

Environmental and Land-Use Policies in the United States: Climate Change and Urban Spatial Containment

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To help achieve climate policy goals, the state of California has adopted measures to reduce greenhouse gas emissions (GHGs) by promoting more efficient, compact, and mixed-use growth patterns.

This presentation will examine how this landmark legislation is being implemented in Southern California, home to 18 million people and having a reputation as the “capital of sprawl”.

Each Country's Share of CO2 Emissions

Source: Union of Concerned Scientists

		TOTAL	PER CAPITA
2011 Total Emissions Country Rank	Country	2011 Total Carbon Dioxide Emissions from the Consumption of Energy (Million Metric Tons)	2011 Per Capita Carbon Dioxide Emissions from the Consumption of Energy (Metric Tons of Carbon Dioxide per Person)
1.	China	8715.31	6.52
2.	United States	5490.63	17.62
3.	Russia	1788.14	12.55
4.	India	1725.76	1.45
5.	Japan	1180.62	9.26
6.	Germany	748.49	9.19
7.	Iran	624.86	8.02
8.	South Korea	610.95	12.53
9.	Canada	552.56	16.24
10.	Saudi Arabia	513.53	19.65
11.	United Kingdom	496.80	7.92
12.	Brazil	475.41	2.41
13.	Mexico	462.29	4.07
14.	South Africa	461.57	9.42
15.	Indonesia	426.79	1.73
16.	Italy	400.94	6.57
17.	Australia	392.29	18.02

The World: *Intergovernmental Panel on Climate Change (5th Assessment)*

IPCC Working Group III—Chapter 12

Starting to connect worldwide, regional scale to the urban scale in terms of climate change.

More than 1/2 of world's population now in urban areas.

Urban areas account for between 71-76 percent of CO₂ emissions from global energy use. (CO₂ one of four components of GHG emissions.)

Anticipated growth in urban areas to require a massive build-up of urban infrastructure, which is key driver of GHG emissions.

Also increased urbanization intensify urban heat island effects caused by loss of vegetation, urban morphology, and waste production.

Key urban form drivers of GHG emissions are density, land use mix, connectivity, and accessibility.

CO2 EMISSIONS (STATES IN THE U.S.)

Rank	Jurisdiction	Annual CO ₂ emissions (in millions of metric tons) ^[2]	Percentage of total emissions	Population (population in 2011) ^[9]	Percentage of total population	CO ₂ emissions per capita (in metric tons)
	TOTAL U.S.	5,384	100.00%	311,587,816	100.00%	17.28
01	TEXAS	656	12.18%	25,631,778	8.23%	25.59
02	CALIFORNIA	364	6.42%	37,683,933	12.09%	9.18
03	PENNSYLVANIA	245	4.55%	12,743,948	4.09%	19.22
04	OHIO	233	4.33%	11,541,007	3.70%	20.19
05	FLORIDA	227	4.22%	19,082,262	6.12%	11.90
06	ILLINOIS	225	4.18%	12,859,752	4.13%	17.50
07	LOUISIANA	223	4.14%	4,574,766	1.47%	48.75
08	INDIANA	207	3.84%	6,516,353	2.09%	31.77
09	NEW YORK	158	2.93%	19,501,616	6.26%	8.10
10	MICHIGAN	157	2.92%	9,876,801	3.17%	15.90

California Global Warming Solutions Act 2006

By 2020, GHG emissions levels reduced to 1990 levels.

By 2050, GHG emissions levels reduced 80 percent below 1990 levels.

California: Major sources of greenhouse gas (GHG) emissions

Fossil fuel consumption from transportation: 41 percent

Industry: 23 percent

Electricity production: 20 percent

Agriculture/forestry: 8 percent

(On-road transportation= 35 percent of GHG emissions)

As urban planners, how do we get to these targets?

FOCUS ON URBAN TRANSPORTATION

GOOD NEWS

Technological improvements (cleaner fuel)
Auto fuel efficiency changes (miles per gallon)

But —

BAD NEWS

Increases in VEHICLE MILES TRAVELED (VMT) are cancelling out the positive effects of cleaner and more efficient fuel.

Vehicle miles traveled (VMT)= how much a car travels (and thus emits).

