The future of French climate and carbon policy

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Outline

- Problems. French climate and its impact: the long view, from the heat wave of 1719 to the heat wave of 2003;
- Climate change in France: temperatures, glaciers, “vendemiologie”; French climate until 2050;
- The heat wave of 2003: vulnerability and inequality;
- Attitudes of French on climate change: the question of policies.
- The Greenhouse gas emissions profile of France;
- Going green: the economics of the “Grenelle environnement” (2007);
- The French carbon tax of 2010: ecological efficiency and social justice;
- Copenhagen: the French approach.

The long view of French climate: E. Leroy Ladurie

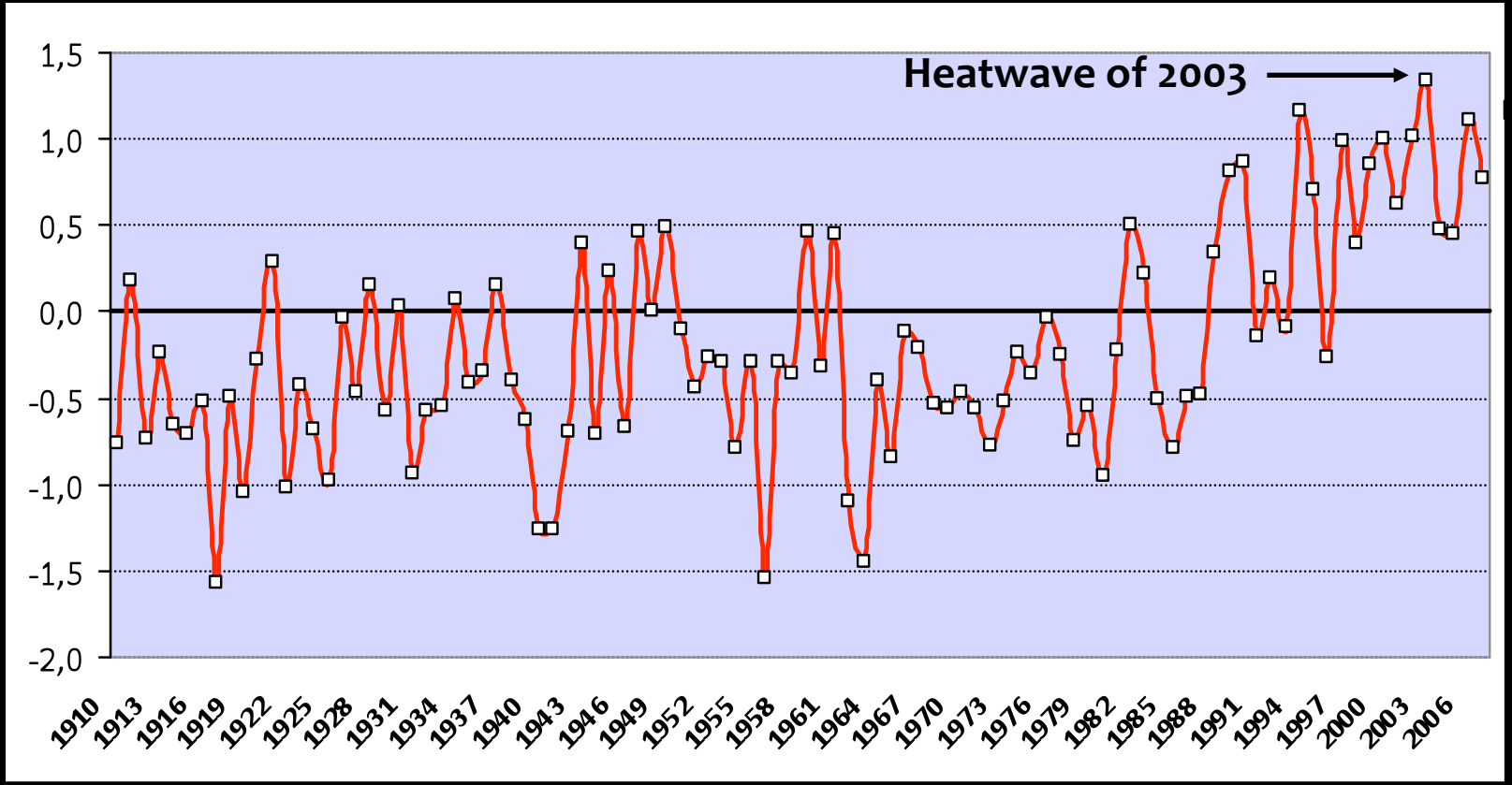
- Evolution of French climate: close to evolution of climate in Western Europe; three phases: warming during the «small medieval optimum » between 900 et 1300; cooling during the «small ice age» between 1300 until 1860; new warming between 1860 until today, with an acceleration from the 1970s onwards;
- Climate impacts French history before 1860. For instance, in 1719, out of 22 millions French, 450 000 dead because of heat wave. In 1859, 100 000 dead because of the most severe heat wave of the 19th century. 1911, another dramatic heat wave;
- Even political consequence of climate. French Revolution was preceded by the wet fall of 1787, then the Spring and summer of 1788 that cause poor harvest, a spike in prices and "riots of *subsistance*", the last of which happened on 13 July 1789 in Paris… Climate also plays a role in 1830 riots;
- The influence of climate will gradually decline with the 1st globalization (imports of food products) and the development of welfare state;
- Are we entering an era where climate again plays a political role ("the revenge of Montesquieu")?

Climate change in France

- For France during the most recent period, two key dates: 1860: beginning of the retreat of Alps glaciers; 1976: year of intense heat and drought, 5700 dead. Turning point of the 1970s: average annual temperatures jump from 11,7° to 13° in the 2000s; In 1911, first heat wave of warming era: 40 000 dead;
- According to Météo France, France became on average one degree warmer over the course of the twentieth century (a little bit more in the southwest and a little less in the north); this warming is higher than the globe's as a whole (around three-quarters of a degree);
- If the period 1950-2000 is considered: increase of 1,1 to 1,5 °C ; The warmest ten years have all been recorded after 1988;
- Same as Europe: according to IPCC, the average temperature has increased 1.00C for the European land area and European land & ocean area;
- As with all developed and temperate countries, climate change has already disrupted and damaged France's ecosystems, and will continue to do with increasing force in the future (recent ONERC Report). If "business as usual", increase between 3°C and 8°C for France.

French climate, 1910-2007

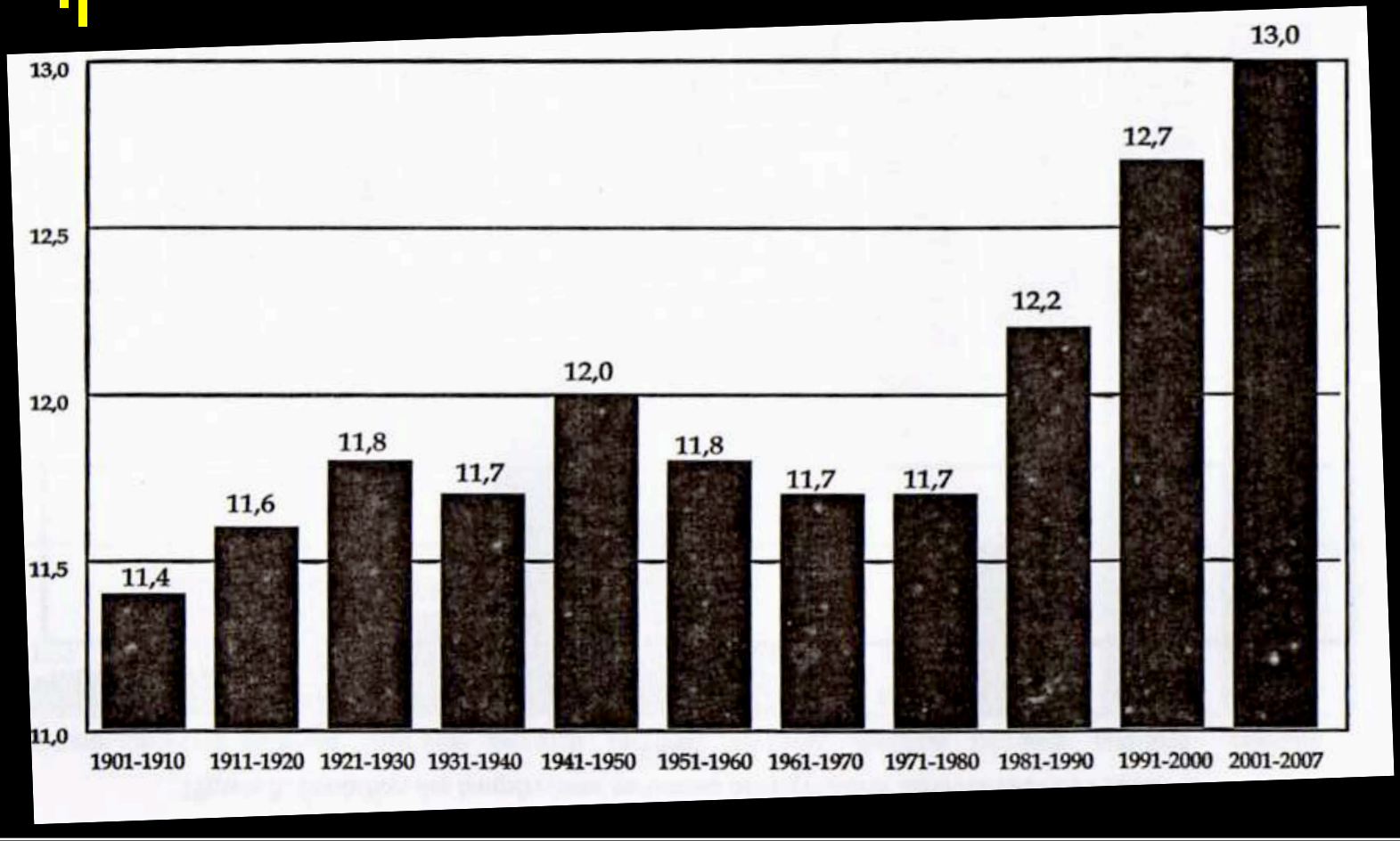
Deviation in °C of normal temperatures
(average1971-2000)



