

Regional climate and energy strategies in Paris-Ile France Region



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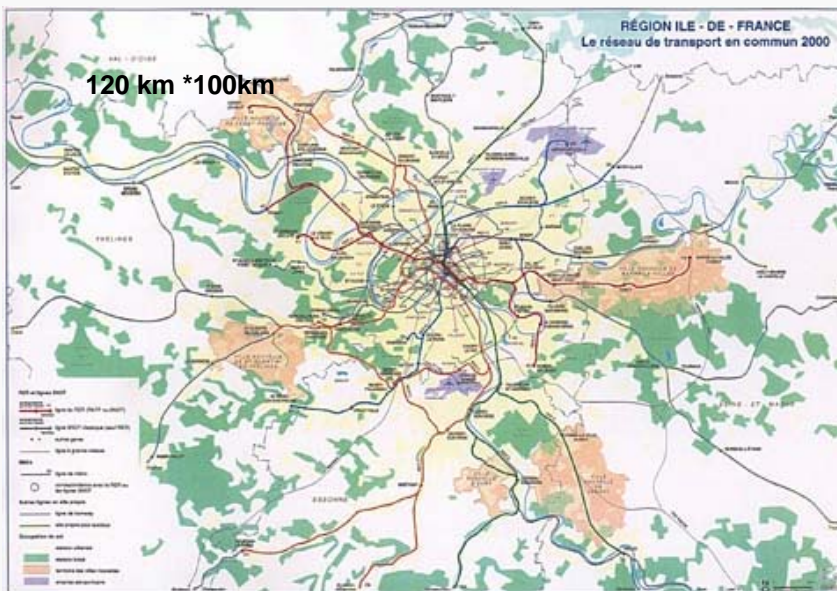
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Paris region

- Population and GDP higher than 20 of the 27 EU countries
- 11 millions inhabitants
- 29% of the France GDP and 5% of EU GDP
- Europe's 2nd busiest airport hub and 2nd busiest inland waterway transport hub
- the World's leading tourist destination
- 9,1% of national GE (territorial)
- 2% of the territory of France



- 19% of France population
- 52 million t CO₂ per year
- a 22 million t consumption of primary energy depending for outside energy by 95%



Energy strategies in Paris-Ile France Region



- 25% built-up areas, 52% farmland, and 23% forest and woodland areas
- TGV links to 2 European capitals : London and Brussels
- 210 km of Metro lines, 1,400 km of railway and express subway, 3,000 km of bus lanes

- 95% of its energy out of the region : some local oil & thermal

Energy strategies in Paris-Ile France Region

Presentation

- 1.The international and national engagements
- 2.The Paris Region energy inventory: IAURIF workshops
- 3.The main stakes in the Region for an effective change
- 4.Energy consumption scenarios by 2050
- 5.Main strategies carried out at regional and local levels



Energy strategies in Paris-Ile France Region

1.1. International engagements

United Nations

- 1992: Framework Convention on Climate Change in Rio
- 1994 : The Convention enters into force
- 1997: the Kyoto Protocol sets legally binding objectives for industrialized nations to reduce their greenhouse gas emissions by 2008-2012

EU

Within the framework of the Kyoto Protocol, the European Union has committed to reducing its greenhouse gas emissions by 8% by 2008-2012. The necessary initiatives have been distributed among Member States.

France is playing its part by committing to stabilizing its emissions and limiting them to 565 million tonnes of CO₂ equivalent per year by 2008-2012.

1.2. France national regulations and actions

2000 -2004 -2005- 2006 : National programme against the climate change

- target :facteur 4 (more than Kyoto)
- Regulations

National climate plan Plan

National plan of quotas of GHG emission

Priority of actions : buildings and transportation

- **2005 Loi POPE: orientations for a new energy policy**
- **2006** : implementation of the European regulations on the thermal performances for real estate : 15% more every 5 years

Energy strategies in Paris-Ile France Region

In France and Paris region, many regulations, actions, financial incentives, and climate plans are carried out

The goal is to reduce the gas emissions by 4 from here 2050. It is what is called « factor 4 »



