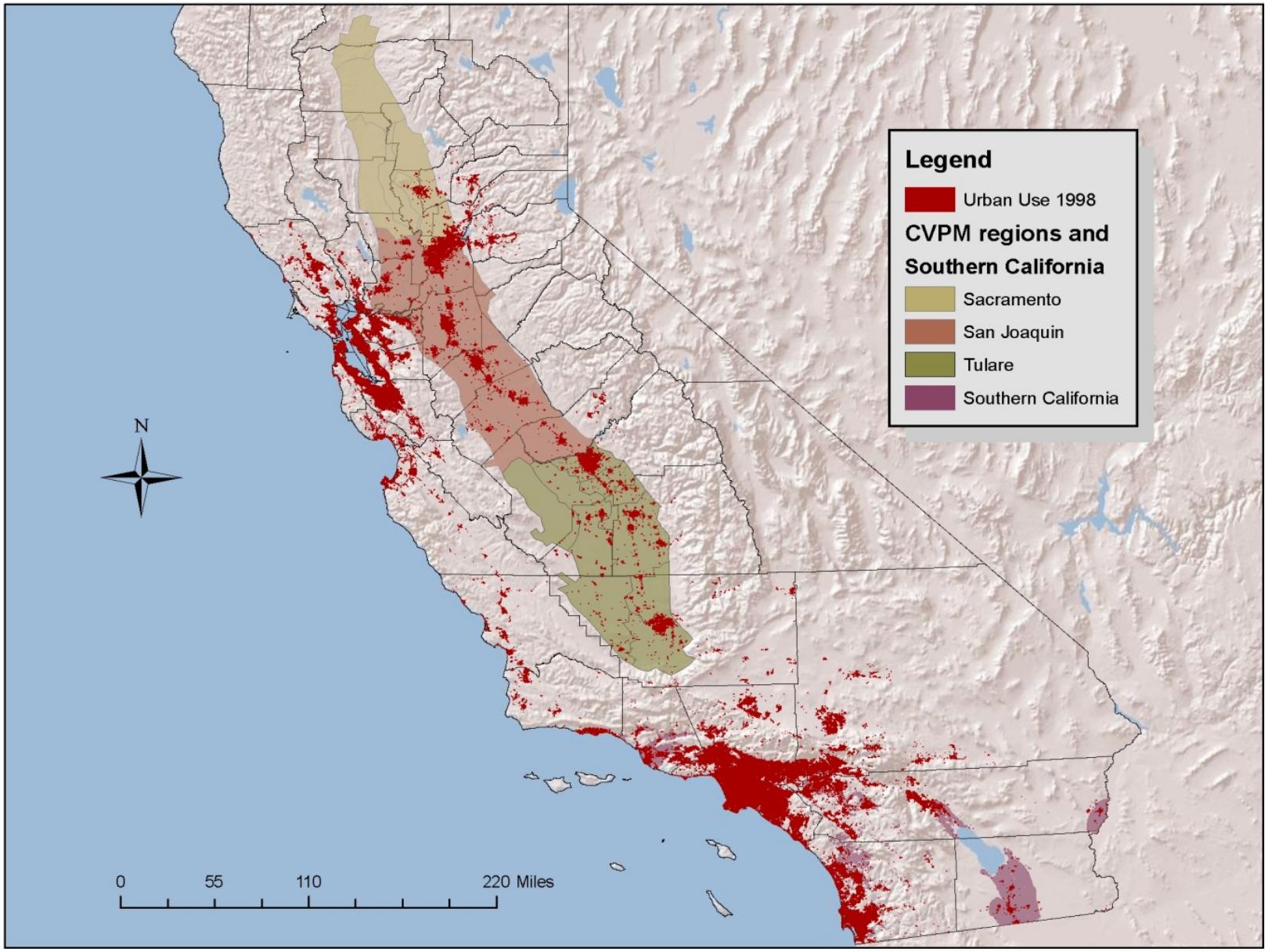


SOURCE: Center for Sustainable Systems "U.S. Food System Factsheets" University of Michigan, Ann Arbor <http://css.snre.umich.edu/facts>

