Lexington:
'Carbon footprint' is largest (per capita) in nation!

"Lexington, which touts itself as the Horse Capital of the World, now has a less appealing nickname:
Bigfoot.

"A first-of-its-kind study of the carbon footprints of the nation's 100 largest metropolitan areas being released by the Brookings Institution on Thursday puts Lexington at No. 100 -- the worst of them all."

Posted on Thu, May. 29, 2008
By Andy Mead
AMEAD@HERALD-LEADER.COM

Lexington: 91st-largest metro area, #1 per capita CO_2 polluter
This study: "a partial footprint" considers only residential buildings and transportation.

what do we mean by a footprint?

Bigfoot:

First: Footprints versus Commodity chains (CCs)

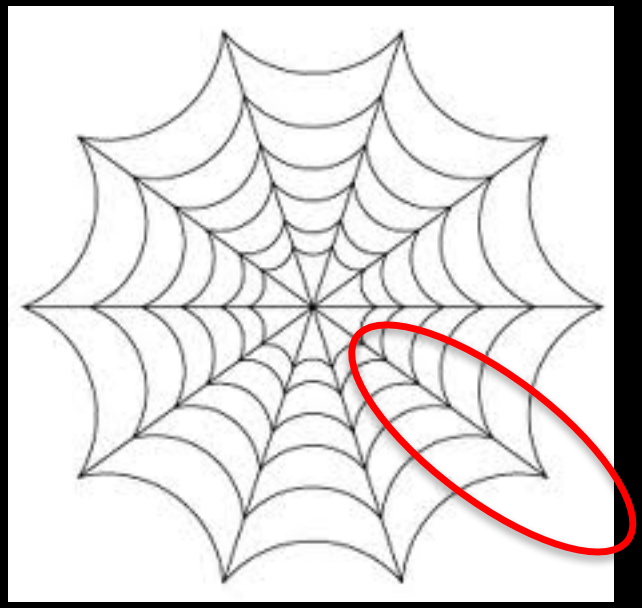
Footprints specify the web of environmental impacts connected to a person or thing.

A commodity chain is like one strand of the web that traces the movement, value, and impact of a particular item across geographically-linked spaces.

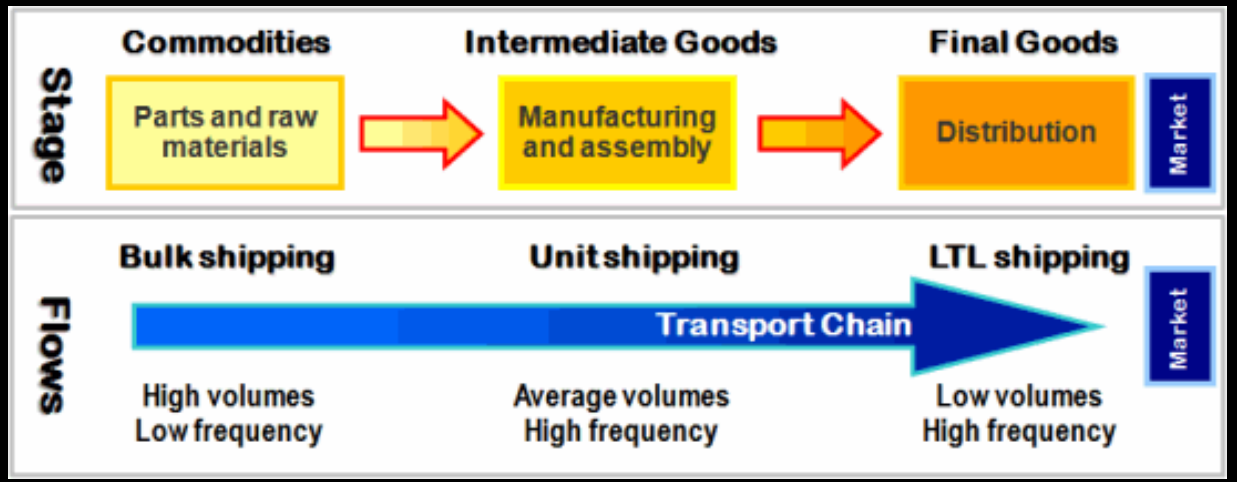
Both are needed to understand environmental impact.

A footprint cannot be assessed without taking into account the commodity chains that make up its web

a commodity chain environmental analysis requires an examination of the webs centered on each of its nodes