Source: Météo France.

French climate, 1901-2007

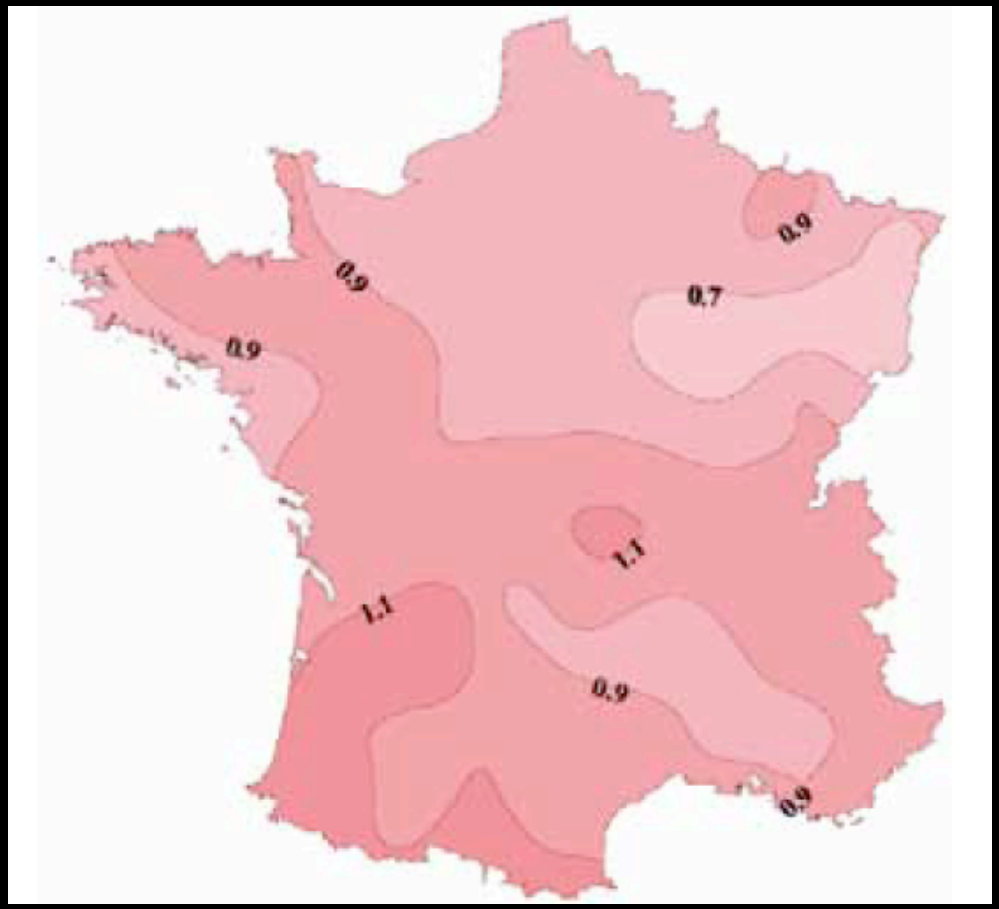
Average temperatures per decade



Source: *Histoire humaine et comparée du climat. Le réchauffement de 1860 à nos jours* d'Emmanuel Le Roy Ladurie, avec le concours de Guillaume Séchet, Fayard, .

French climate change: geographical variation, 1901-2000

Average increase of temperatures, in °C

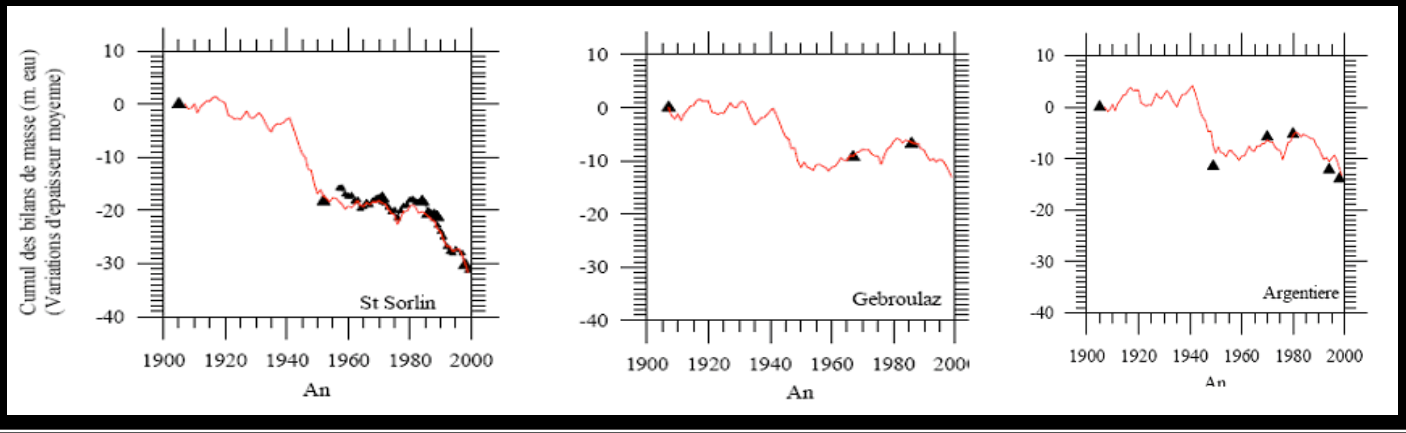


Source: Météo France.