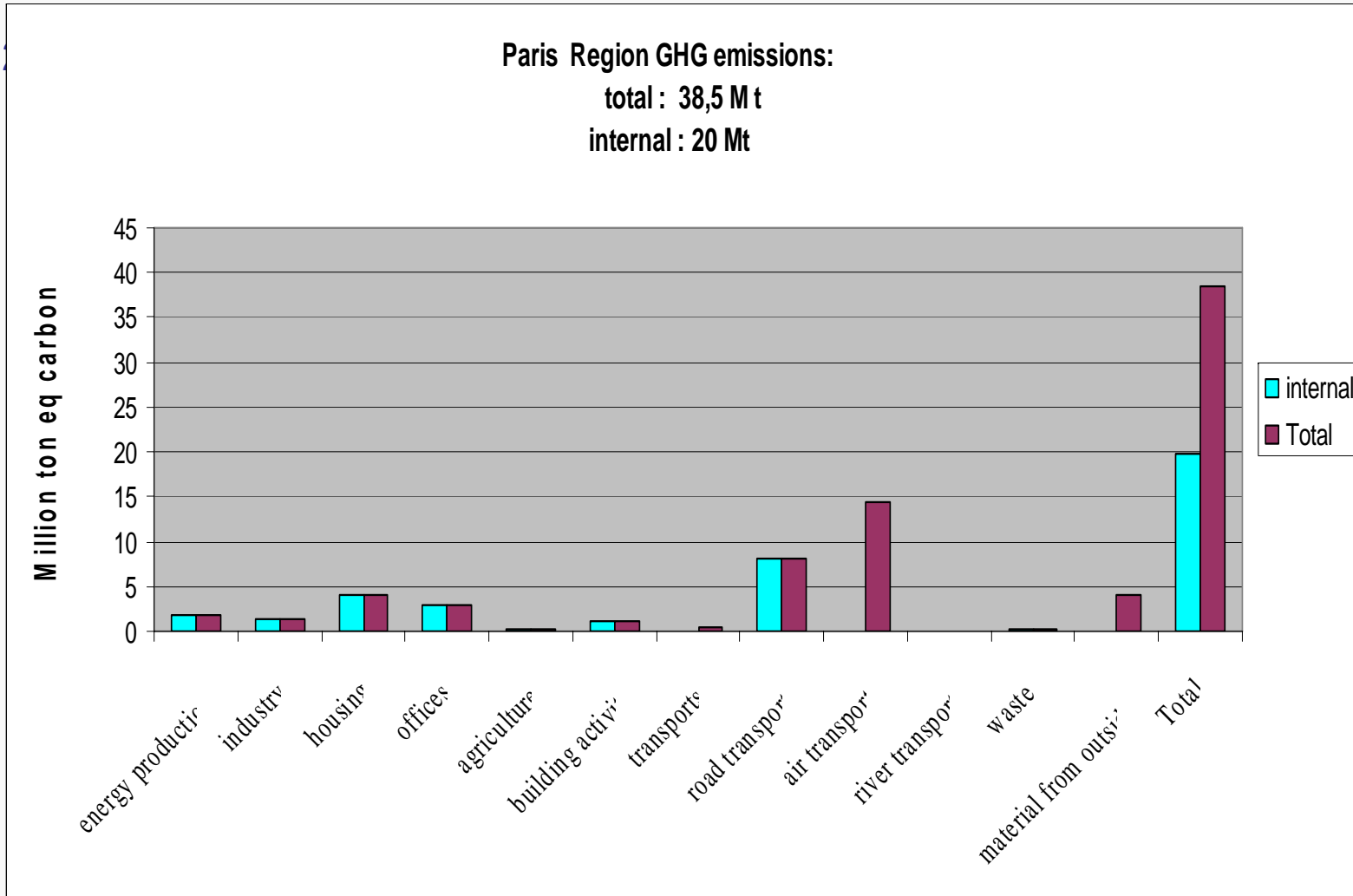
1.3. Means

- A national agency for energy : ADEME (www.ademe.fr) :
- Tax incentives in 2006 for housing and cars
- Labels energy for cars and housing
- Incenting purchase cost for renewable electricity