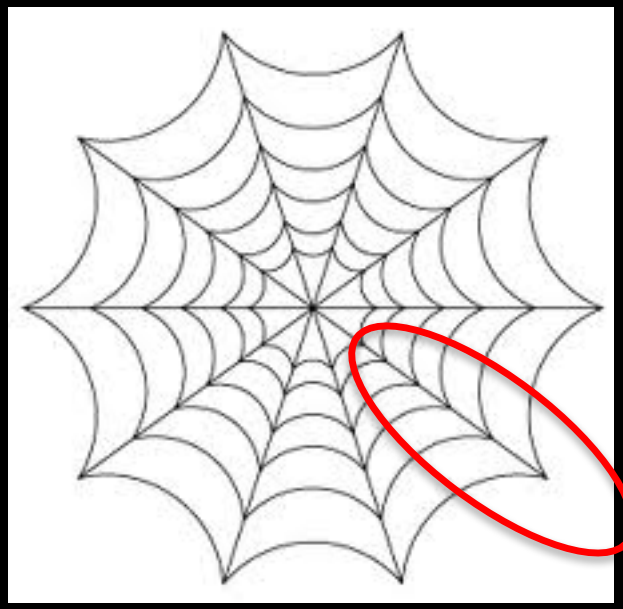
Footprint



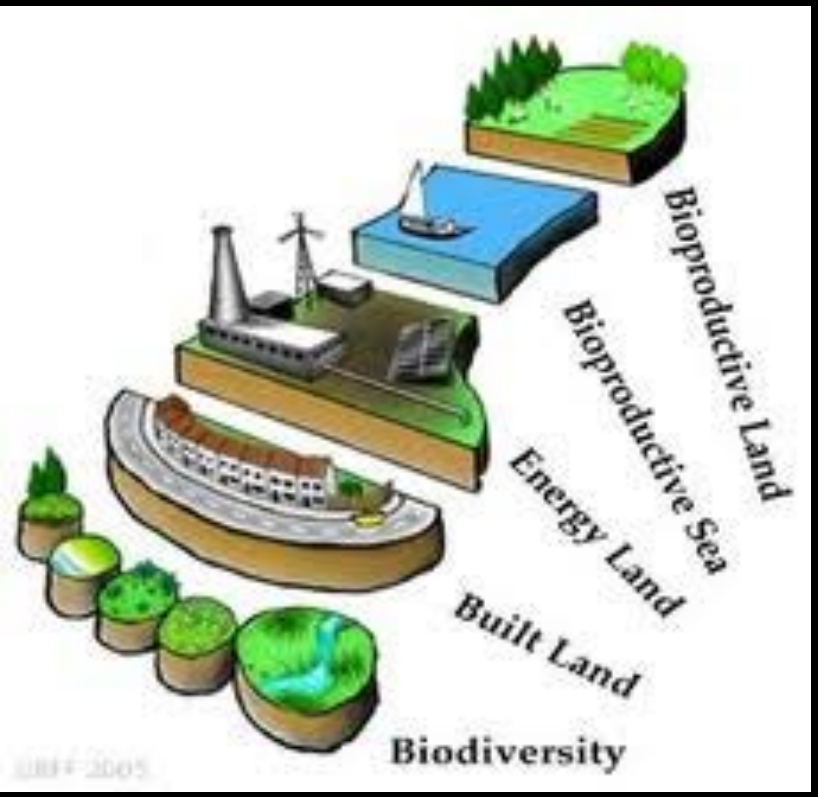
Footprints specify the **web** of environmental impacts connected to a person or thing.

Each **strand** of the **web** is a **commodity chain** that traces the movement, value, and impact of a particular item across geographically-linked spaces.

A footprint is assessed by accounting for each commodity chain that makes up its web



Footprint



Ecological footprint versus Carbon Footprint:

i. Eco footprint includes fishing, soil loss, etc.
   Advantage: comprehensive
ii. Carbon (CO_2) footprint limited to carbon dioxide
   Advantage: Focus on global warming

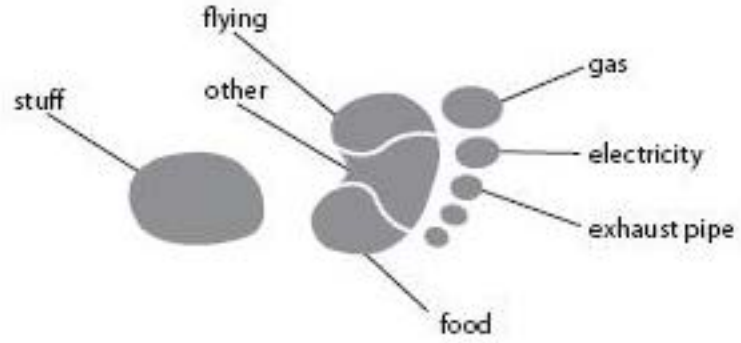
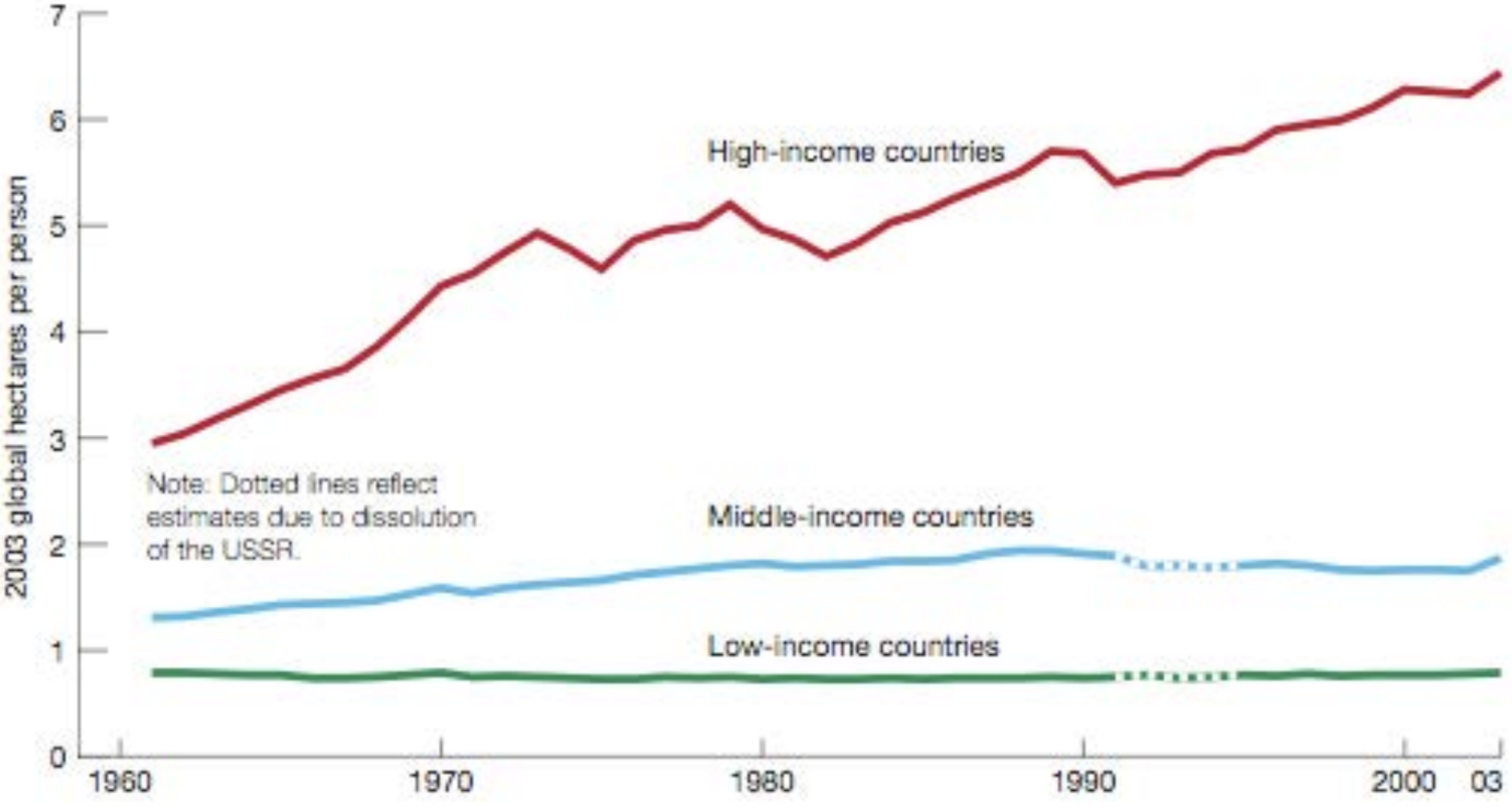