Tracking French climate change through glaciers retreat

Glacier d'Ossoue (Pyrénées): in 96 years, surface was cut by 52%

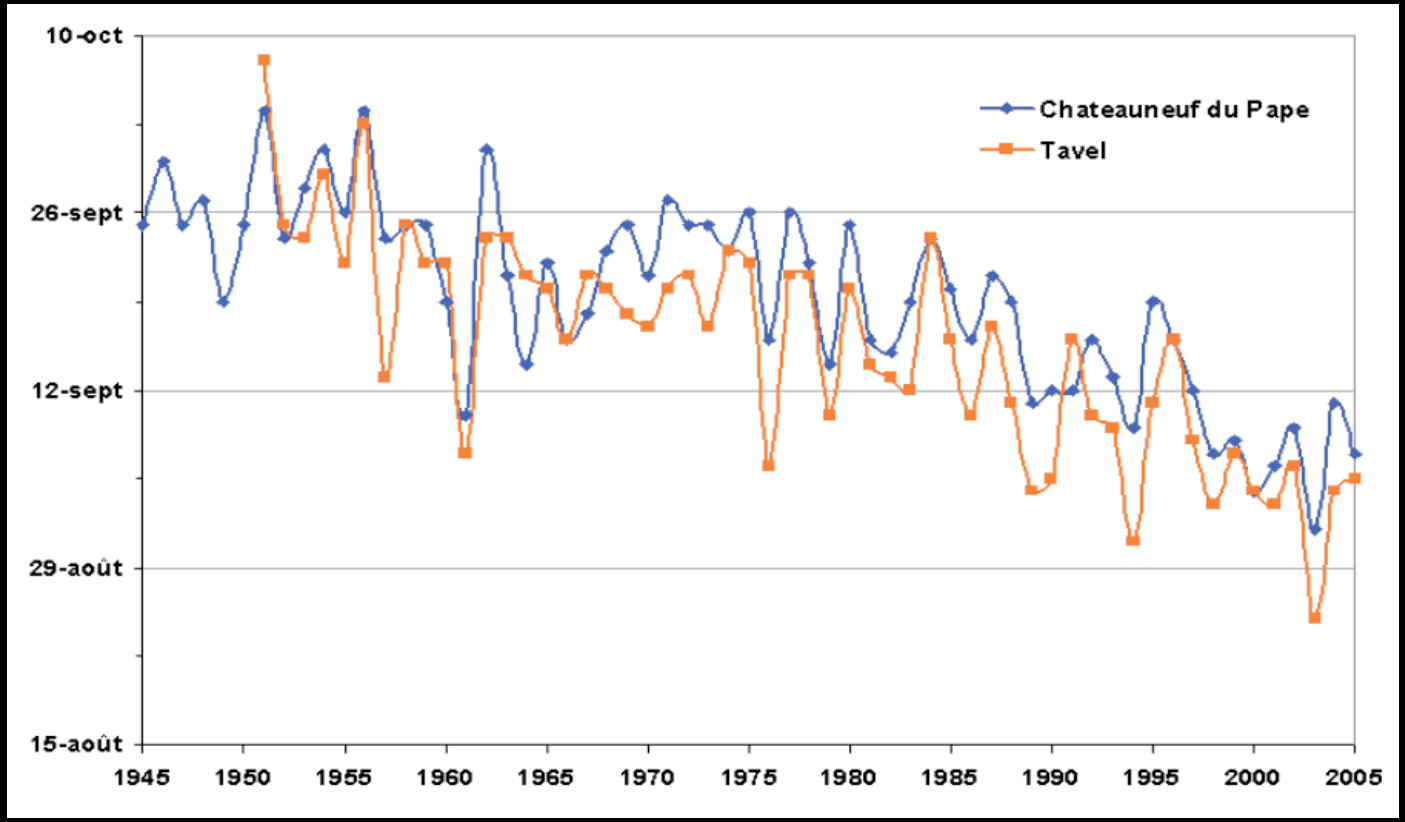
Thickness of snow cover of glaciers in the Alps



Source: ONERC.

Tracking French climate change through “vendémiologie”

Beginning of harvest for Tavel (1951 to 2005) and Châteauneuf du Pape (1945 to 2005)

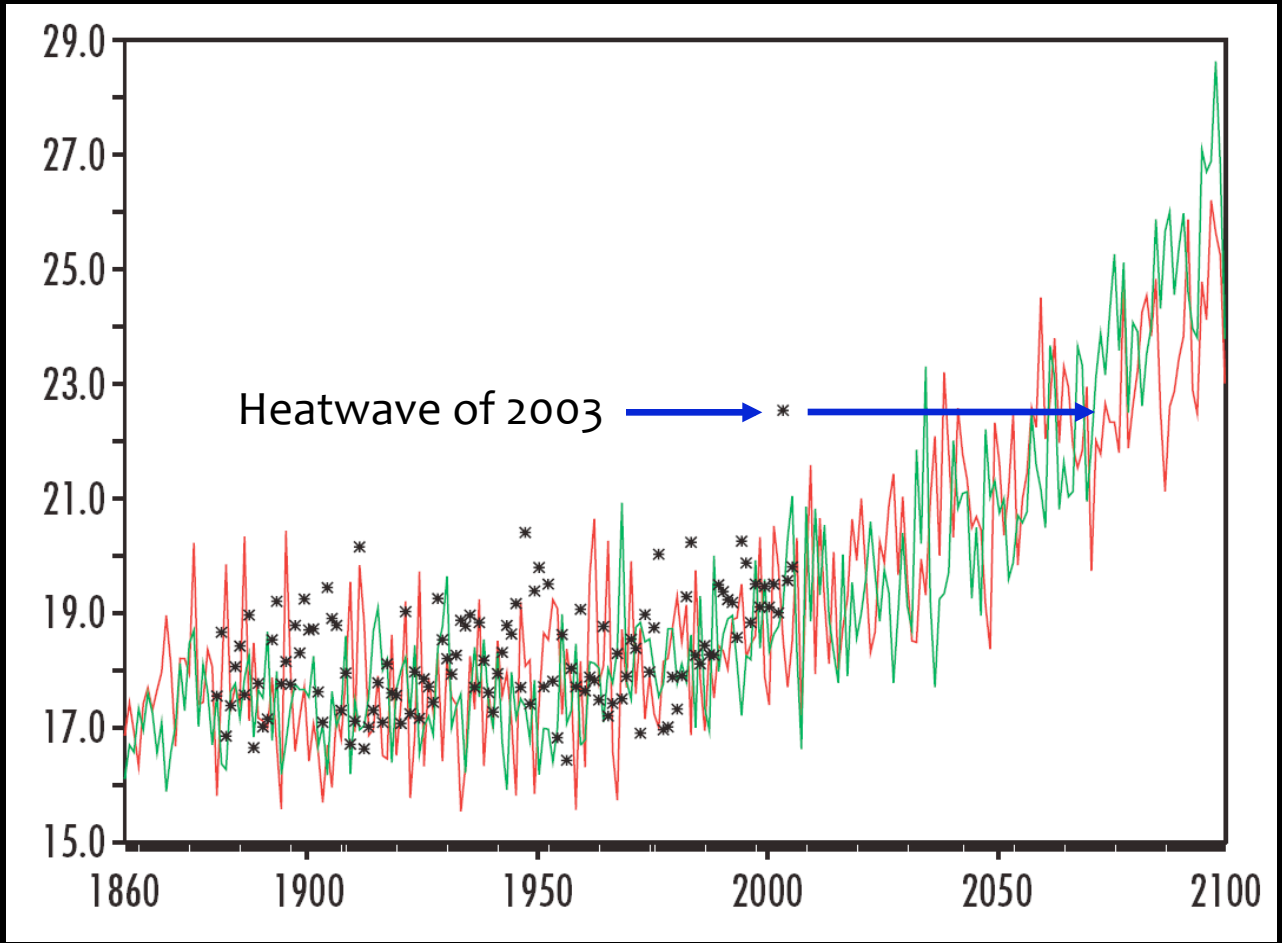


Harvest: three weeks earlier in 2005 than in 1945, with a acceleration from the 1970s onwards

Source: Météo France.