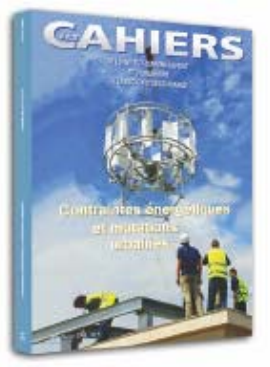
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Experimental carbon footprint inventory (IAURIF/ADEME)

Responsability in climate change as a metropolis & a strong place of air traffic (1st item)



A better knowledge : Paris-Ile de France Region inventory



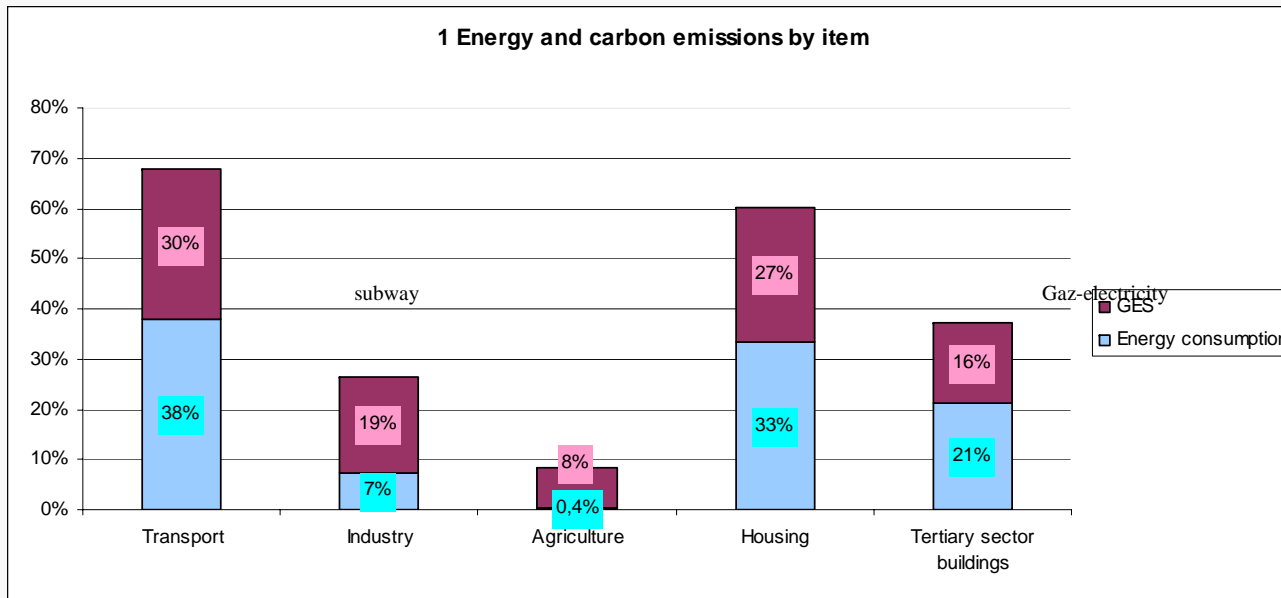
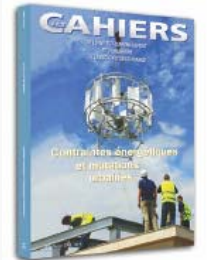
7 workshops on the regional energy constraints

1. Energy risks and related climate issues change
2. Energy challenges in housing and service sector buildings in IDF
3. Energy challenges facing passenger transport in IDF
4. Energy production and consumption in IDF
5. Spatial planning : urban form, density and energy issues
6. Spatial planning: rural areas and local production
7. Opinions and behavior-essential for change

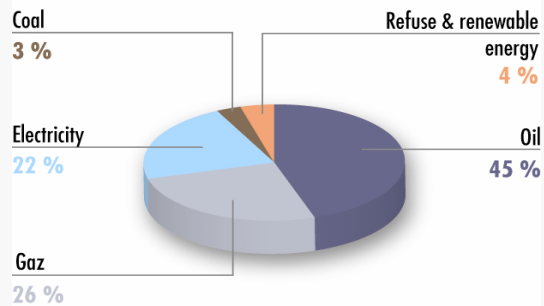
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A REGIONAL INVENTORY OF ENERGY CONSTRAINTS