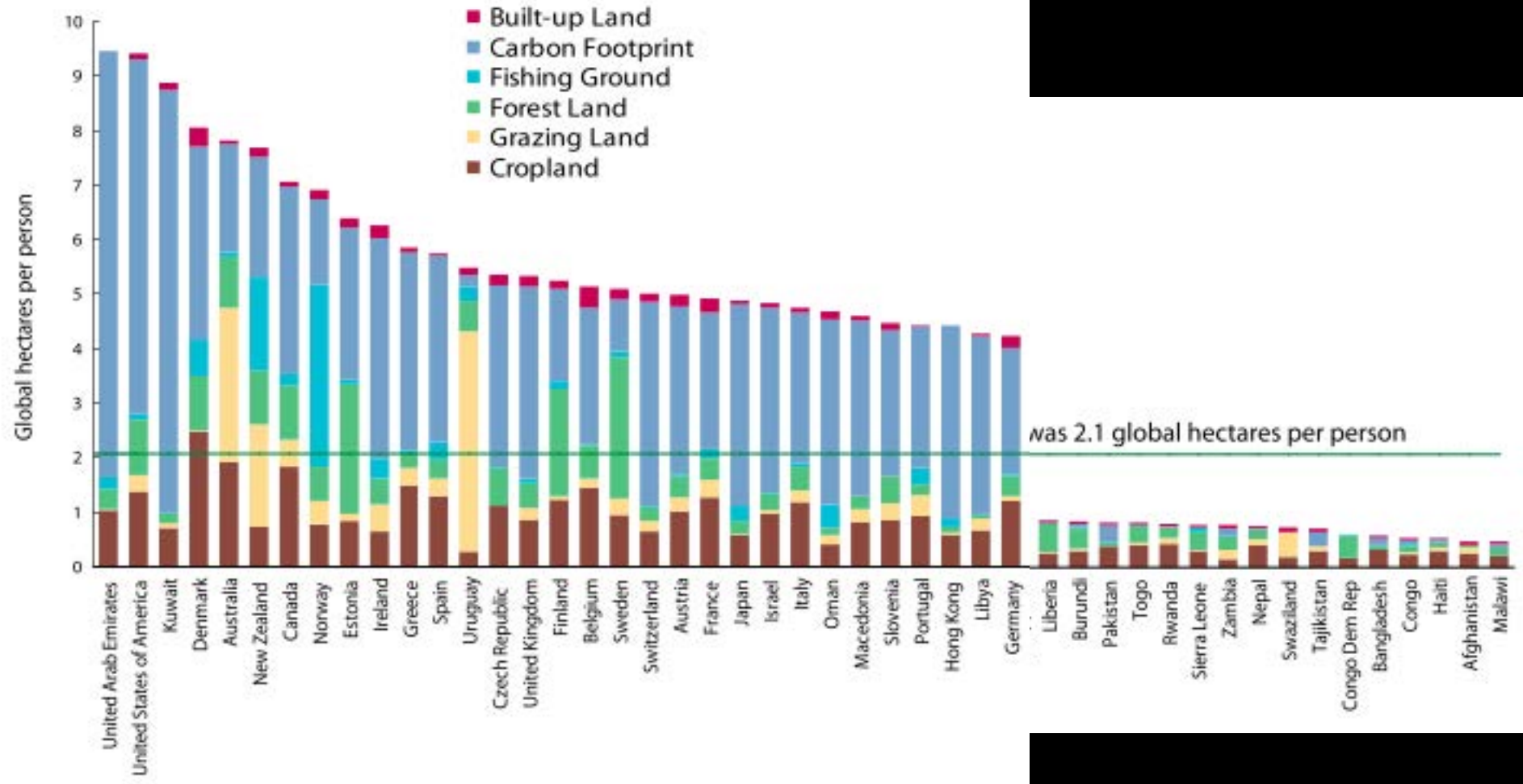
FIGURE 1.1: The footprint of a lifestyle is bigger than its toe-print.

Fig. 21: **FOOTPRINT BY NATIONAL AVERAGE PER PERSON INCOME,** 1961–2003



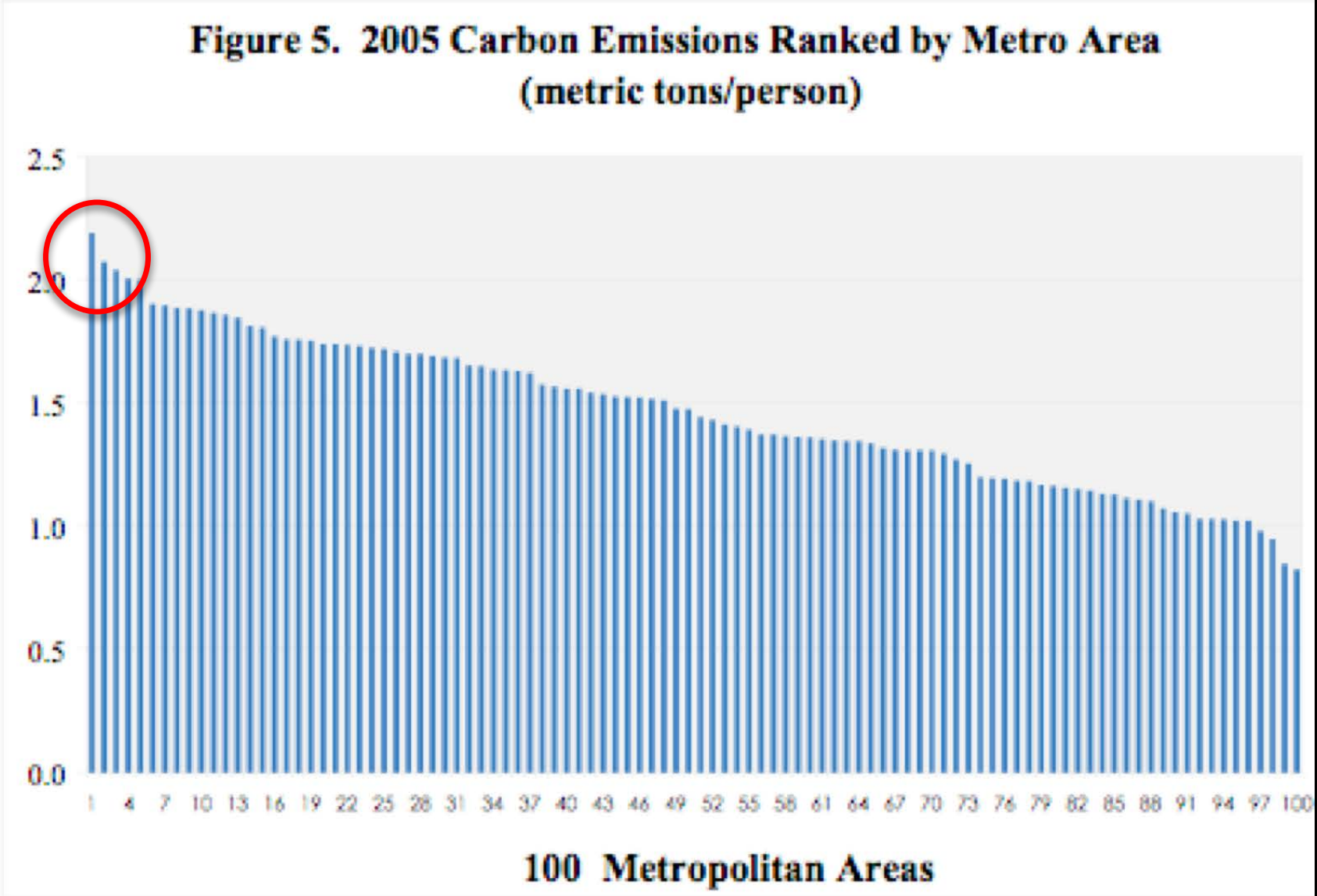
Breaking it down: What makes up a footprint?