French climate, 1860-2100

Average temperatures, in °C

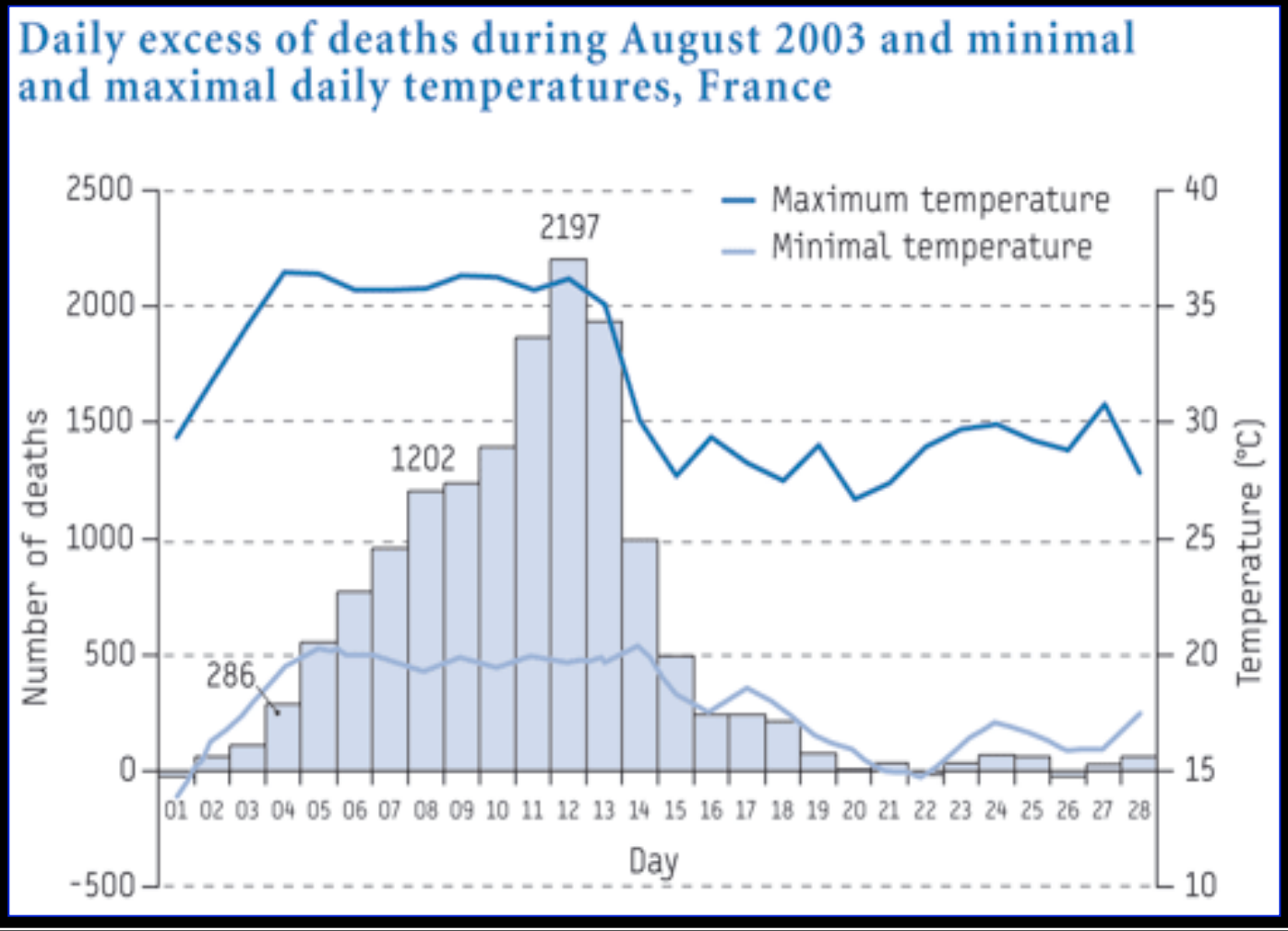


Source: Météo France.

The 2003 heat wave: vulnerability

- During the first four days of August 2003, temperatures recorded by Météo France increased dramatically from approximately twenty-five degrees Celsius to thirty-seven, and remained as high as thirty-six or thirty-seven for the following nine days.
- The duration, intensity, and geographical reach of the 2003 heat-wave ("canicule") that struck most of France were without precedent; according to Météo France, overall, the summer of 2003 was two degrees hotter than in previous record years, 1976, 1983, and 1994.
- France has one of the best health care systems in the world, but the heat-wave still resulted in the deaths of 14,800 people (2,000 people died on August 12 alone).
- While climate change can not be directly linked as a cause of the 2003 heatwave, Della-Marta, et al. (2007) among others, show that the number and intensity of hot days and heat-waves exhibit a clear and disturbing upward trend in Europe from 1880 to 2005.
- As a matter of fact, France was hit by another heatwave only three years after 2003, between 11 and 28 July 2006. Only second to that of August 2003 in intensity but geographically much more limited, it was still responsible for an over-mortality of 2,000 people.

Heatwave of 2003 in France



Source: INSERM, 2003.

The 2003 heat wave: inequality

- Extreme events resulting from climate change will increase inequality, between rich and poor and between vulnerable and resilient, even in rich countries; we are entering the era of "environmental inequalities"
- Klinenberg, *Heat Wave: A Social Autopsy of Disaster in Chicago* (2002): sociological analysis of the 739 people killed by the heat wave of July 1995 in Chicago;
- Same kind of analysis for the 2003 heat wave in France: demographic divide, with 90% killed older than 65 years old; socio-economic divide, with socio-professional category and degree of autonomy related to the probability of dying (INVS, 2004).

Srutinizing the heat

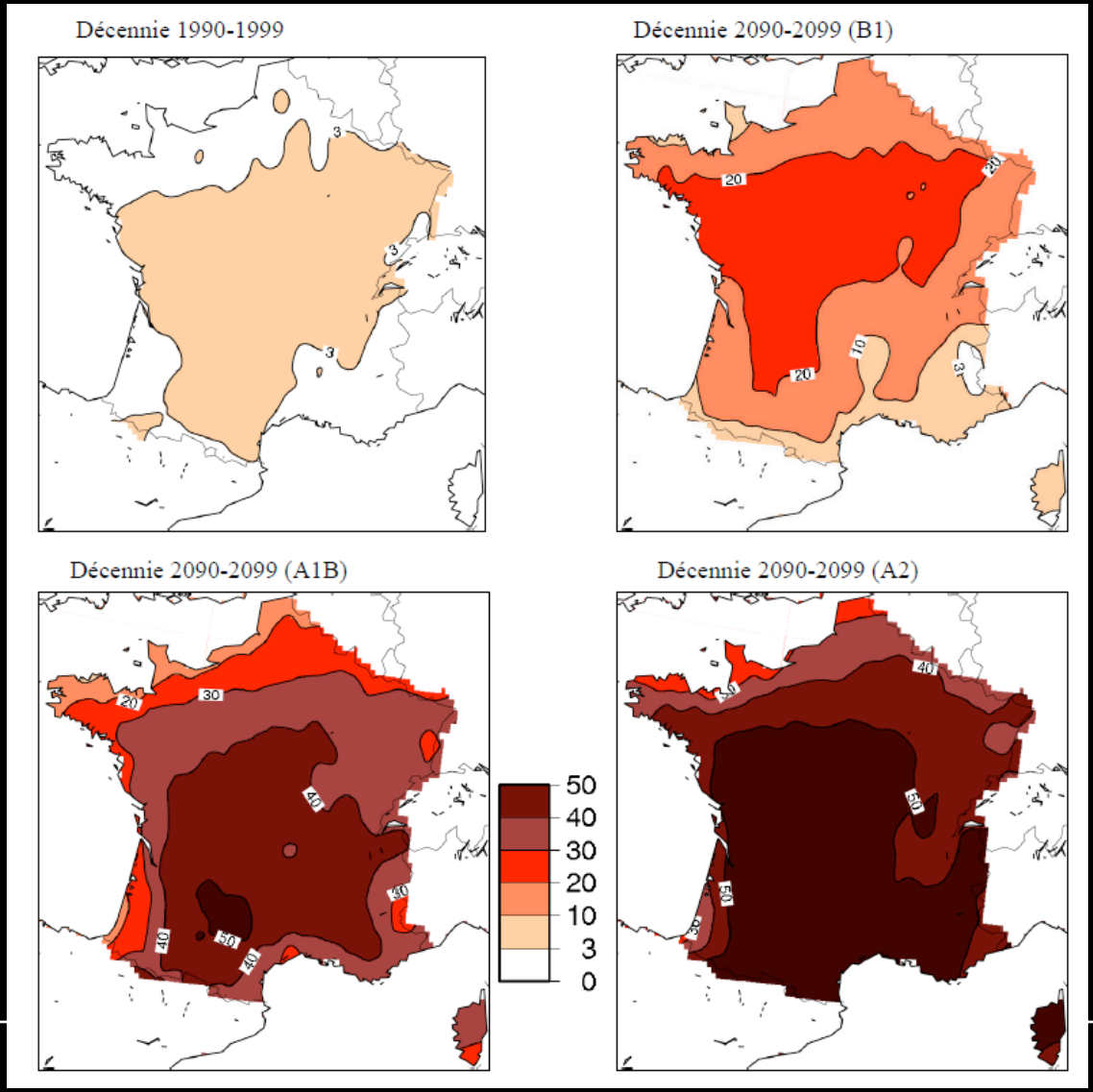
Age	Population (in millions)	Nb of dead
<35	**26,9**	**67**
<1	0,7	15
1–14	10,4	4
15–24	7,8	24
25–34	8,0	24
35–74	**28,2**	**2930**
35-44	8,6	151
45–54	8,3	488
55–64	6,2	615
65–74	5,1	1676
≥75	**4,7**	**11731**
75–84	3,6	4558
85–94	1,0	5691
≥95	0,1	1482
Total	59,9	14729

	14 729 dead
< 35	67
35-65	1254
> 65	13 407 (90%)

Source: Fouillet et al. (2006); Laurent (2009).

