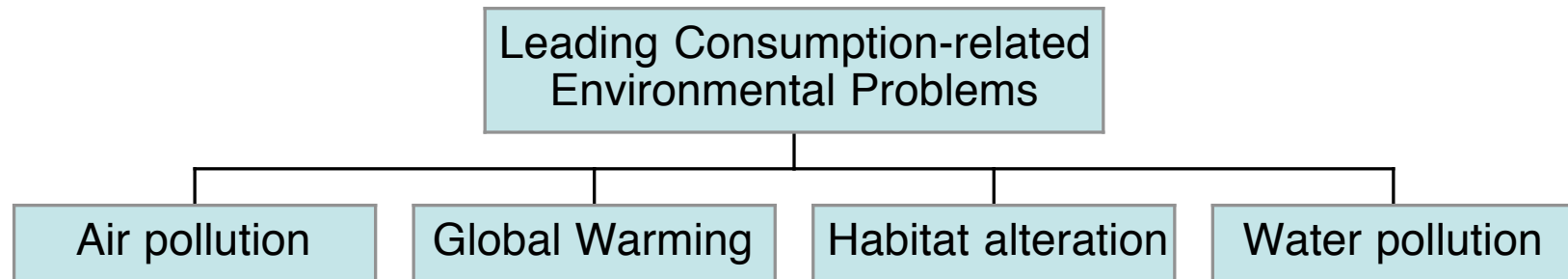


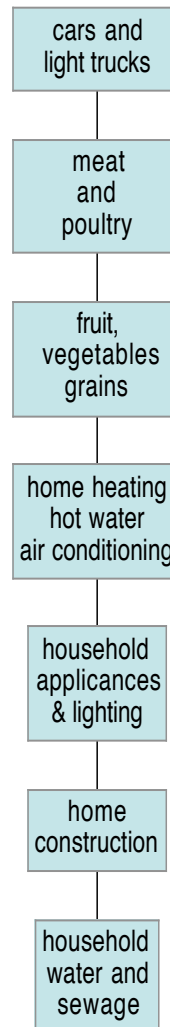
# The Real Impacts of Household Consumption

by Michael Brower and Warren Leon

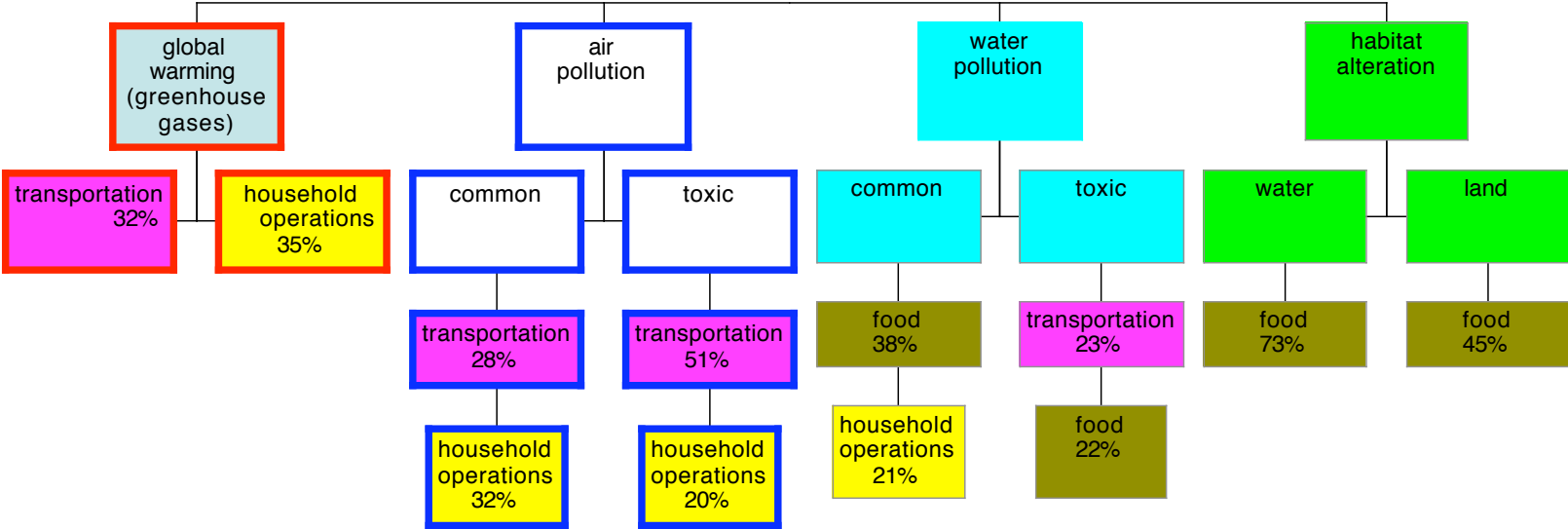
The Real Impacts of  
Household Consumption



