

# **Cap and Trade System for Land Use Planning: A dynamic, Flexible and Sustainable Tool for Planners**

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# Structure

- Introduction
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- Mechanism
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  - Trade
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- Example
- Solving the issues

# Introduction

- Land consumption
  - Agriculture
  - Forests
  - Nature
- Sustainable Land Development
  - Use derelict land?
  - Reuse first

# Urban sprawl

“The urban future of Europe is a matter of great concern. More than a quarter of the European Union's territory has now been directly affected by urban land use; by 2020, approximately 80 % of Europeans will be living in urban areas, while in seven countries the proportion will be 90 % or more. As a result, the various demands for land in and around cities are becoming increasingly acute. On a daily basis, we all witness rapid, visible and conflicting changes in land use which are shaping landscapes in cities and around them as never before”

*Source: European Environmental Agency – 2006 : ‘Urban Sprawl in Europe’*

# Land consumption in Europe

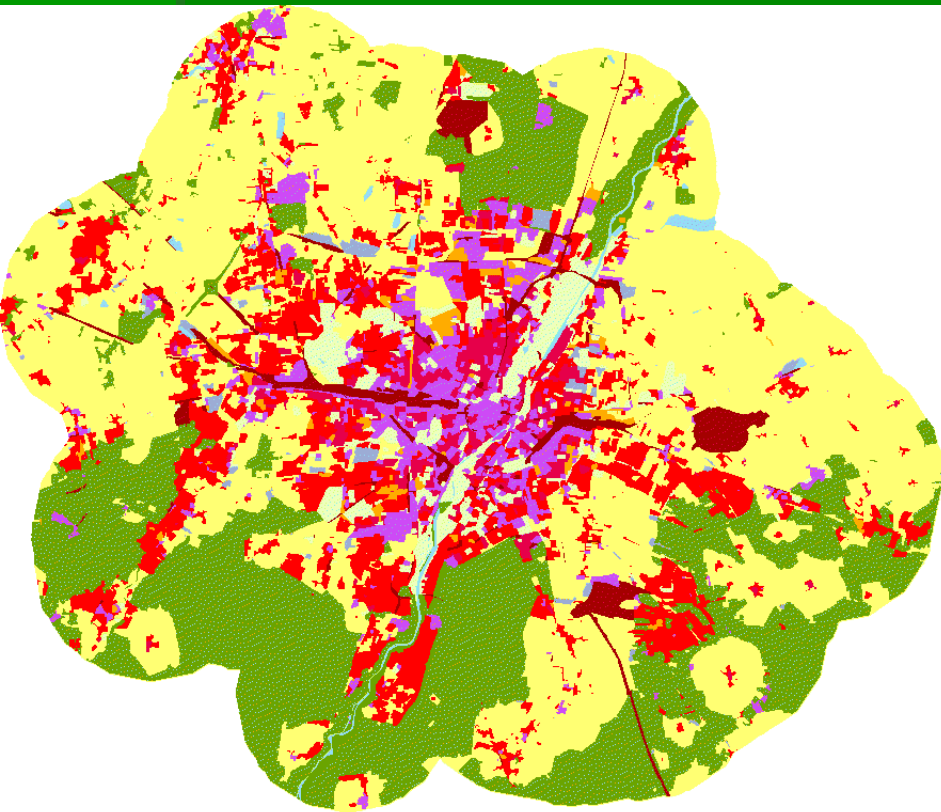
- 1990 – 2000:
  - 8,000 km<sup>2</sup>
  - (or 0.25% of combined agriculture, forest and natural land)
  - 25 m<sup>2</sup>/sec