Figure 1.1. Ecological Footprint per person, by country, 2005



OK, Back to Carbon Footprints! 11 BROOKINGS · May 2008

Residential Per Capita Footprints for 100 Metro areas



Residential Use,

Why does Lexington rise to near the top of CO2 emitted per person, without appearing in the top chart of energy consumed per person?

Highest and Lowest Emitting Metro Areas Based on Per Capita Carbon Emissions

Year 2000	Carbon/ person	Year 2005	Carbon/ person
Lowest Emitters:		**Lowest Emitters:**	
Honolulu, HI	1.230	Honolulu, HI	1.356
New York-Northern New Jersey-Long Island, NY-NJ-PA	1.388	Los Angeles-Long Beach-Santa Ana, CA	1.413
Los Angeles-Long Beach-Santa Ana, CA	1.408	Portland-Vancouver-Beaverton, OR-WA	1.446
Portland-Vancouver-Beaverton, OR-WA	1.519	New York-Northern New Jersey-Long Island, NY-NJ-PA	1.495
Highest Emitters:		**Highest Emitters:**	
Harrisburg-Carlisle, PA	3.252	Louisville, KY-IN	3.233
Oklahoma City, OK	3.282	Toledo, OH	3.240
Toledo, OH	3.344	Cincinnati-Middletown, OH-KY-IN	3.281
Lexington-Fayette, KY	3.480	Indianapolis, IN	3.364
Indianapolis, IN	3.552	Lexington-Fayette, KY	3.455

Drivers of Lexington's high CO2 per person emissions:

Traffic. Metropolitan sprawl + little use of public transportation

- **Truck and other traffic on the interstate highways intersect here.**

Residential: High consumption of dirty energy.

- **Lexington's hot summers *and* cold winters**
- **residents use furnaces or air conditioners almost year-round.**
- **energy comes from burning coal, a high-carbon fuel.**

Inefficient homes.

- **building standards in Kentucky (and Southeast US) place minimal importance on energy efficiency.**
- **Single-family homes in a Lexington subdivision use more energy than, say, Baltimore rowhouses with shared walls.**

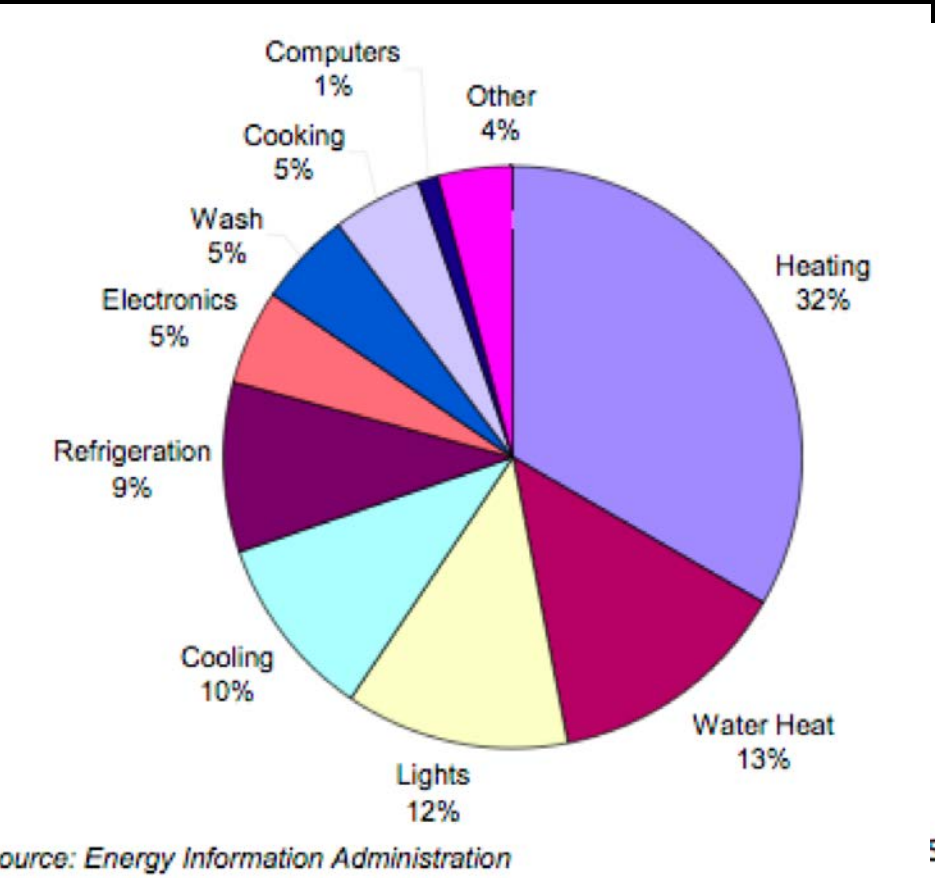
Lack "a conservation ethic": not just an issue of cheap electricity = waste

- **Oregon, Washington and Idaho have relatively cheap energy, yet waste less despite low costs.**