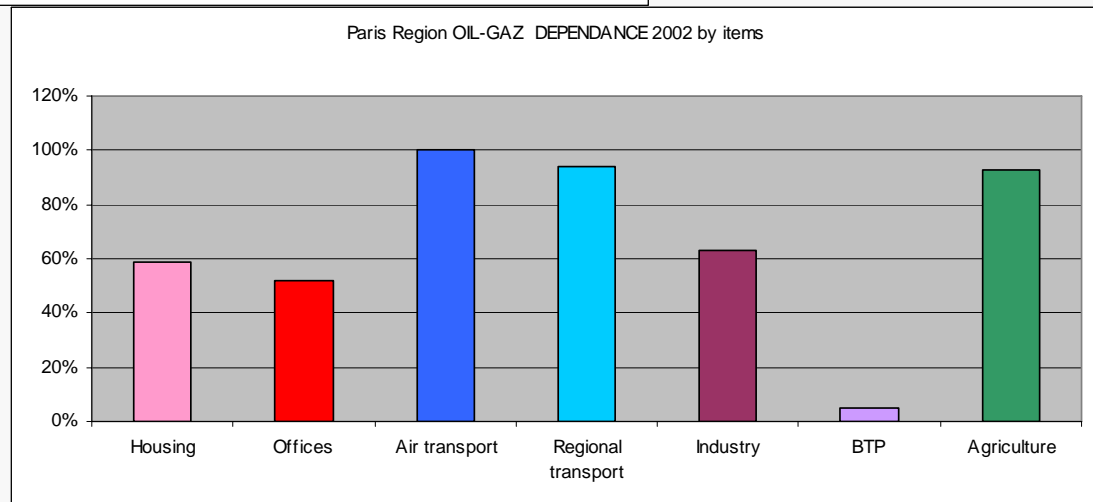
IAURIF workshops general survey



Final energy consumption (22,3 M tep) in 2003



From : ARENE/ADEME

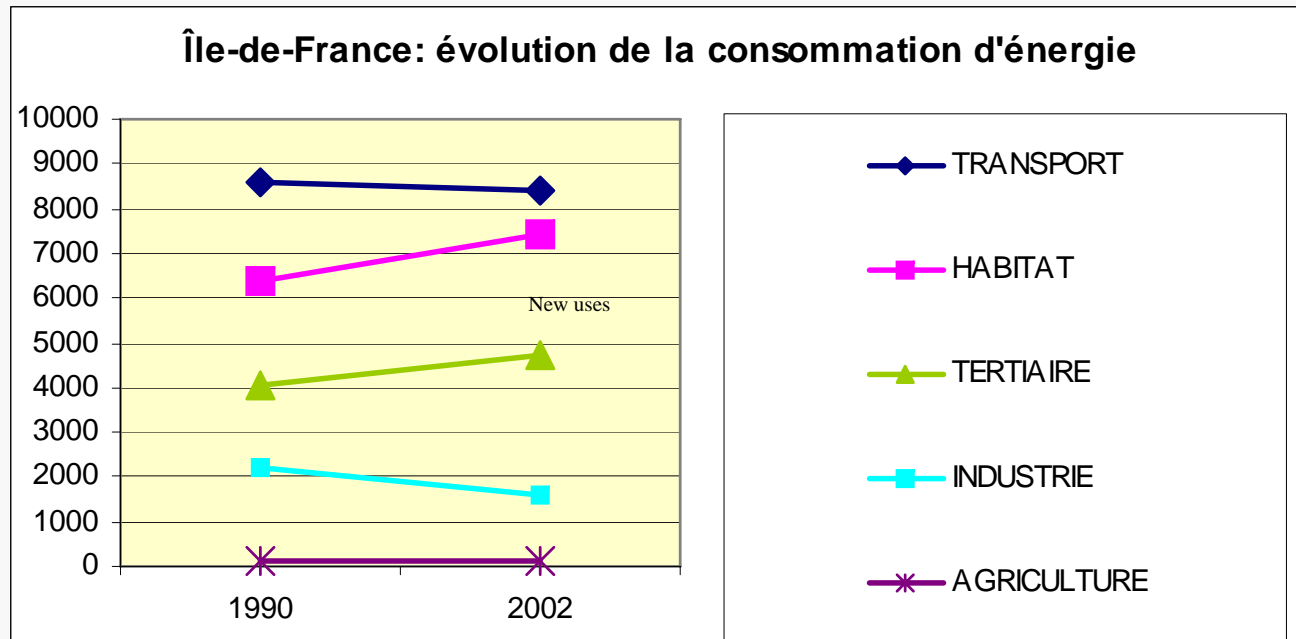


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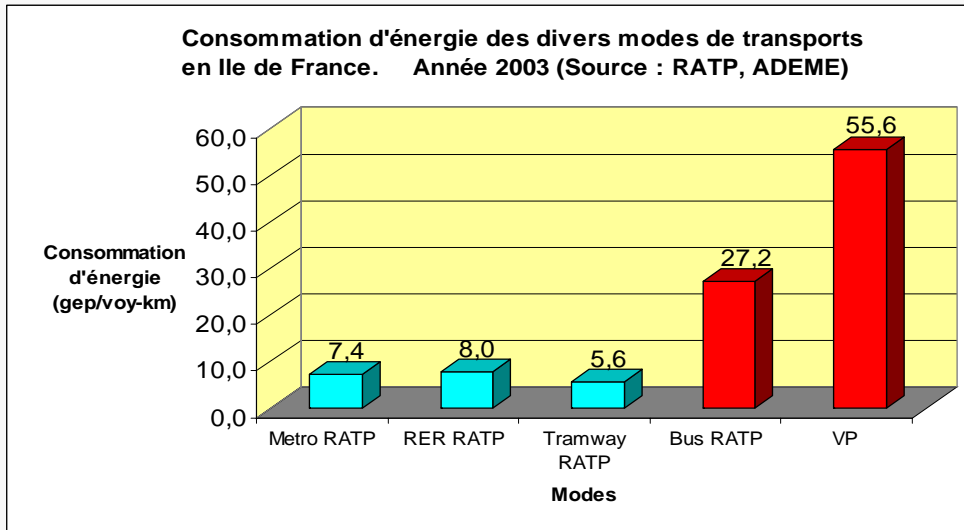
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Energy consumption in Paris Region

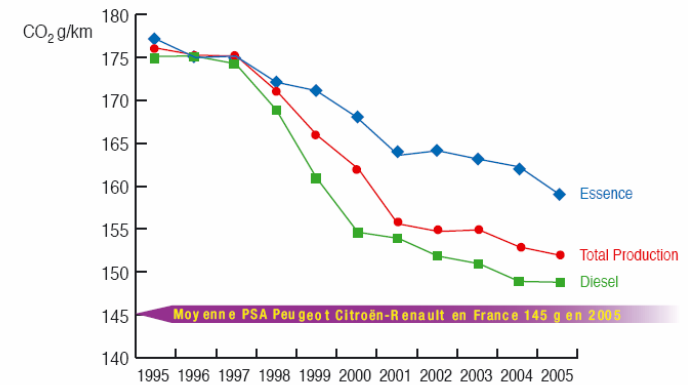
21,3 millions de Tep en 1990, 22,3 en 2002...



3.1 The main stakes : Regional transport



Evolution du taux moyen d'émissions de CO₂ des véhicules neufs vendus en France

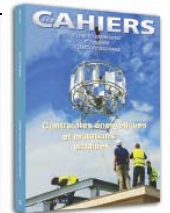


Source ADEME.