Source: EEA – 2006

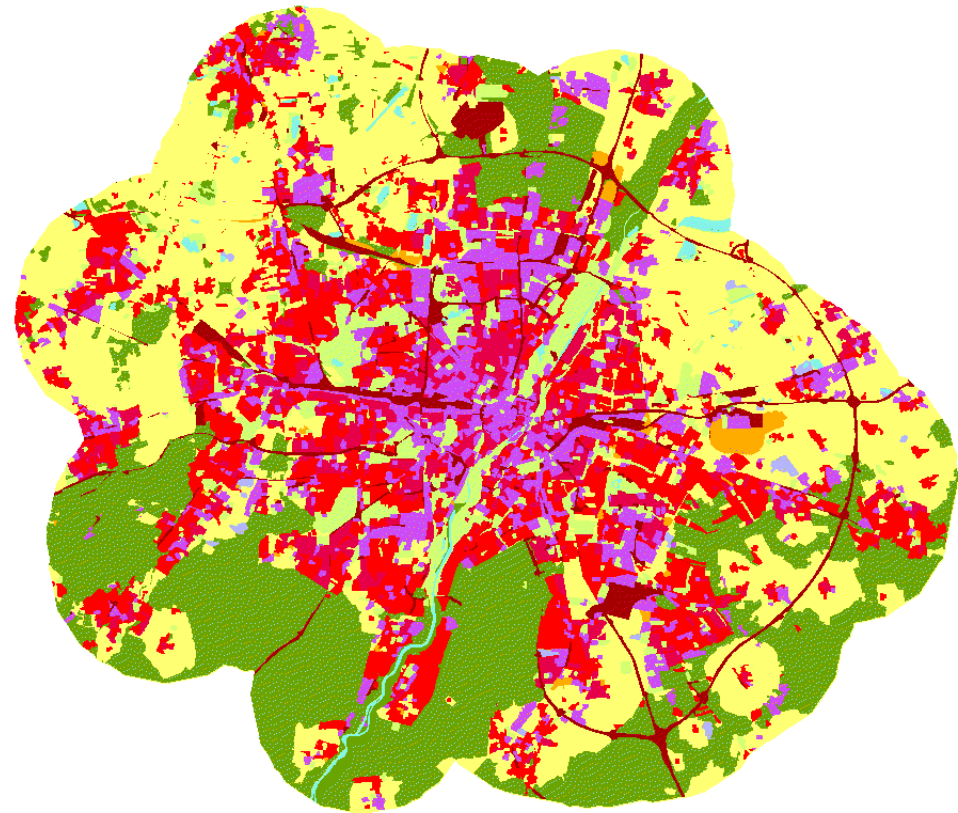
- Estimated over 3 million contaminated sites in Europe  
(*number growing as investigations grow*)
  - Total surface estimated: 3,000 to 15,000 km<sup>2</sup>