National Stats: USEAGE

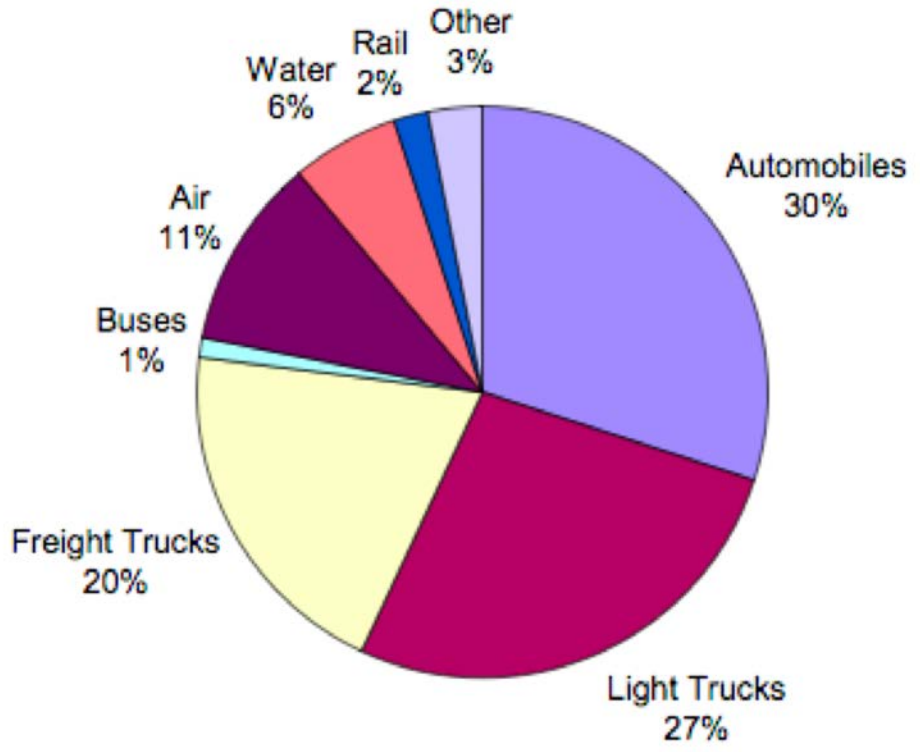
Transportation responsible for one-third of 534 million metric tons CO2 emissions 2005.

Residential



ource: Energy Information Administration

Transport



Source: Energy Information Administration

Study recommends federal and local policy changes:

Federal

- **promoting transportation choices,**
- **rewarding local and state governments for reducing driving**
- **requiring that homes for sale include the costs of heating and cooling.**

state and local government:

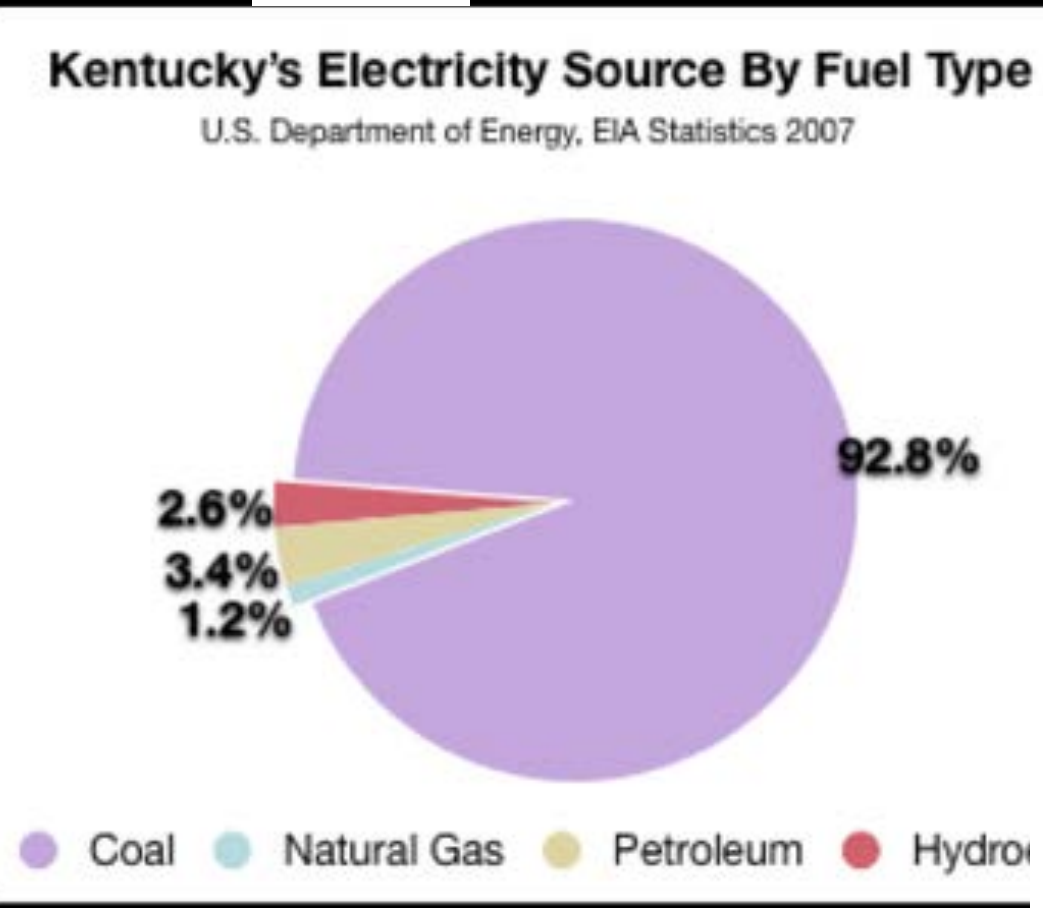
- **tightening building codes to produce more efficient homes**
- **strengthening planning and zoning regulations so less forest and farmland is converted into subdivisions.**
- **encourage Infill**

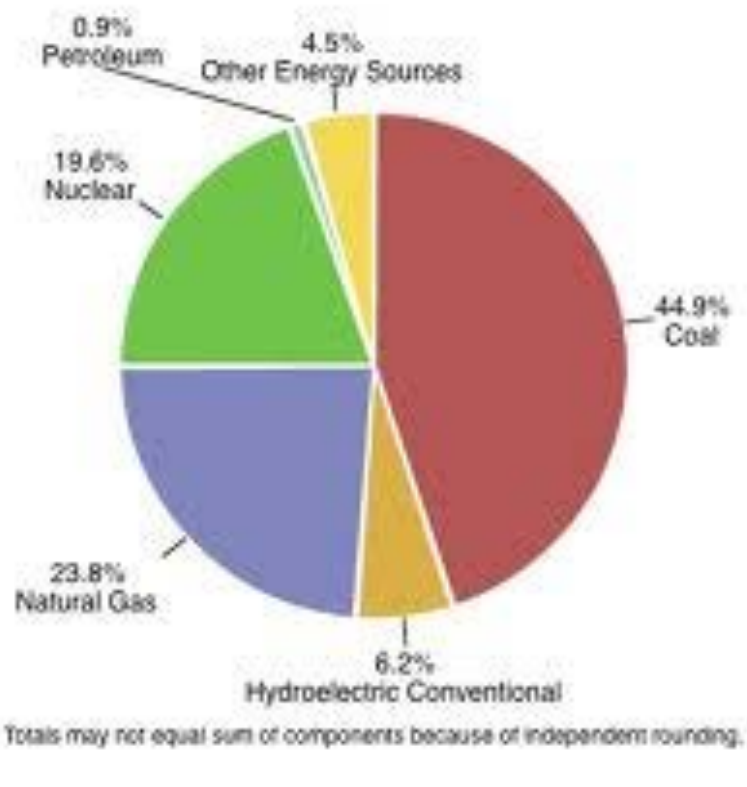
Many Actions Taken:

- **City voters approved a tax to increase LexTran bus service**
- **Greater emphasis on bike lanes**
- **Infill policies**: Lexington has one of the oldest greenbelt programs in America

Bigfoot: a question of coal

KY Electricity USE: USA





The Question of Coal

Kentucky electricity production is dependent upon coal
What are the environmental costs of coal?

Besides CO2, what are the other aspects of coal that contribute to a large footprint?

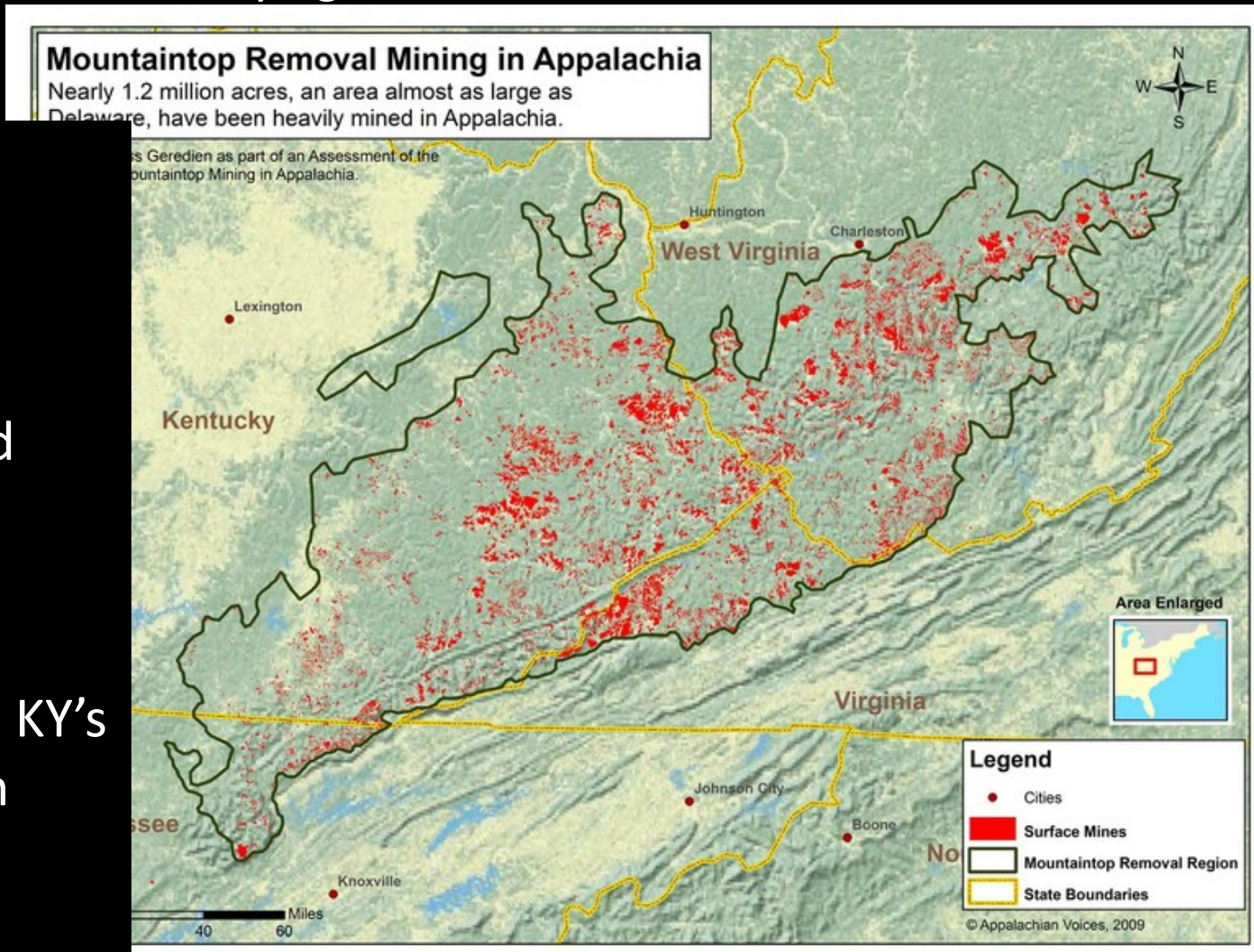
Appalachia today is witnessing the one of the greatest anthropogenic landscape modifications in global history:

THE OTHER CARBON FOOTPRINT (NOT CO2): Mountaintop Removal Mining: (MTR overall) 500 sites in Kentucky, Virginia, West Virginia, and Tennessee,

- Stripping 1.2 million acres, burying 2,000 miles of streams.