VMT projected to increase nationally by 59 percent by 2030 (Urban Land Institute 2007); emissions from VMT far outstrip any emission reductions from increased fuel efficiency and cleaner, low carbon fuels.

VMT growth rate greater than population growth rate and growth in number of vehicles.

Attempt to change the way we develop cities in order to reduce VMT per capita and thus GHG emissions

Build jobs closer to housing; housing closer to jobs.

Jobs-housing balance.

Encourage development near public transportation corridors. Transit-oriented development.

Infill, mixed use, higher density development. Compact growth.

Limit sprawl (outward low density development). Urban growth boundaries.

“Smart growth” shown to reduce VMT per capita by 20-30 percent compared to conventional suburban development patterns. With smart growth, we drive less often and when we do drive it is for shorter distances. Smart growth can reduce transportation GHG emissions 7-10 percent compared to current trends.

How do we change the way we develop?

Case study of SOUTHERN CALIFORNIA

Region= multiple jurisdictions with interdependency in terms of economic and housing markets. 18 million people, 49 percent of population of California. SCAG region is expected to grow by another 4 million people in the next 25 years.

75 percent of total trips automobile, still only 3 percent transit (2009).

74 of people that drive to work drive alone; carpool rate 12 percent and decreasing.

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State air resources board assigns GHG emissions targets to each of 18 regional governments in California.

Regional council of governments (called the Southern California Association of Governments, or SCAG) is charged under state law with formulating a “sustainable communities strategy” (SCS)

SCS sets forth a future regional land use pattern to meet GHG emission reduction targets; in particular, to coordinate future land use and transportation investments in ways to promote mixed-use, balanced, and compact development.

SCS, in its planned allocation of future growth, focuses the majority of new housing and job growth in high-quality transit areas and other opportunity areas in existing main streets, downtowns, and commercial corridors, which would improve jobs-housing balance and increase opportunity for transit-oriented development.

VMT= vehicle miles traveled

The key indicator (“proxy”) being used by SCAG to measure progress is reduction in per capita vehicle miles travelled (or VMT) per capita.

Such reduction in VMT expected from SCS plan—approximately 9 percent per capita in 2020 and 16 percent per capita in 2035, compared to 2005.

Implementation of this sustainability plan is the challenge.

SCAG cannot dictate local land use policies and is in a position rather of trying to encourage local governments to enact new and innovative land use policies that would address regional GHG goals.

191 cities in the SCAG region

SCAG primarily advisory.

Strongest authority in regional transportation

Land use control the domain of local governments

Local general plans do not have to conform with regional SCS. These local plans are the foundation for subsequent land use zoning of private property (what determines what goes where and at what densities).

STATE AND REGIONAL GOVERNMENT SUPPORT OF LOCAL SUSTAINABILITY

- 1. Transportation investment to support SCS compact growth and centers**
- 2. State review of local housing plans to assure planning for sufficient housing**
- 3. Project review incentives to encourage sustainable development**

3. Project review incentives to encourage sustainable development

California Environmental Quality Act streamlining (lessened environmental review of projects) for these types of projects consistent with SCS

Transit Priority Projects (TPP), defined as projects with all of the following:

At least 50% Residential Use, 20 dwelling units per acre (minimum), within ½ mile of major transit stop or high-quality transit corridor

OR

Residential or mixed-use residential project

A project where at least 75% of the total building square footage of the project consists of residential use.

SOUTHERN CALIFORNIA EXAMPLE

Difficulties and complexities of addressing climate change because it involves:

All three levels of government—state, regional, and local—needing cooperation and coordinative action by all three levels.

A mix of mandatory goals and voluntary means of implementation.

Sources

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http://report.mitigation2014.org/drafts/final-draft-postplenary/ipcc_wg3_ar5_final-draft_postplenary_chapter12.pdf

Urban Land Institute “Growing Cooler” report

<http://www.uli.org/AM/Template.cfm?Section=Home&CONTENTID=104276&TEMPLATE=/CM/ContentDisplay.cfm>

Smart Growth

<http://www.smartgrowthamerica.org/>

Green Building Council (LEED)

<http://www.usgbc.org/>

LEED= Leadership in Energy and Environmental Design— encourage energy conservation and use of alternative energy in building and neighborhood design

Thank you

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