The future of French heat waves

Nb. of days per year with max. temps > 35°C, according to scenarios A2, A1B and B1

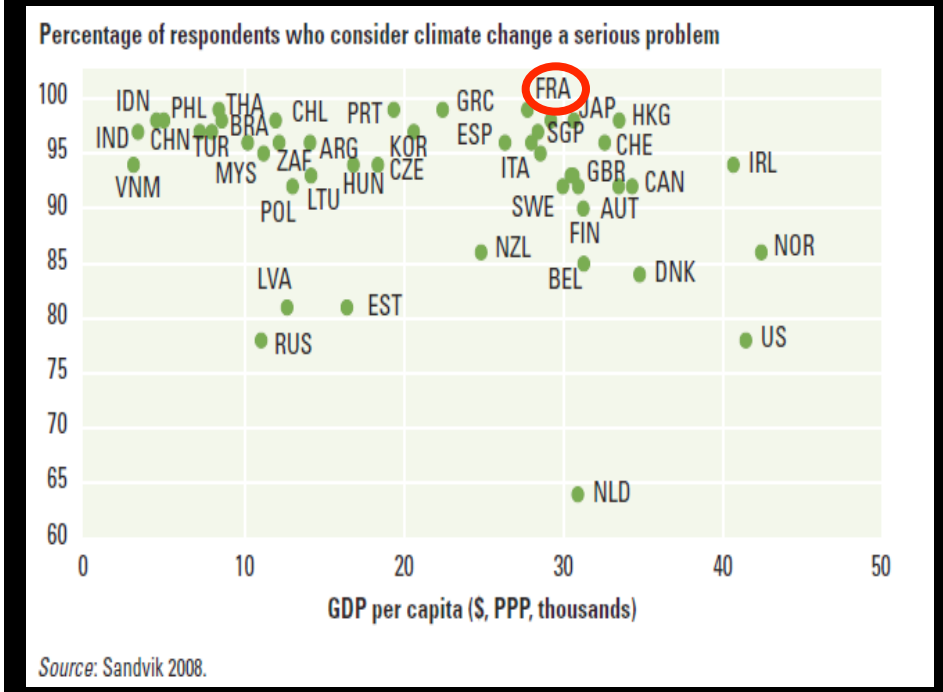


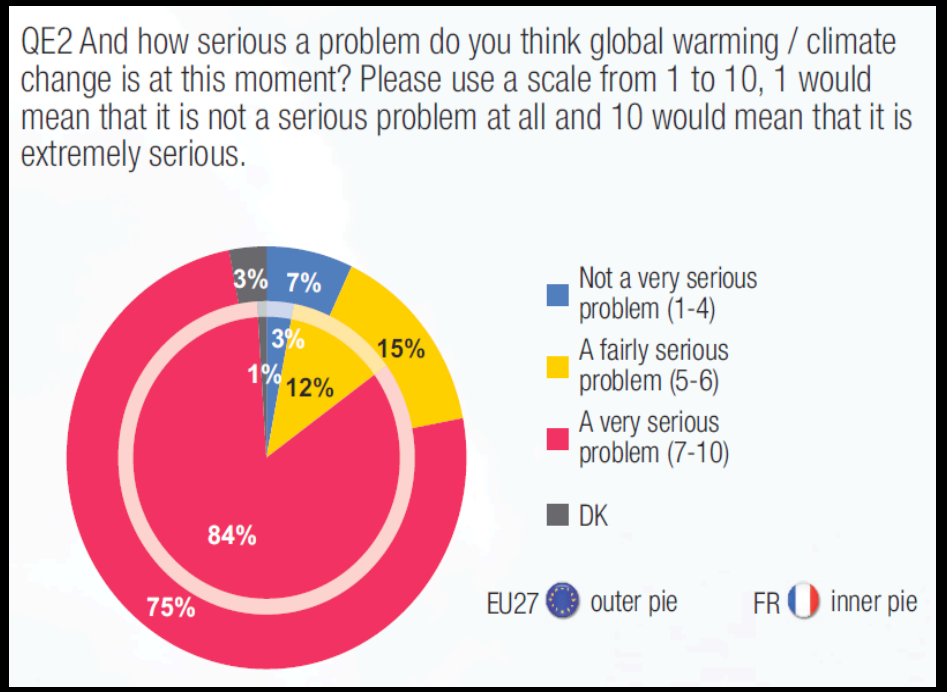
Source: Météo France.

French attitudes on climate change

- Heat wave of 2003: probably the moment when French realized the seriousness of the issue of climate change (maybe turning point);
- French opinions on climate change compared to other developed nations : relatively higher level of awareness accompanied by a relatively higher level of concern (Laurent, 2009).
- Even within the European Union, concern about climate change higher and commitment to mitigating climate change also higher in France.
- Latest Eurobarometer poll measuring Europeans' attitudes towards climate change: 84 percent of French people are inclined to view climate change as a "very serious problem," while 75 percent of EU 27 respondents shared this view on average.
- This survey also suggests the French are more likely than their European counterparts to separate most of their waste for recycling, and to reduce their consumption of energy and water and disposable items.
- Maybe just continuation of French pessimism by other means...
- In any case, what is the state of public policies?