Source: EEA – Aug 2007

# Munich – 1955 - 1990

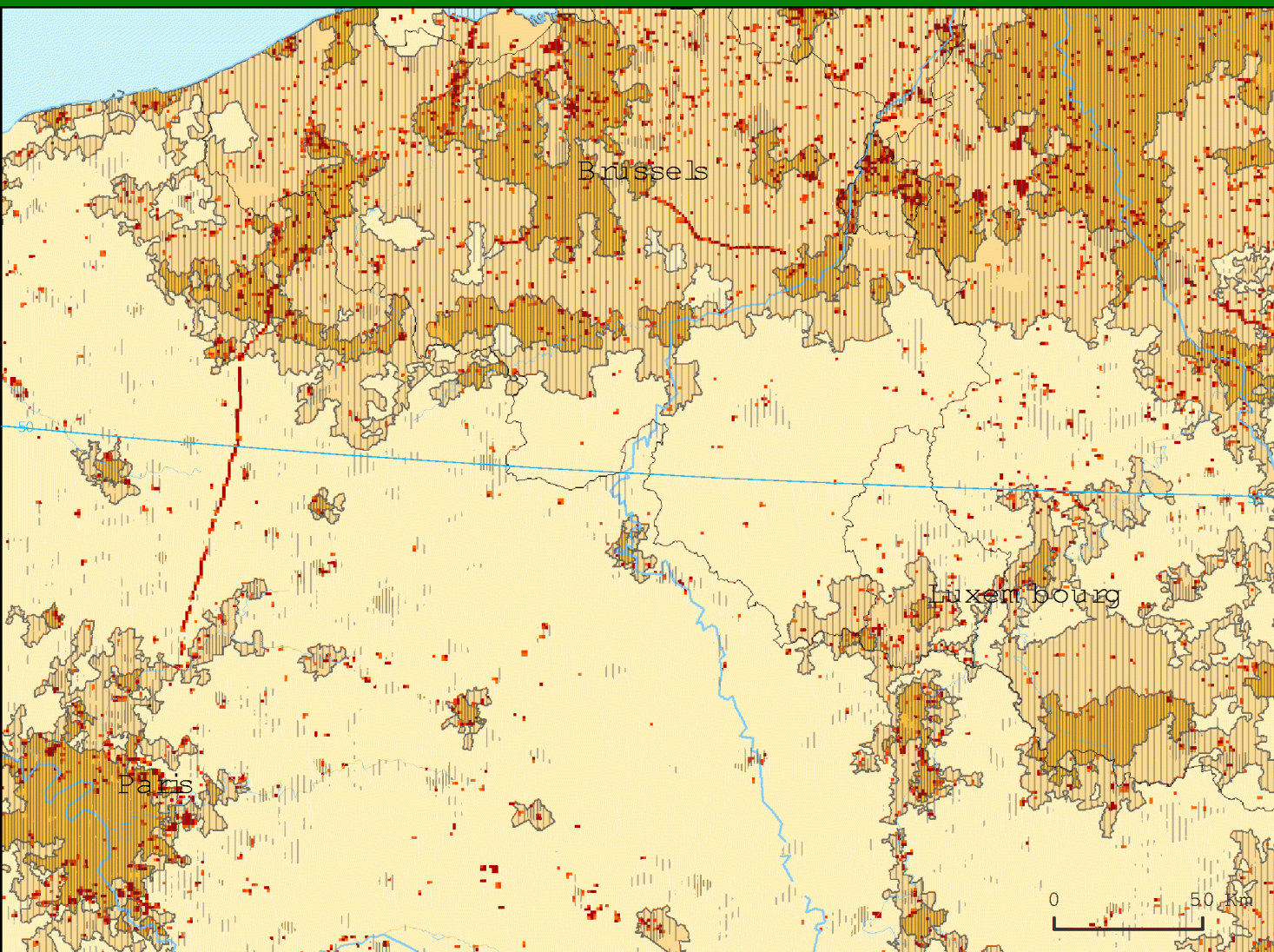


1955



1990





### Zoom in on Urban and Rural Areas

Population density levels in 2003

- Urban I= Densely populated areas
- Urban II= Areas subject to sprawl

Population density levels in 1991

- Urban I= Densely populated areas
- Urban II= Areas subject to sprawl

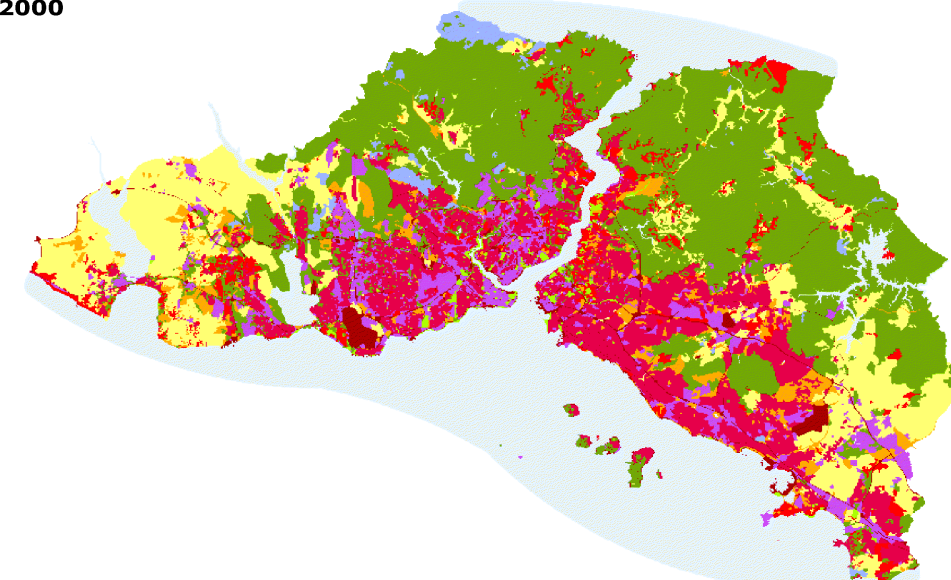
Urban Sprawl between CLC1990 and CLC2000