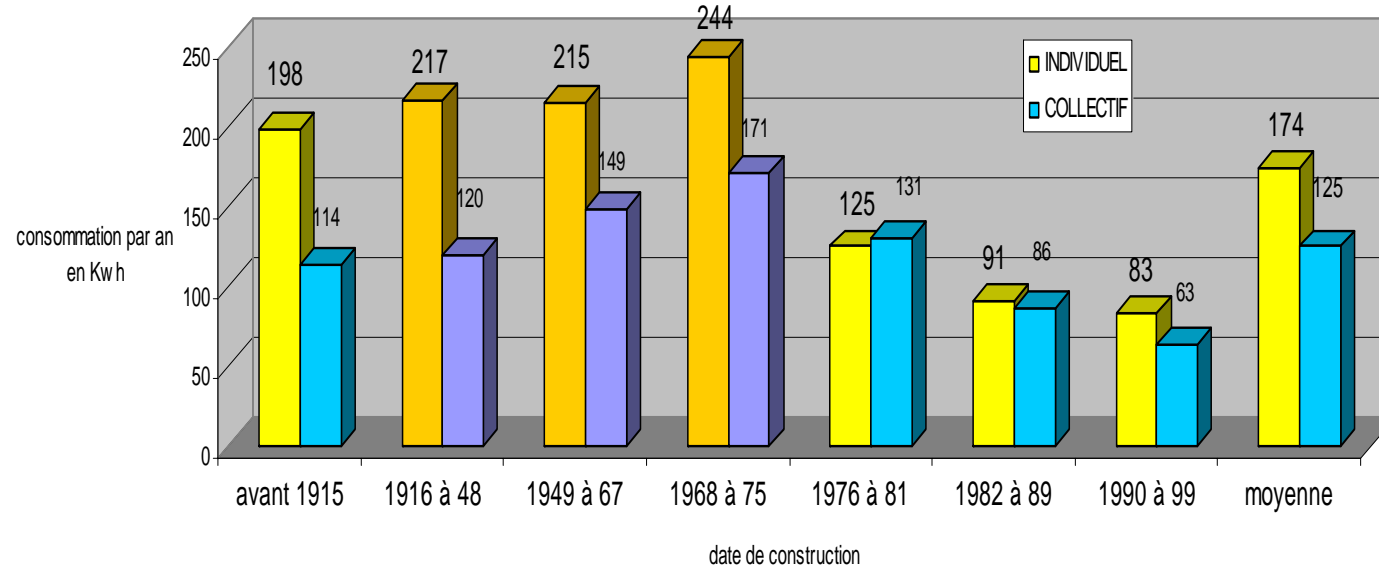
Cars renewal	50% stock	95% stock
Without régulations	13 years	24 years
vehicule inspection & new standards	- 4 years	-7 years

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3.2. The main stakes : housing and real estate



heating energy consumed in housing according to the construction period building



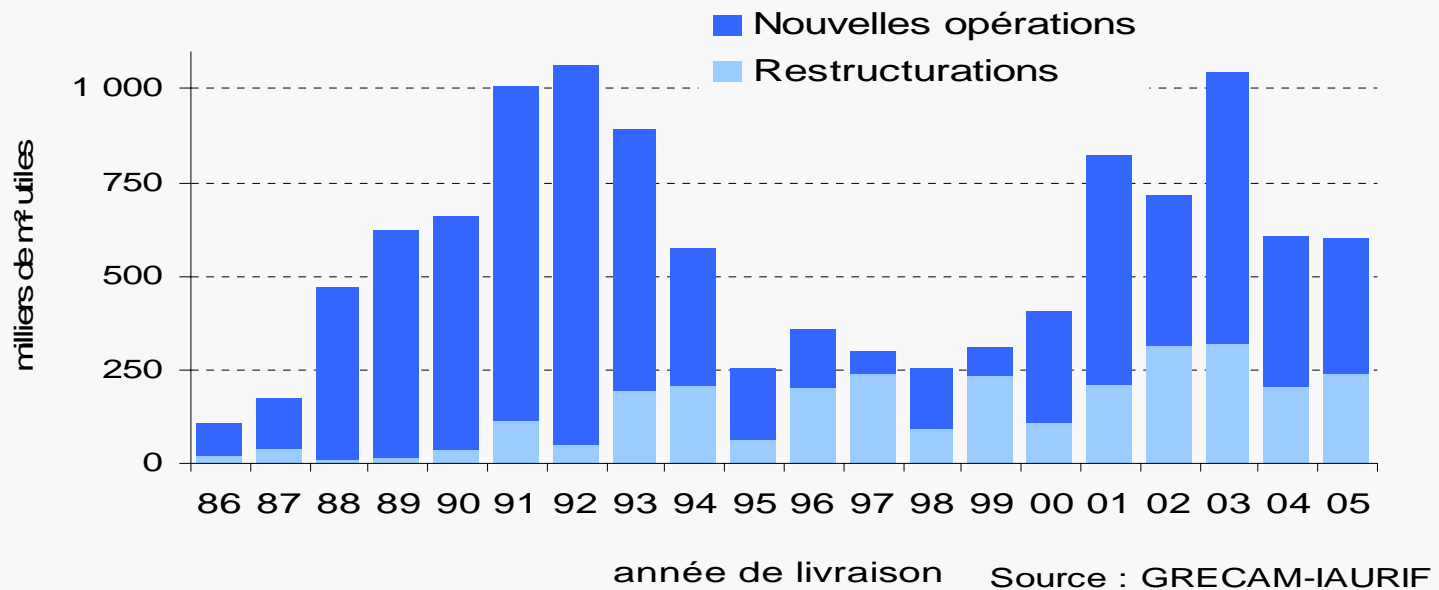
- Efficiency of thermal regulations since 1975
- The priority : rehabilitating the 3 700 000 flats built before the first thermal standards (1975)