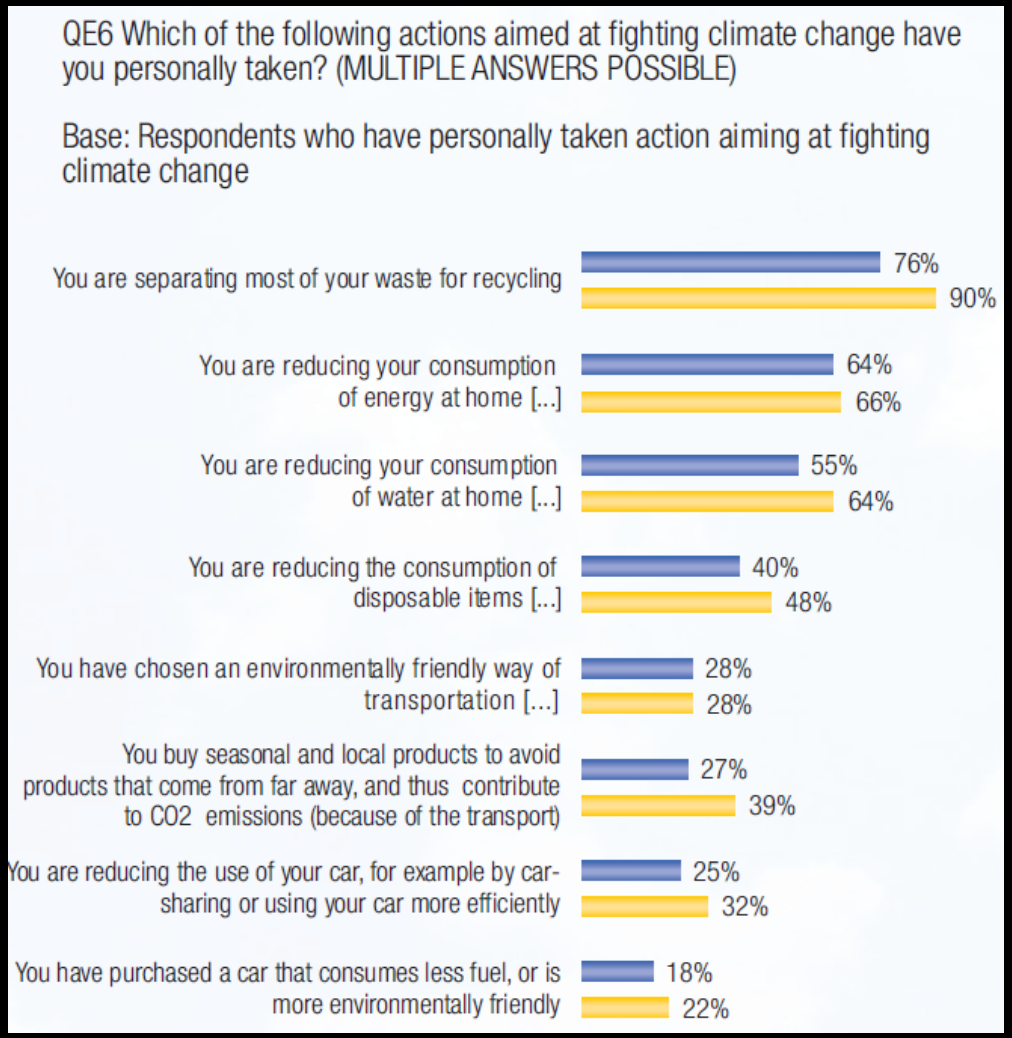
Concern about climate change





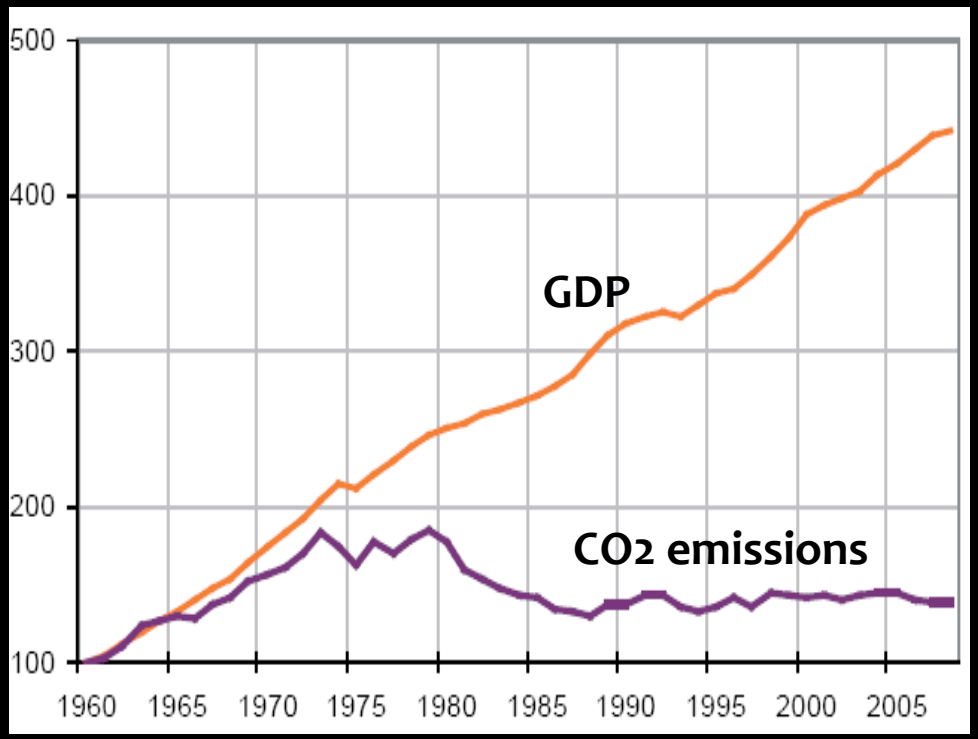
Source: WDR 09 and Eurobarometer 09.

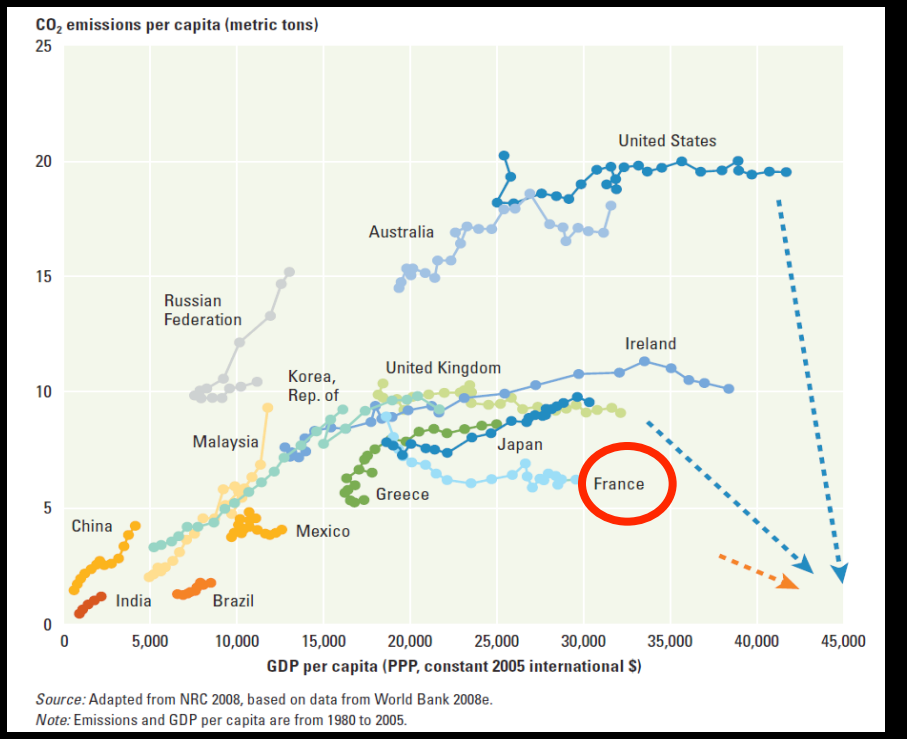
Acting on concern



Source: Eurobarometer 09.

France GHG profile: looking good…

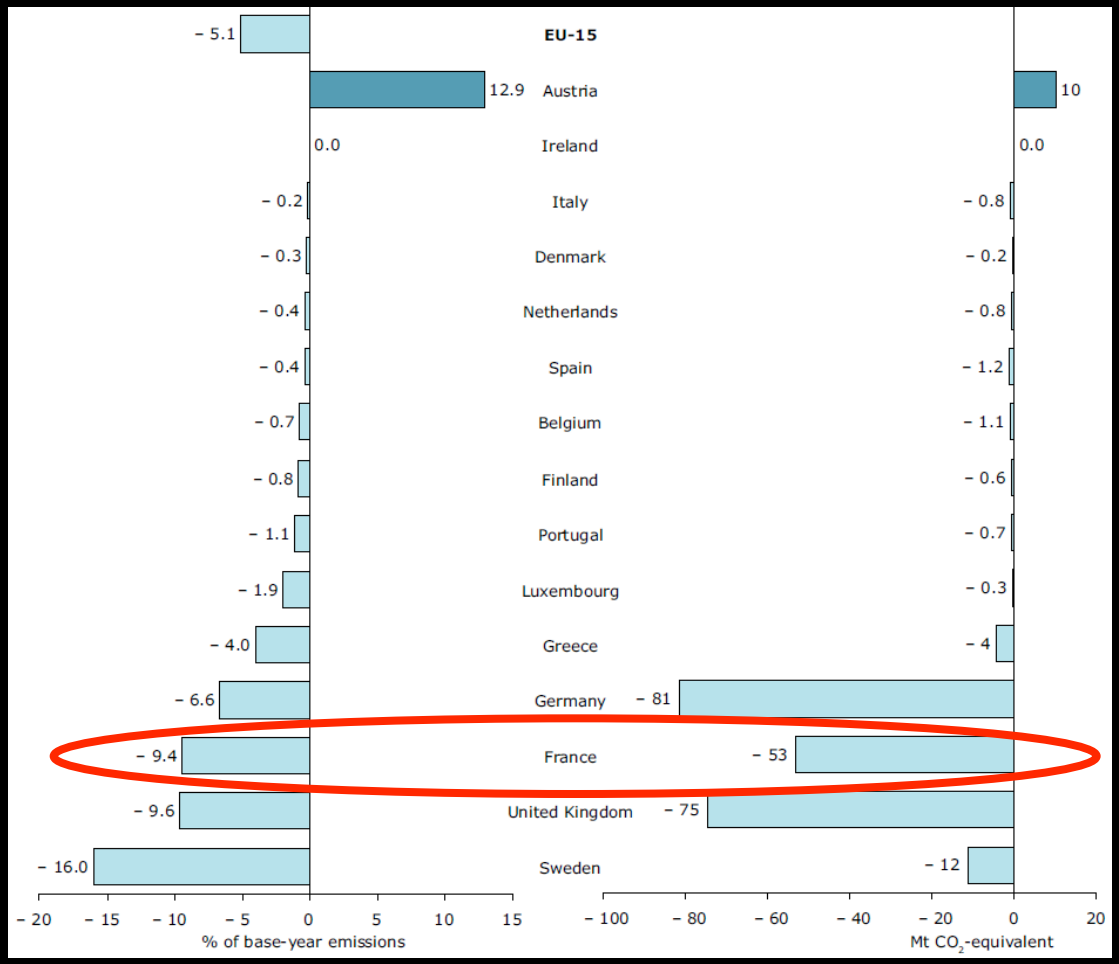




Source: WDR 2010 and French Minister of Industry.