- more than 10 %
- 5% -10%
- 1% -5%

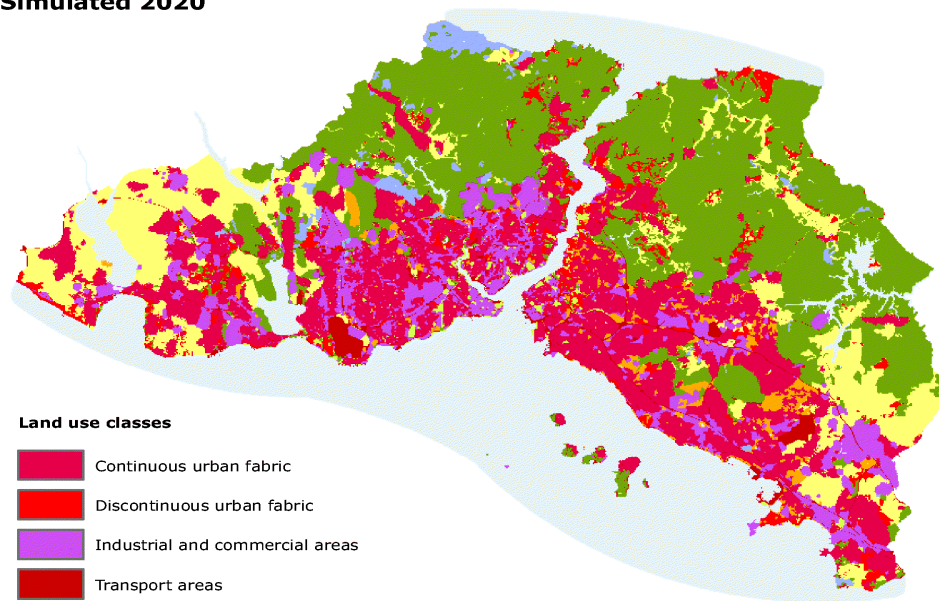
- Country border
- Rivers

Note: Due to recent changes in the Eurostat definitions of urban areas the classifications in the two datasets (1991 and 2003) differ. The 1991 levels are Eurostat population density levels and the 2003 levels are based on only population data per administrative units.

2000



Simulated 2020



Land use classes



# Istanbul

## 2000 - 2020



# Issues addresses

- Greenfield is easier than brownfield
  - Cheaper
  - Faster
  - Less legal complications
  - Safer
- Changes in land usage are a private profit when increased in value and a collective loss when reduced in value

# MARKET-BASED INSTRUMENTS AND ZONE PLANS

- Market-based instruments (as explained in EU Green Paper on Market-Based Instruments for Environment-Com/2007/0140):
  - Taxes
  - Grants and subsidies
  - Tradable permit systems

# MBI: Advantages

- Provide more certainty towards policy objectives
- Provide security regarding the cost of policy
- Can generate revenue if allowance are auctioned
- Influence behavior
- Transparency

# Current system – Zone planning

- Price to nature
- Balancing between « weak » and « strong » intended land usages (industrial, residential, nature, etc.)
- No incentive on cleaning contaminated areas