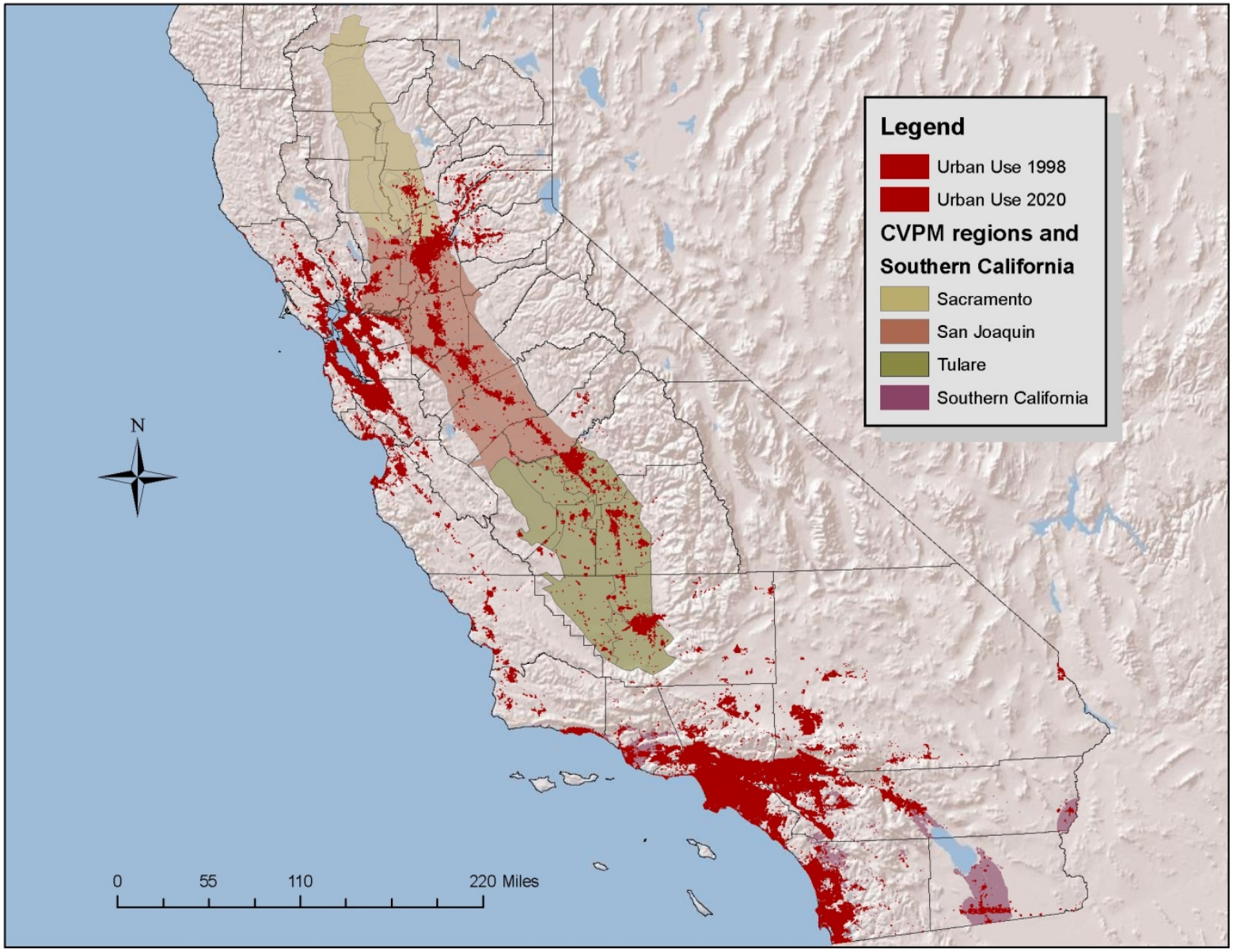
Climate Change in California: Impacts on Agriculture

- More than 400 crops (mostly fruits, vegetables and nuts)
- Provide 50% of nation's produce
- $36 B industry
- Implications for public health