## *The Most harmful Consumer Activities*



*The Big Picture*



# transportation

- 5 sectors of transportation
  - Personal cars and light trucks (including minivans and pickup trucks)
  - Personal aircraft, recreational boats, and off-road vehicles
  - Passenger air, intercity rail, ferry and intercity bus travel
  - Other (motorcycles, trailers, mass transit)
- The average new car is responsible for 2 metric tons of carbon emissions per year
- The average emissions per household 3.7 metric tons
- 15% for manufacture of automobiles
- 85% to use of vehicles
- Batteries most important source of toxic water pollution

# food

- 60% of USA land area used for crops or to graze livestock
- Food purchases by priority:
  - Meat and poultry
  - Fruit, vegetables and grains
  - Dairy products
  - Other (including seafood, alcohol, soft drinks, specialty foods and tobacco)
- 800 million acres or 40% of land area used for grazing livestock, most of which used for household consumption
- (beef most serious, chicken and then pigs)
- 30% of total water consumed used for irrigation of fruits, vegetables and grains
- 5 out of 7 environmental impacts of food production find the majority of damage done through cultivation rather than packaging, processing, transportation and retail stages.

# housing

- 26% of significant ecological land is linked to home construction
- 36 million acres of land in the U.S. are devoted to residential use, or 1/3 of an acre per household
- Mobile homes accounts for 1/6 of the common water pollution of a single-family home, it causes 1/3 the greenhouse gases and common air pollution and over half the toxic air and water pollution just in the process of manufacturing

# Personal items and services

- clothing (230 billion a year) the most serious impact
- Personal services
- Paper products
- other

Entertainment has a significant impact  
Golf courses which use large quantities of pesticides and fertilizer to keep their grass green, and dams and reservoirs for recreational purposes (either for fishing or boating).

# Yard services

- Fertilizer and pesticide use
- Water use
- Lawn and garden equipment and use
- Other (including landscaping services and materials)

Direct use of water in the yard dominates water consumption, about 35% of household water usage.

The desert southwest 50-60%

A new lawn mower produces the same emissions as driving a car for 50 miles, a chain saw for one hour same as 200 miles in car.



# Growth of World Urbanism

*notes from Human Impact on Ancient Environments*

- With an increasing reliance on an expanding food base provided by agrarian innovations and improvements in the transport of foodstuffs, it became possible for larger and larger numbers of people to exist and to live in nucleated locations.

# The emergence of urban society

- Impacts
  - 1. more people in the world
  - 2. Increased need for building materials - wood, stone, fired bricks, .....
  - 3. Settlements, creating urban ecosystems
    - 4. Urban society: industry, trade and hierarchical administration

# Irrigation

- An effective irrigation system laid the foundation for many of the world's early civilizations, but it required.....
  - Labor and favored societies with a central control.

# Four general strategies to expand food production

- **Intensification** (denser fields, shorter fallow)
- **Extend fields** to less suitable and more distant lands
- **Centralized control** - through allocation of water controls and choice of plants grown

AND organizing labor to expand and maintain

- rely on goods **imported** within a regional system

# Carrying capacity

- Environmental potential when considering carrying capacity does not directly correlate to population because **treating demand for food does not reflect the “need” for food**

# Population

- Human populations grow as long as there is productive technology....
- Irrigation for agriculture is just one of those technologies, but every ecological system has a carrying capacity and a biomass that can support it.
- Malthus stated that when a human population reached the **carrying capacity** of the land, its numbers would be kept in check by **disease, warfare or starvation.**

# Human impact

- Is generally considered in terms of the environment in soil erosion, deforestation or species extinction, but
- *Quality of life and health is missing*
- Disease in particular has reshaped societies  
As History notes civilization and densely packed cities, reliance on agriculture OUTSIDE of the city and the changing of the landscape, leading to loss community nutrition.