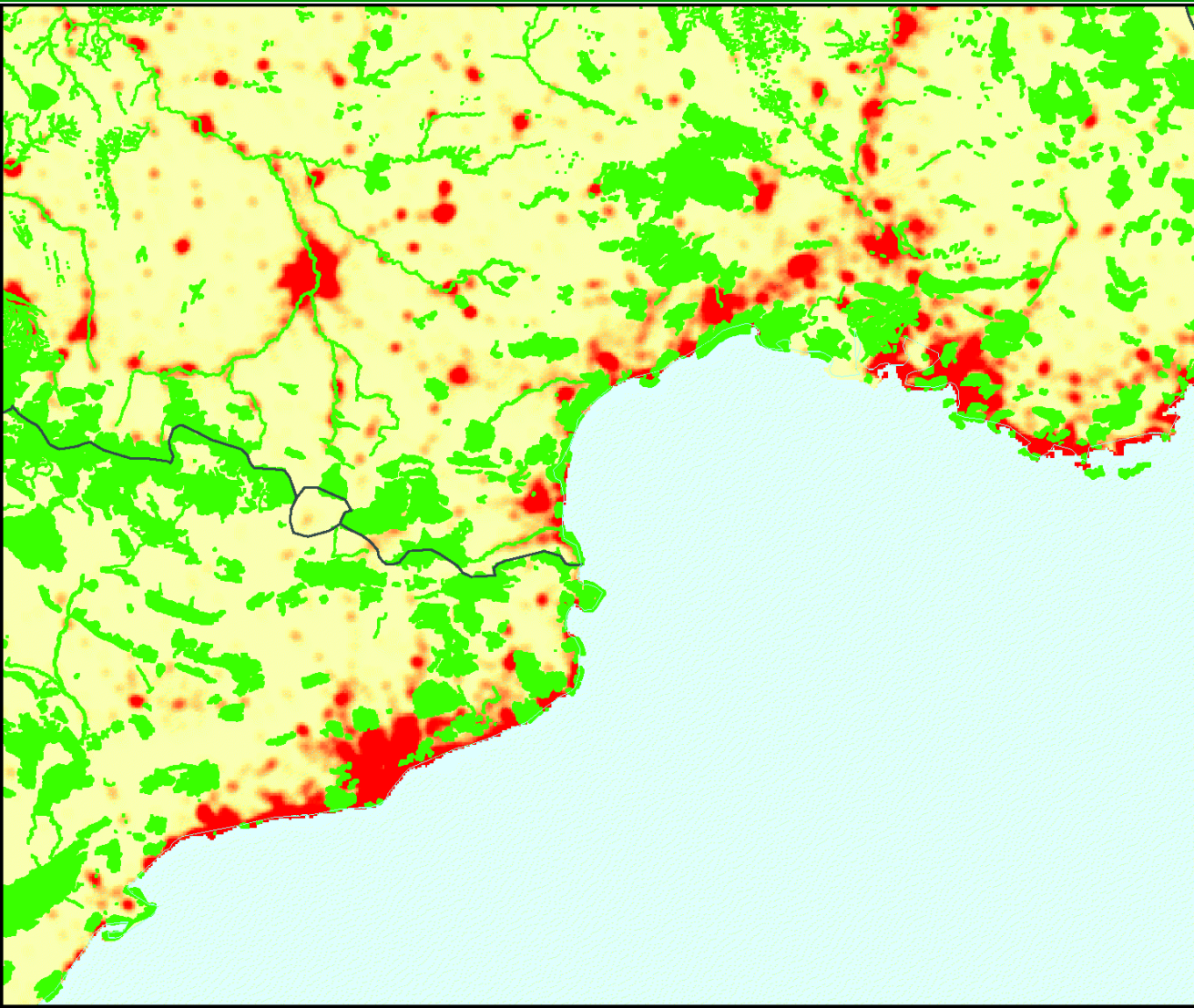
# Mechanism

- Cap & Trade system for land quality and quantity
- By fixing the total surface for each designated land usage, land ownership and possible land usage are both required in order to achieve land usage modifications
- The cap and trade guarantees a standstill obligation and a controlled growth of used areas

# Mechanism (2)

- Tools (inventory) to quantify the subject regarding the destination (examples)
  - countryside category (NATURA 2000)
  - organic agriculture category
  - Industrial contaminated land
  - Housing
  - Infrastructure
  - ....
- Title unit (Area – example: 1m<sup>2</sup>)
- Free titles or sold by auction

# Pressure on NATURA 2000 Sites



**Natura 2000 sites**



**Urban (%) in a 5 km neighbourhood**



High: 100

Low: 0

# Cap

- First step: Inventory of current (zero) situation by surface unit and 'usage type'
- The total of surface unit (e.g. m<sup>2</sup>) is the CAP
- CAP cannot be modified unless government full approval (political decision – collective involvement)



# Trade

- Once every land owner has received the certificates corresponding to the existing usage and surface, those 'usage certificates' are tradable
- Trade can only take place as an **exchange** of certificates, as land cannot 'exist' without usage;
- The difference in allowed usage will be compensated financially and give a 'market value' to each specific usage

# Regulator Implication

- Regulators determine any variation in the CAP
- The Cap&Trade does NOT modify the rules for real usage (all other permitting)

# Example – Region A

- 3 land usages
  - Agriculture
  - Housing
  - Industrial
- Initial cap:
  - 1,000,000 m<sup>2</sup> Agriculture
  - 200,000 m<sup>2</sup> Housing
  - 300,000 m<sup>2</sup> Industrial

# Example (2)

- Land owner Joe owns 10,000 m<sup>2</sup> Industrial land and an adjacent parcel of 5,000 m<sup>2</sup> agricultural land. He wants to expand his business and convert the 5,000 m<sup>2</sup> agriculture into industry
- He owns 10,000 industrial certificates and 5,000 agricultural certificates
- He needs to exchange 5,000 A for 5,000 I and therefore offer a financial compensation



# Example (3)

- Landowner Bill owns 10,000 m<sup>2</sup> of derelict industrial land; He has no use for it;
- Bill owns 10,000 industrial certificates

# Example (4)

- Joe offer Bill to swap 5,000 A for 5,000 I and offers in compensation XXX €/m<sup>2</sup>, corresponding to the increase in value between Agriculture and Industry; With the €€€ received, Bill can pay for clean-up of his derelict land; If he cannot reach agriculture levels (clean-up), but only housing, he will look for 5,000 Housing certificates;
- With those certificates, Bill can sell his property as housing and pay for the whole scheme

# Solving the issues?

- Land Consumption
  - The CAP is the guarantee that land consumption is stopped;
  - Increase in specific usages can only be done by the Government after due political process
- Brownfield incentive
  - Upgrading land use generates financial income, helping to fund remediation
  - Clean-up to lower levels is incentivized (polluter pays principle can be applied)

# Solving the issues?

- Private profit and common losses
  - The change in land use will be paid for by the beneficiary (as he will have to pay for the difference between current use and future use)
  - No longer 'indecent' profits by land use changes in favor of private landlords
  - No longer a need for financial compensation in case of 'degradation of use' to be paid by the government



# Questions?

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