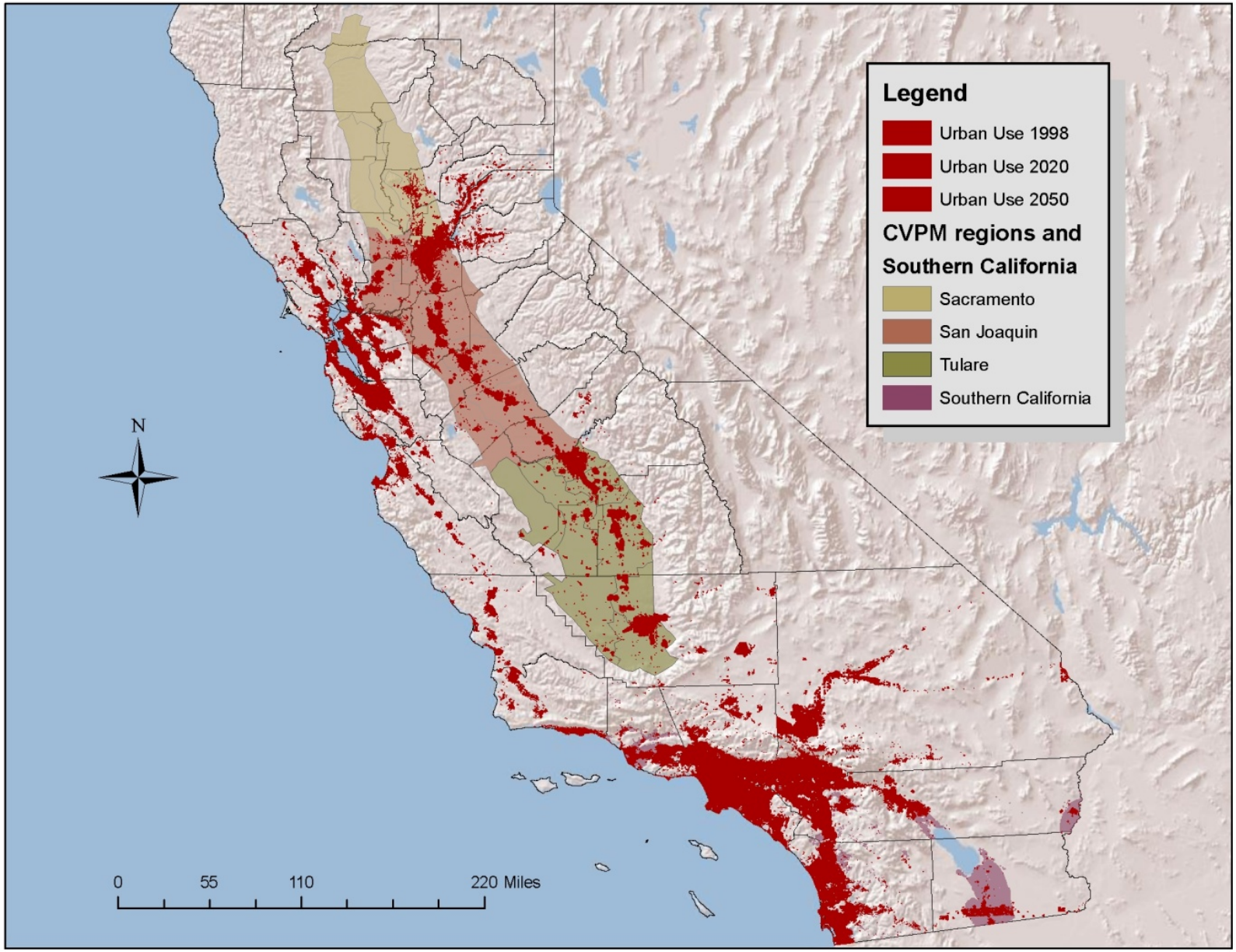
Urbanization: Land use year 1998



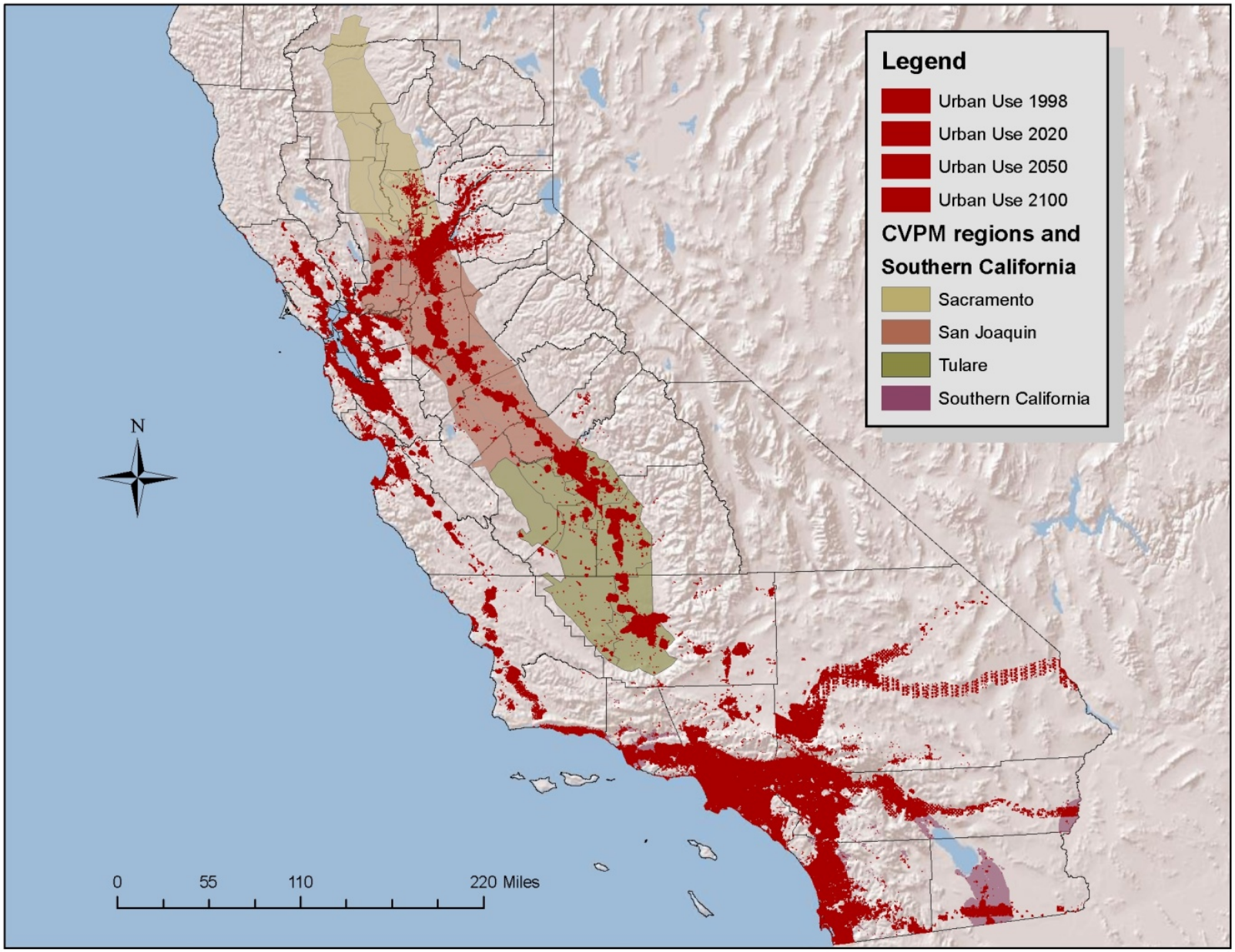
Urbanization: Land use year 2020



Urbanization: Land use year 2050

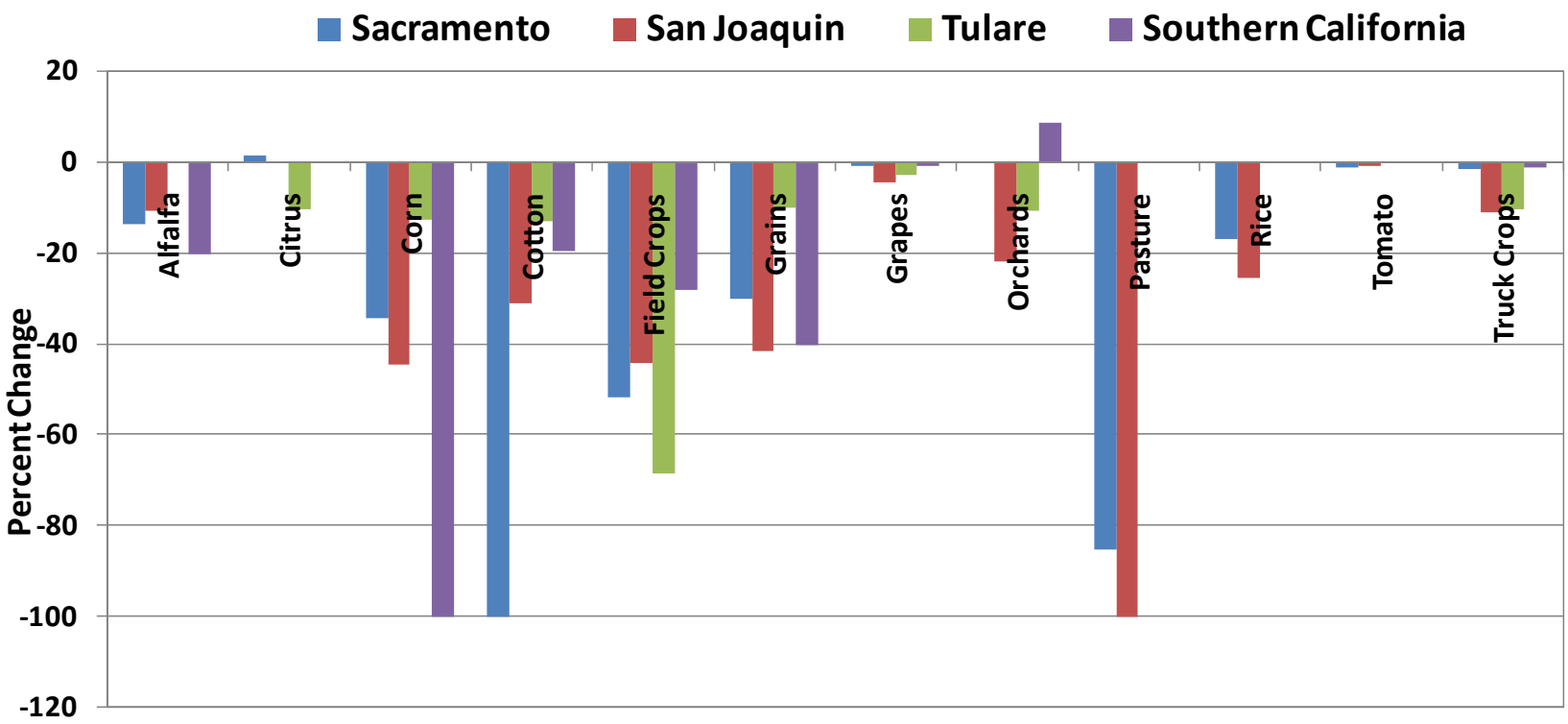


Urbanization: Land use year 2100



Extensive Margin Results: Land Use Changes

- Shift to less water intensive crops
- Production shifts to regions with comparative advantages



Refocus attention on…

- Food production systems
- Distribution systems
- Consumption patterns

Public Health Impacts of Climate Change and the Food System

- Understand how the food system contributes to greenhouse gas emissions

Greenhouse Gas Emissions in the Food System

- Activities involving significant greenhouse gas emissions in the food system

Carbon dioxide
(linked to fossil fuel use)