… Not so bad…

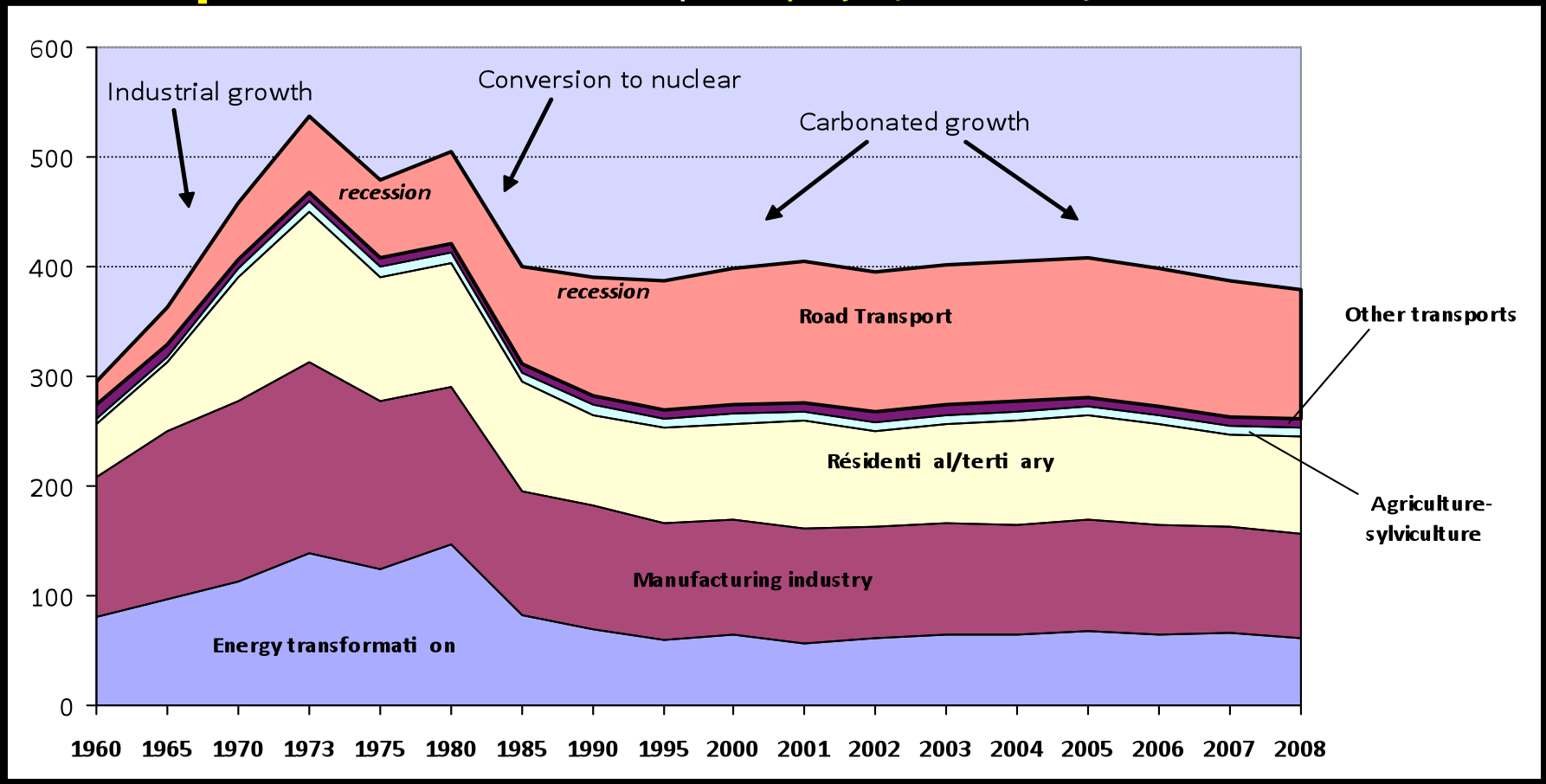
Projected gap between EU-15 GHG emissions and Kyoto units (emission rights) during the Kyoto commitment period 2008–2012



Source: EEA.

… and not so good

2/3 of emissions not covered by EU ETS,
road transport up by 490% since 1960

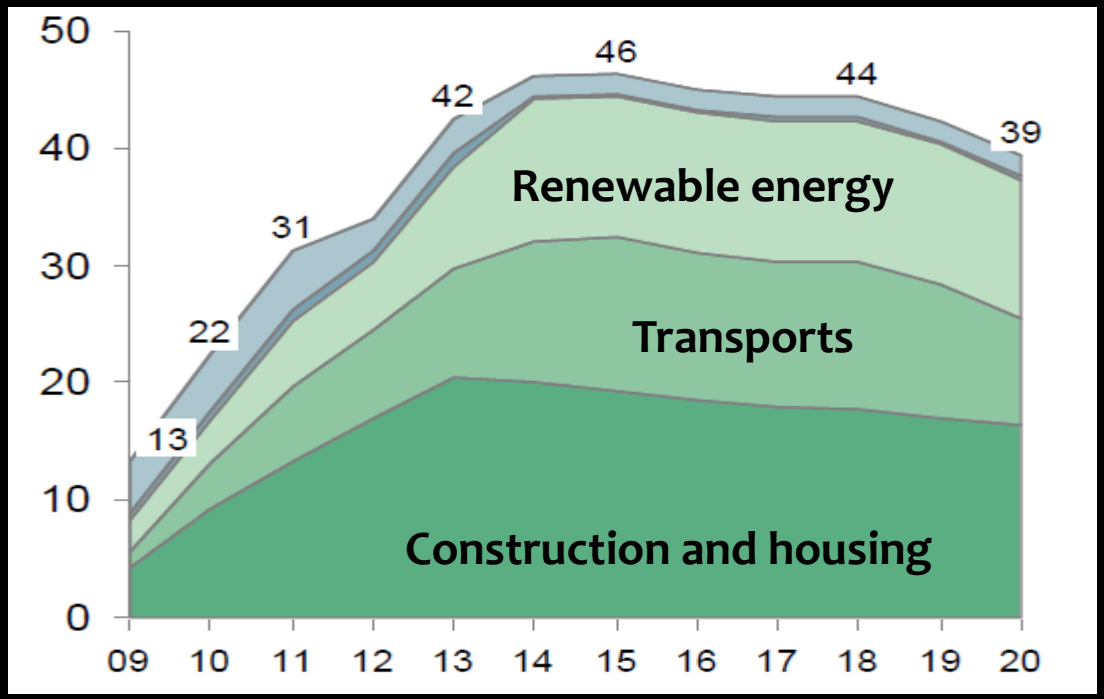


Source: Laurent & Le Cacheux, 2009.

The "Grenelle environnement" (2007)

- The central policy instrument in France's arsenal to mitigate climate change before 2007 was "the Plan climat," adopted in 2004 and updated in 2006, aiming to achieve the "factor 4," = fourfold reduction of GHG emissions by 2050 (a 75 percent decrease from 1990 to 2050 = IPCC);
- Given France's emissions path, this objective (requiring a reduction of emissions of 30 percent as early as 2020, the new EU objective adopted in March 2007) obviously requires a renewed political ambition.
- Although the subjects touched by the so-called "Grenelle environnement" were much broader than just climate change, it can be said that climate change was precisely the centerpiece of this innovative institutional and policy process;
- Grenelle = the first environmental negotiations ever to take place in France between five "colleges": the State, trade unions, employers, NGOs, and local jurisdictions;
- The original idea of convening all actors of the environmental scene to agree on a new action plan can be traced back to Nicolas Hulot's Pacte écologique,17 which called for "a national mobilization," an idea picked up by Nathalie Kosciusko-Morizet and suggested by her to Nicolas Sarkozy during his presidential campaign;

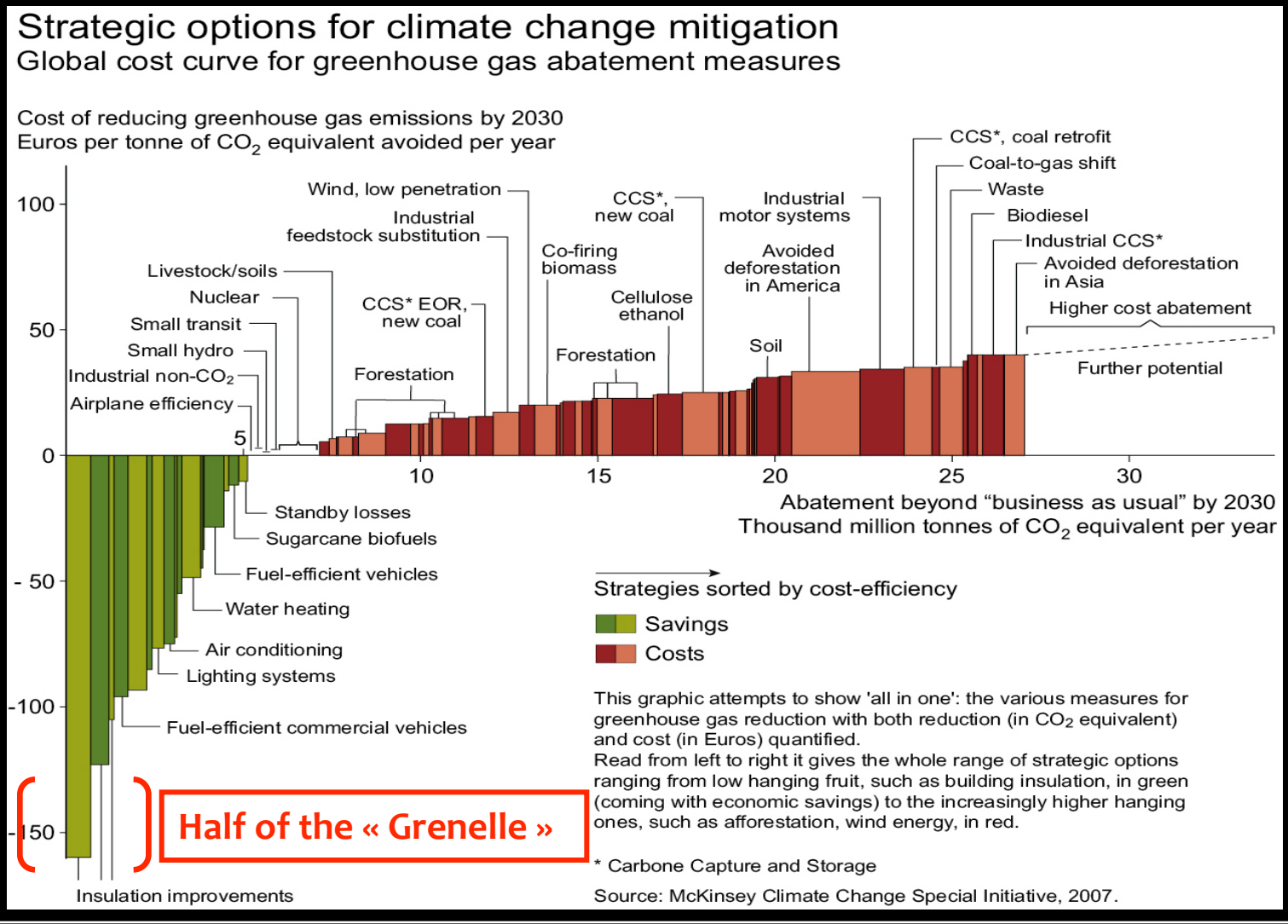
The economics of the « Grenelle »: where the money is going