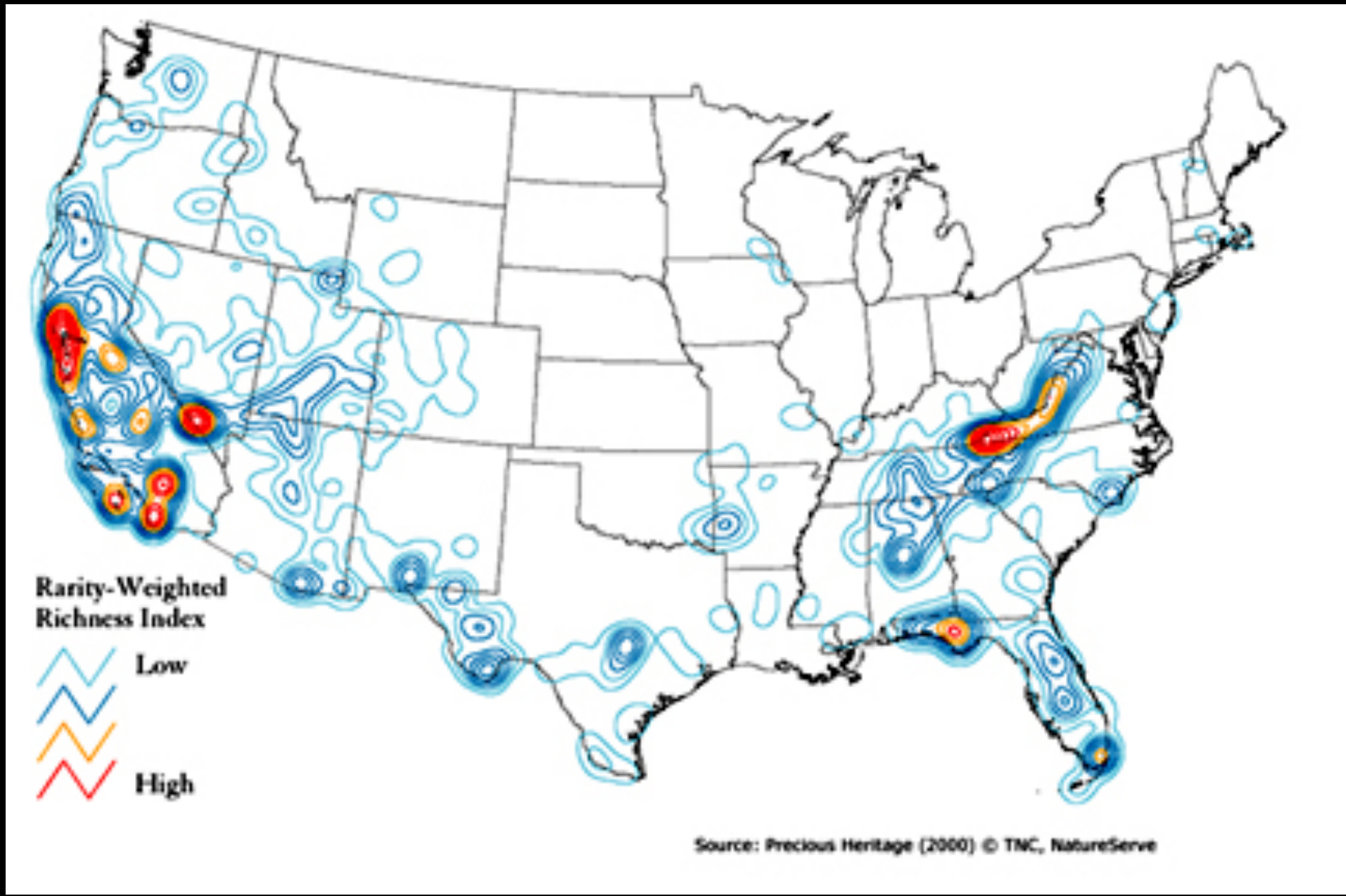
Kentucky,

- 293 MTR sites,
- 574,000 acres
- 1,400 miles streams damaged or destroyed,
- 2,500 miles streams polluted
- ‘ridge reduction’: KY’s highest mountain (Black Mountain) getting a trim.

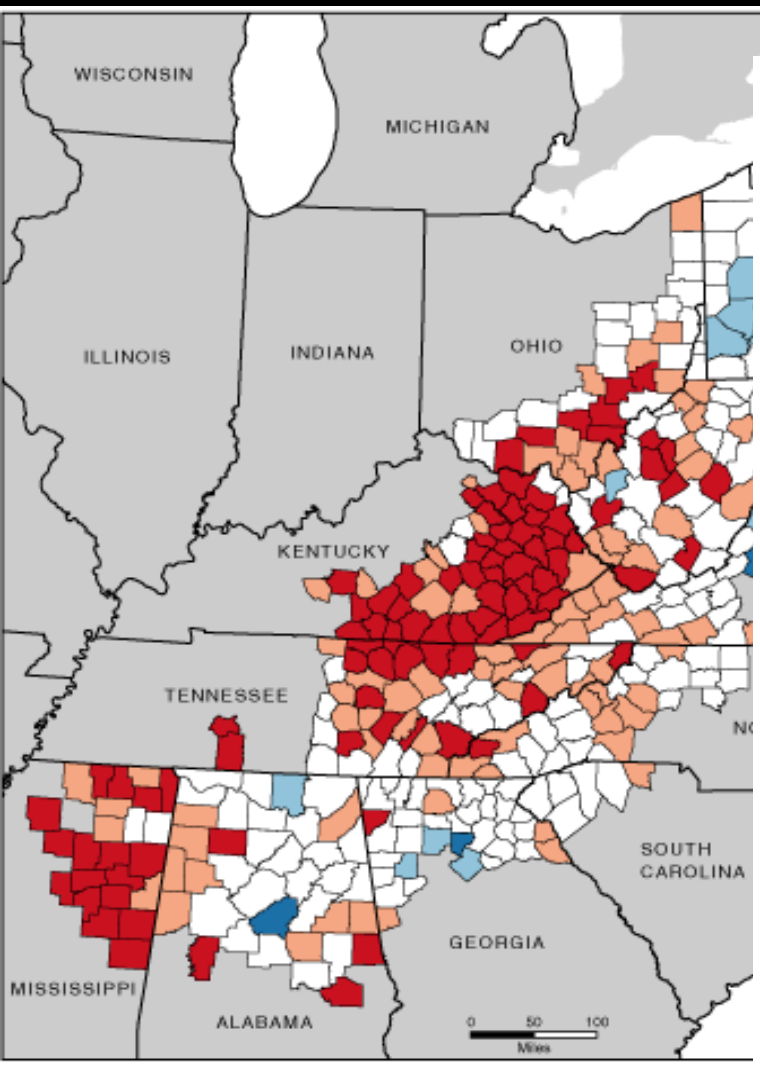


Appalachia: a
National Sacrifice?