Fertilizer production
Agric fuel use
Processing
Food preparation
Refrigeration

Methane

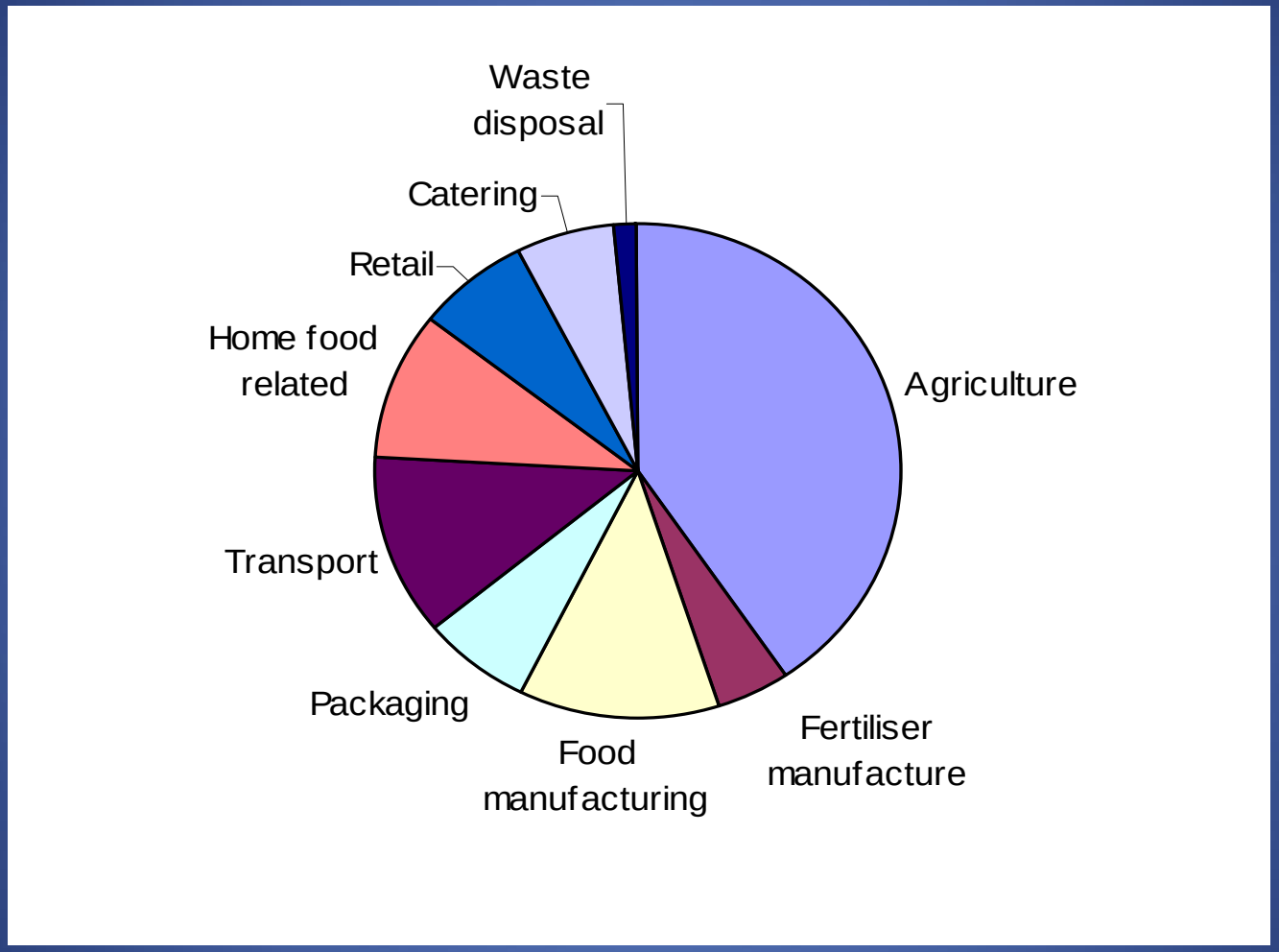
Rice production