450 bn€ over 12 years (≈ 1.9% per year of GDP); creation of 600 000 jobs (previous gov. estimate = 450 000 jobs), mostly in construction and housing sector (BTP) ; 190bn euros spent on building retrofiting alone.

Source: Ministère de l'écologie and BCG.

The « Grenelle » and the cost curve



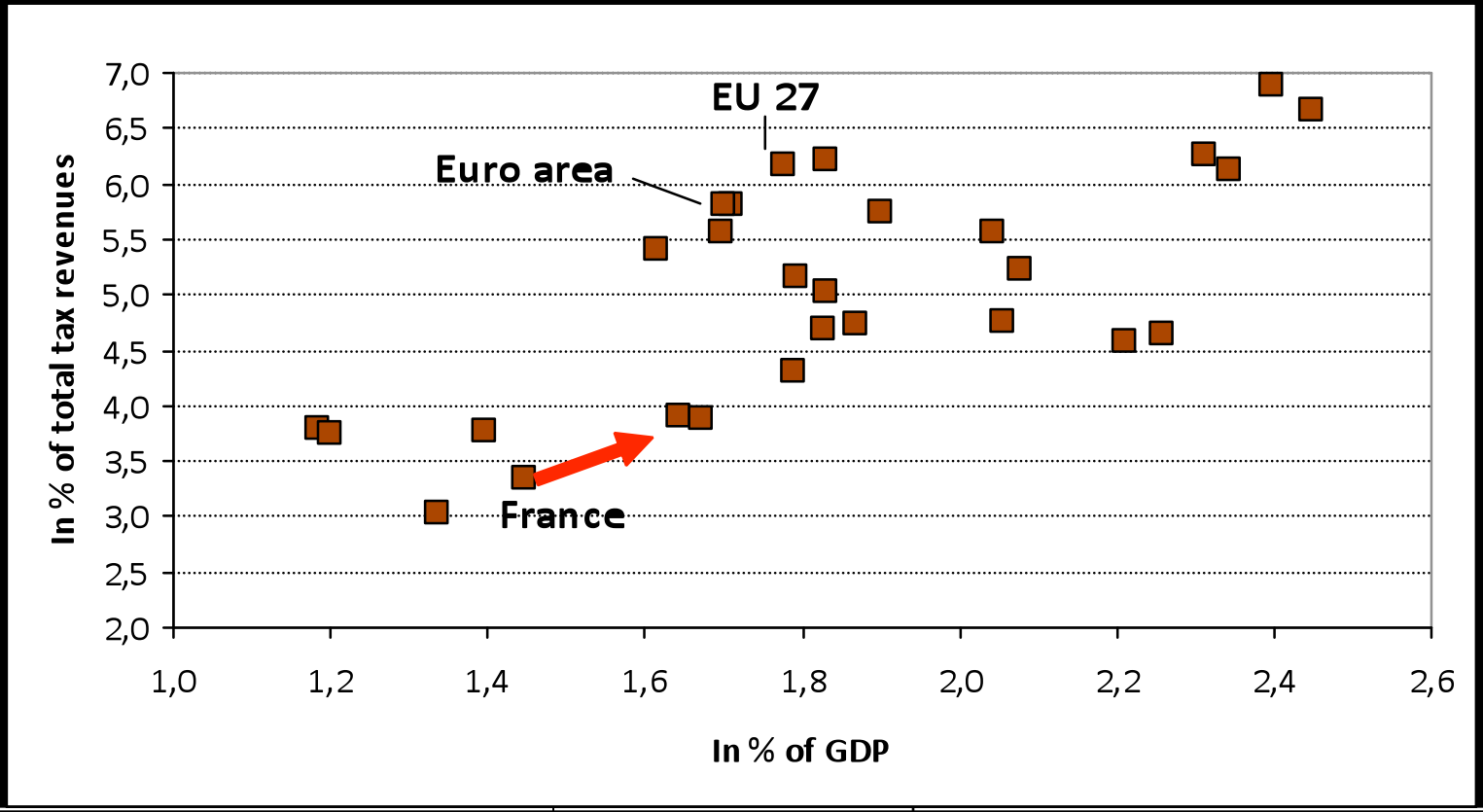
Source: McKinsey/Vattenfall.

The French carbon tax (2009-2010)

- Carbon tax voted last month in 2010 budget; will be introduced early 2010: France will then become biggest economy to have a carbon tax. Two questions: ecological efficiency and social justice;
- Ecological efficiency is problematic because initial level too low : 17 euros (Commission of experts recommended 32 euros, "ideal price", ie, scientific and not political = 45 euros). Why so low? Because EU ETS used as reference. Level for 2030 = 100 euros, but we don't how we'll get from here to there. Overall impact week. Tax = 4,6 bn euros = 0,23% of GDP, 0,47% of total tax revenues;
- Social justice: computations by ADEME, the French agency for environment and energy efficiency, show that, with transfers of 94 euros for people living in the country and 76 euros for people living in urban areas, the tax actually benefits French citizens up to the third decile of income distribution.

France's position in EU

France today ranks at the very bottom of the EU both for energy taxes as % of GDP, with 1,4% in 2007 (23rd out of 27) and for energy taxes as % of total taxation, with 3,3% in 2007 (26th out of 27).



Data source: Eurostat, *Taxation trends in the European Union*, 2009; Laurent, 2009.

Impact on income distribution

	HEATING		FUEL		TOTAL		TOTAL AFTER TRANSFERS	
	Country	Town	Country	Town	Country	Town	Country 94 eu	Town 76 eu
1° décile	- 50	- 11	- 26	- 19	- 76	- 29	+ 18	+ 46
2° décile	- 52	- 50	- 29	- 22	- 81	- 72	+ 13	+ 4
3° décile	- 57	- 38	- 35	- 29	- 93	- 67	+ 2	+ 9
4° décile	- 57	- 53	- 44	- 29	- 101	- 82	- 7	- 6
5° décile	- 59	- 42	- 44	- 36	- 103	- 78	- 9	- 3
6° décile	- 51	- 76	- 55	- 38	- 105	- 114	- 11	- 38
7° décile	- 62	- 95	- 49	- 45	- 110	- 140	- 16	- 65
8° décile	- 47	- 63	- 55	- 42	- 101	- 105	- 7	- 29
9° décile	- 78	- 60	- 54	- 48	- 132	- 109	- 37	- 33
10° décile	- 99	- 98	- 74	- 48	- 174	- 146	- 79	- 70

Data source: ADEME/Alternatives Economiques.

The France of future

- France has a huge "ecological comparative advantage" but risks losing it because of "nuclear complacency": decisions not bold enough on carbon tax;
- "Grenelle environnement II": soon to be a law, and a good one, but devil in details; Mostly: problem of missing skills on job market, training in sustainable development also lacking (≠Germany);
- Politics of ecology: from right to left to right? "Grenelle de la mer"; "Grenelle" all the time as a political tactic to divide the left?
- Geopolitics of climate change: "M. Sarkozy goes to Copenhagen". During the French Presidency, climate-energy deal + French plan for adaptation financing ("Climate Justice" Plan); but lack of EU coordination ("franco-brazilian plan") + competition of egos.