- **Population growth, community health, industrial production, trade and hierarchical government** are the cornerstones of modern civilization, each have essential elements in social change and with its own dramatic environmental implication

# Ur III Dynasty 2000 BC

- In southern Mesopotamia
- Well developed writing, a system of laws, extensive trade networks, ambitious builders, and a period of strong centralized political control.
- The economic system relied heavily on irrigation agriculture, field systems and canals.

# Ur III Dynasty 2000 BC

- The economic system relied heavily on irrigation agriculture and vast field systems along the Euphrates River and its canals.
- Salinization due to overuse, irrigation
  - Crops changed to more salt tolerant
  - Forests clear cut for domestic needs
  - Centralized political control broke

# Anasazi

- 10,000 years or more of occupation in Colorado Plateau
- AD600-700 agriculture becomes dominant for some villages
  - Mesa top farming extremely important
    - Swidden agriculture practiced
    - Trees burned, unburned wood used as fuel
  - Crops such as corn planted until nutrients depleted soil;
    - Settlements would then relocate
  - Successful on short-term (not sustainable over long term)

# Moving into villages

- Growing populations led to human-environmental interactions that led people to live in villages, intensify agrarian food production, deforest the region, deplete the local soils and ultimately abandon the area.
  - Indicators: changes in species of wood
    - Increase in distance for resources
    - Intensify water control mechanisms
  - Vulnerable to changing climatic conditions

# Theories

- Warfare
- Climate change
- Infertility of soils for food

# Hohokam

- America Southwest
  - Lowland river valleys in the desert region of central and southern Arizona
    - Before the Christian era until 1400 AD
  - Successful farmers, highly efficient irrigation systems in a land of 6-8 inches of rain a year
  - Supplemented agriculture with plant gathering and hunting game
    - Wood for fuel would have come from somewhere else
  - High numbers in population eventually took tolls on local vegetation

# Responses to climatic changes

- In AD 1250 climate became more erratic with floods or droughts every 10 years.
- Their reaction was to put more pressure on irrigation systems
  - Which resulted in a loss of fertility in soils
- Invest more labor in extracting maximum of land, that drove the land to be more vulnerable to climatic fluctuations; as well as huge economic costs of labor investment and weakened the underlying system.
  - In 1350AD the culture failed

# Cyclical behavior

- Patterns develop of growth, stability and decline
  - Measured in terms of:
    - population,
    - energy consumption
    - Technology
    - Centralization of political power
    - Changes in social organization
    - Agricultural productivity of landscape
  - Feedback mechanisms act to limit excessive growth in order to regenerate overdepleted situations

# Corn from weed to cob

- 5000 BC **corn** domesticated in North, Central and South America, this differed from Old World species such as **wheat** which are virtually the same as wild is domesticated.

# Biomass recycling

- 75% of the nutrients in the tropical rainforest ecosystem are in the living vegetation and the dead organic matter on the ground, which rapidly recycles its biomass as quickly as 10 years as compared to temperate environments that take 100 years

# Maya

- Among the most innovative people of the Americas, (arts, science and human organization);
- Slash and burn agriculture (milpa agriculture)
- Homelands in the Yucatan, Belize, Guatemala and Honduras.
- 8-10 million people lived in the Mayan domains

# Class Maya AD300

- Deforestation in the classic Maya
- Forest replaced by grasses
  - Need for wood
    - Domestic hearth - a supply of fuel
    - Production of lime plaster for houses and monuments
    - Construction of homes

# Temples

- Earth-filled pyramids topped with ornamental temples
  - Tremendous labor and resources
- Centers of focus for religious activities, trade relations, and politics
  - Astronomy and sacred calendars
- Public ceremonies utilizing temples, pyramids, and ritual ball courts demonstrated the power of the elite, and with militarism.

# Primary cause of failure?

- Environmental degradation through excessive agricultural practices
- In AD900 most of the land was “filled up” and fertility declined. The dense population could not be supported and fell into rapid decline by 80%.
- All ceremonial centers abandoned and emigration occurred

# Tropical Rainforest

- In Central America is only 600 years old.
  - It has grown on what was largely anthropogenic, agrarian landscape.

# Growth of Urbanism