Livestock metabolism

Nitrous oxide

Fertilizer application
Livestock manure

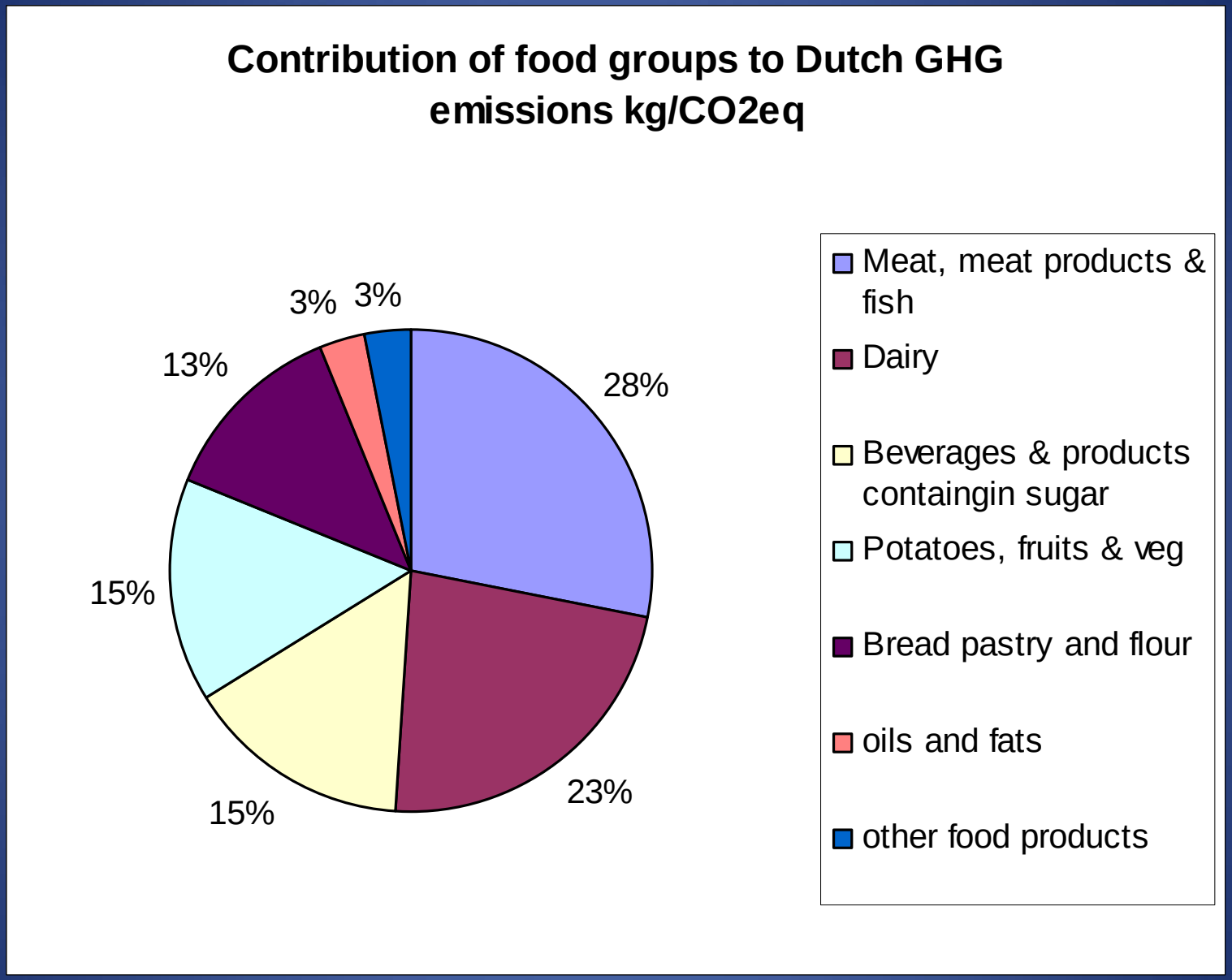
Greenhouse Gas Emissions in the Food System