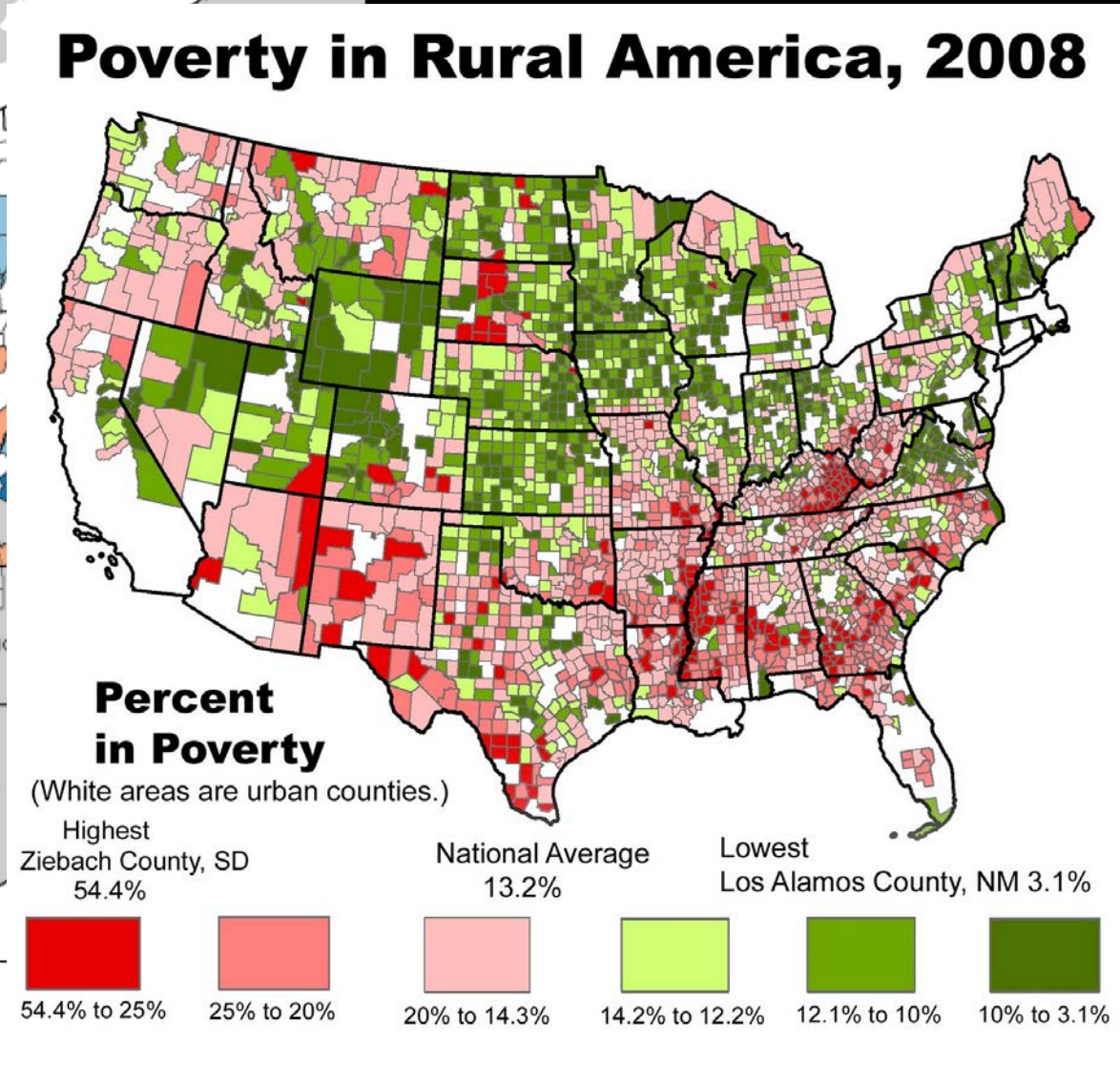
Appalachia is a biodiversity hotspot with perhaps the world's greatest temperate zone landscape level biodiversity.



Poverty Rates Remain High despite years of mining employment
A question of environmental justice?



Created by the Appalachian Regional Commission, March 2011
Data Sources:
Unemployment data: U.S. Bureau of Labor Statistics, LAUS, 2007–2009
Income data: U.S. Bureau of Economic Analysis, REIS, 2008
Poverty data: U.S. Census Bureau, American Community Survey, 2005–2009



Reclamation:
KY, southern Appalachia less robust than 'northern Appalachia, e.g., Pennsylvania

KY	PA
Burn soil	save and replace soil

Total Cost of Coal

'lifecycle costs' increase 17% with biomass

$30/ton CO2e (CO2 equivalent: $10-100 range)

$162.9 million (54.3 m$-3.35 Billion $)

Runoff from mines:

Water contamination (and mitigation)

Mercury, Arsenic

Sulfur, Acid discharges

Risk: environmental disasters

- Fly Ash: impoundment ponds
- 1 out of every 50 Kentuckians live near a fly ash impoundment!
- Low birth weights, cancer…

Bottom Line:

Coal Benefit to Mining communities = 8.8 Billion

Coal Cost to Mining Communities = $74.6 Billion

(2005 dollars;

using VSL 'Value of Statistical Life'

approach)

Air Pollution:
PM (Particulate Matter), SO2, NOX (Nitrous Oxides)

Non-Fatal impacts:

- “2,800 from lung cancer,
- 38,200 nonfatal heart attacks
- tens of thousands of emergency room visits, hospitalizations, and lost work days” (Epstein et al.)

Kentucky, (National Research Council, 2009):

- each ton of SO2 removed from the stack, public health savings of $5,800.
- Removing the 500,000 tons emitted in Kentucky would save over $2.85 billion annually.
- Kentucky, coal brings in $528 million in state revenues,
- Costs $643 million in state expenditures.
- The net impact, a loss of $115 million to the state of Kentucky.
- NOT INCLUDED: costs of health care, lost productivity, water treatment, social expenditures in coal-field communities

What's happening at UK?...

Coal for scholarships?

[University Of Kentucky Adds "Coal" To The New Basketball Dorm's Name For $7 Million Donation]

Campus News Banner

UK Will Not Mine Robinson Forest

Contact: Ralph Derickson

After hearing a detailed report on the value of both the forest land and the coal reserves in the forest, which is located in Breathitt, Knott and Perry counties, UK President Lee T. Todd Jr. told board members he has "no interest in pursuing mining of coal reserves in the main block of Robinson Forest, but I am strongly committed to preserving the Robinson Scholars program."

LEXINGTON, Ky. (Sept. 16, 2003) -- The University of Kentucky will not allow coal mining in the nearly 10,000 contiguous acres of the E.O. Robinson Forest in Eastern Kentucky, it was reported at today's Board of Trustees meeting.

After hearing a detailed report on the value of both the forest land and the coal reserves in the forest, which is located in Breathitt, Knott and Perry counties, UK President Lee T. Todd Jr. told board members he has "no interest in pursuing mining of coal reserves in the main block of Robinson Forest, but I am strongly committed to preserving the Robinson Scholars program."

"Coal Pot" was inspired by Anatsui's time as a visiting artist at UK

World's Fastest Mobile Home (96 mph) (1992) Richard Misrach

http://www.edelmangallery.com/misrach.htm