GHG emissions across the food system in the UK



Agricultural production alone is responsible for 6% of **TOTAL** U.S. GHG emissions and 72% of N_2O emissions (US EPA 2008)

SOURCE: Garnett, T. 2008. Cooking Up A Storm: Food, Greenhouse Gas Emissions, and Our Changing Climate. Center for Environmental Strategy, Univ of Surrey, UK.



From Kramer et al, 2000

ASI Food Carbon Footprint Initiative

Unpack the food supply chain

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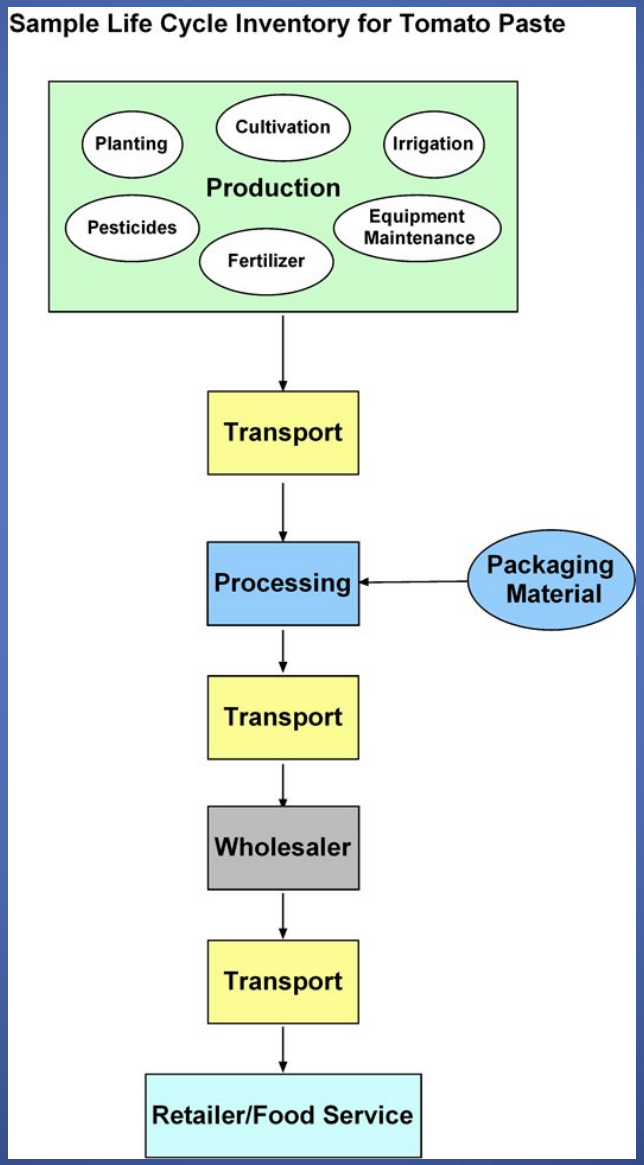
Uncertainties due to complex tradeoffs

Life Cycle Assessment



Research Framework: Key Questions

- Embody typical dilemmas and tradeoffs facing consumers
- Distill key issues that span across the food supply chain
- Identify “hotspots” in the supply chain

www.asi.ucdavis.edu/research/energy_food_system.htm

Six Major “Hot Spots”

- Livestock-related methane and nitrous oxide emissions
- Synthetic nitrogen fertilizers
- Air freight
- Heated greenhouse production
- Post-retail, consumer transport and food storage
- Food waste at multiple points in food chain

Public Health Messages

- "The greatest challenge lies with changing behaviors and institutions, particularly in high-income countries" (World Development Report 2010, World Bank)

Making Changes: Communities in Action

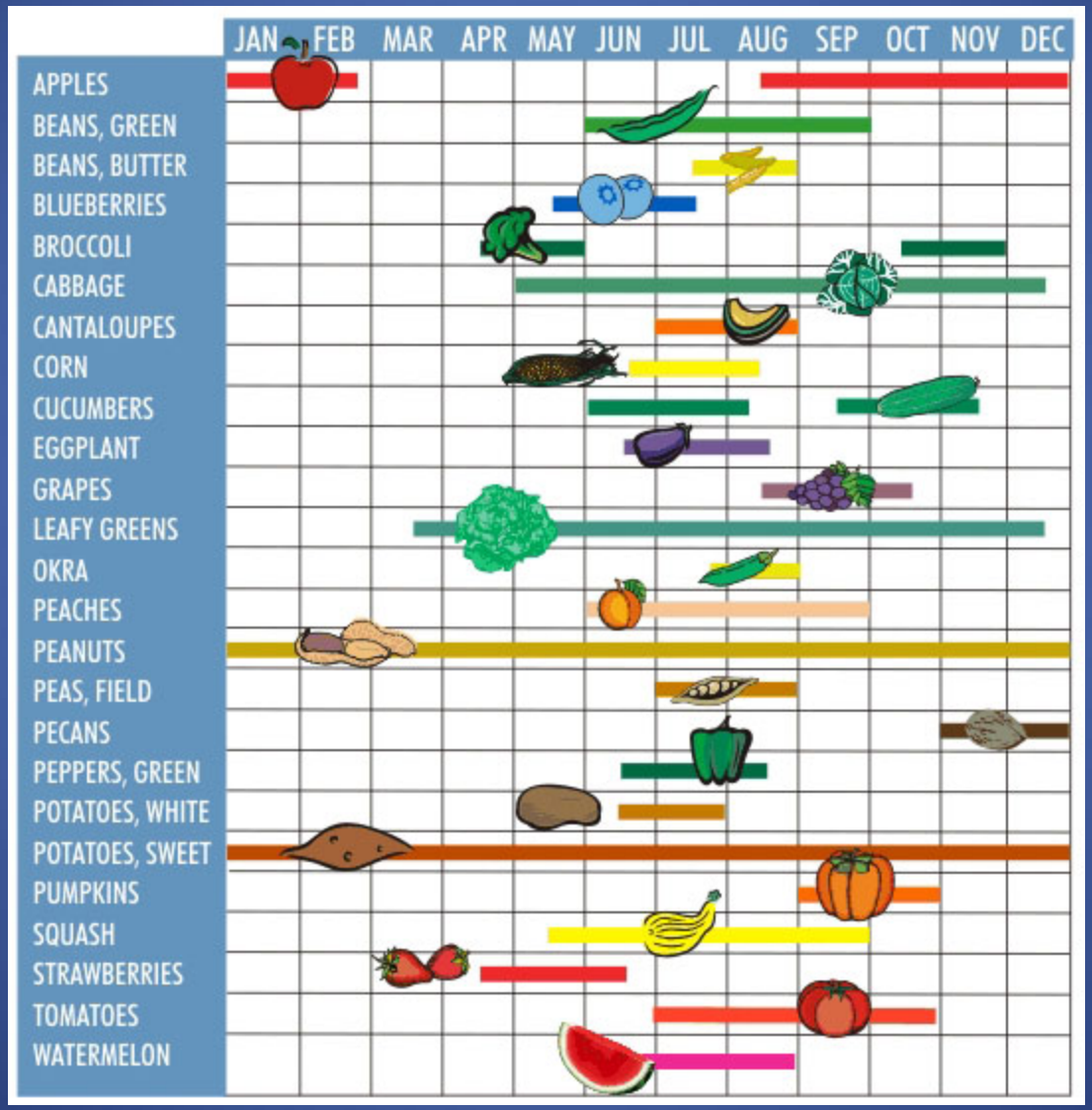
- Changes in Consumption
- Changes in Food Systems (infrastructures, distribution, marketing)
- Changes in Farming Systems

Changes in Consumption

Eat lower on the food chain

Eat Less

Eat Seasonally



Prepare several meals at once

Use energy-saving cooking methods

Avoid waste: Compost

Changes in Food Systems

Grow your own food

Buy from local producers

Support farm-to-school, farm-to-institution programs

Farm to College Night

Shop with less gas

Sustainable City Planning

Changes in Farming Systems

Sustainable farming practices

Nurture local knowledge

Support incentives for farmers to reduce GHGs

Diversify farming systems

Preserve farmland

Guide to a Sustainable, Solar Diet

- Grow (or know who grew) what you eat
- Know what you eat
- Cook what you eat
- Savor what you eat
- Share what you eat

Sweet Crunchy
APPLES
Fuji
BELL
PEPPERS
ORGANICALLY GROWN