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3.3 office buildings « self renovation »



Part des surfaces neuves de bureaux issues de restructurations d'immeubles existants
(opérations lancées en blanc >5000 m²)



More & more « Global cost »

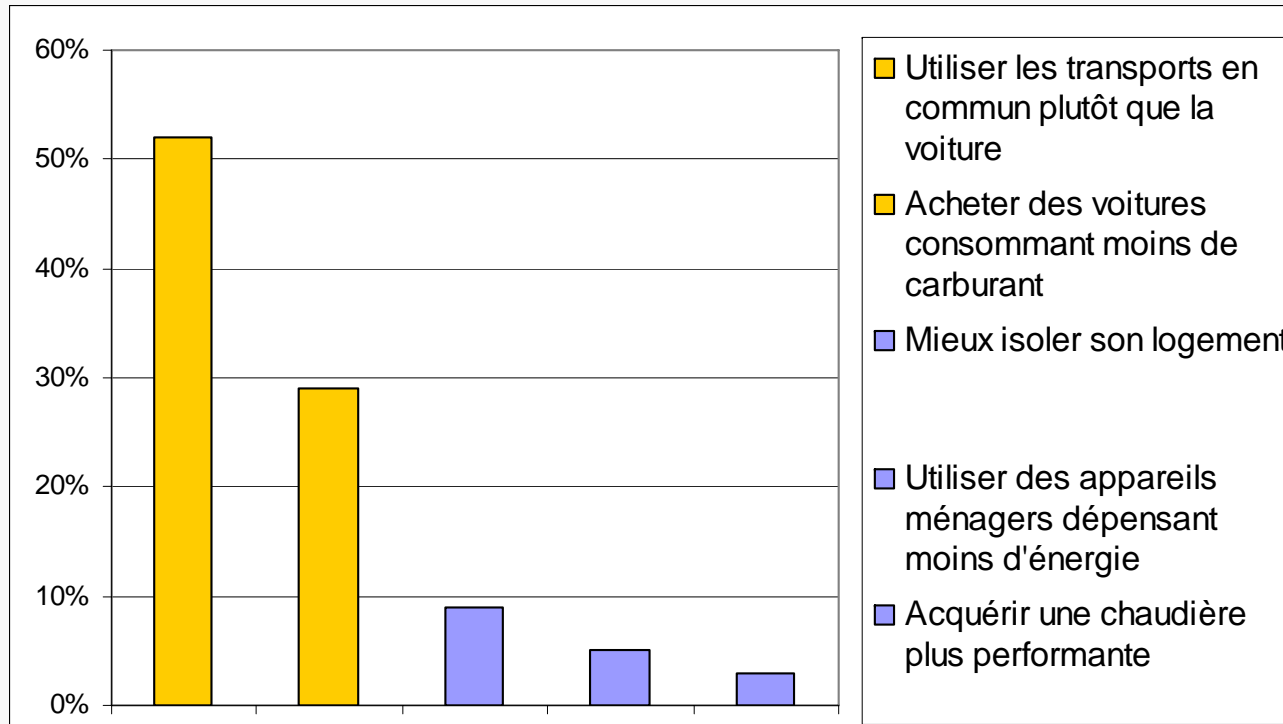


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3.4. A challenge : sweeping change of behavior



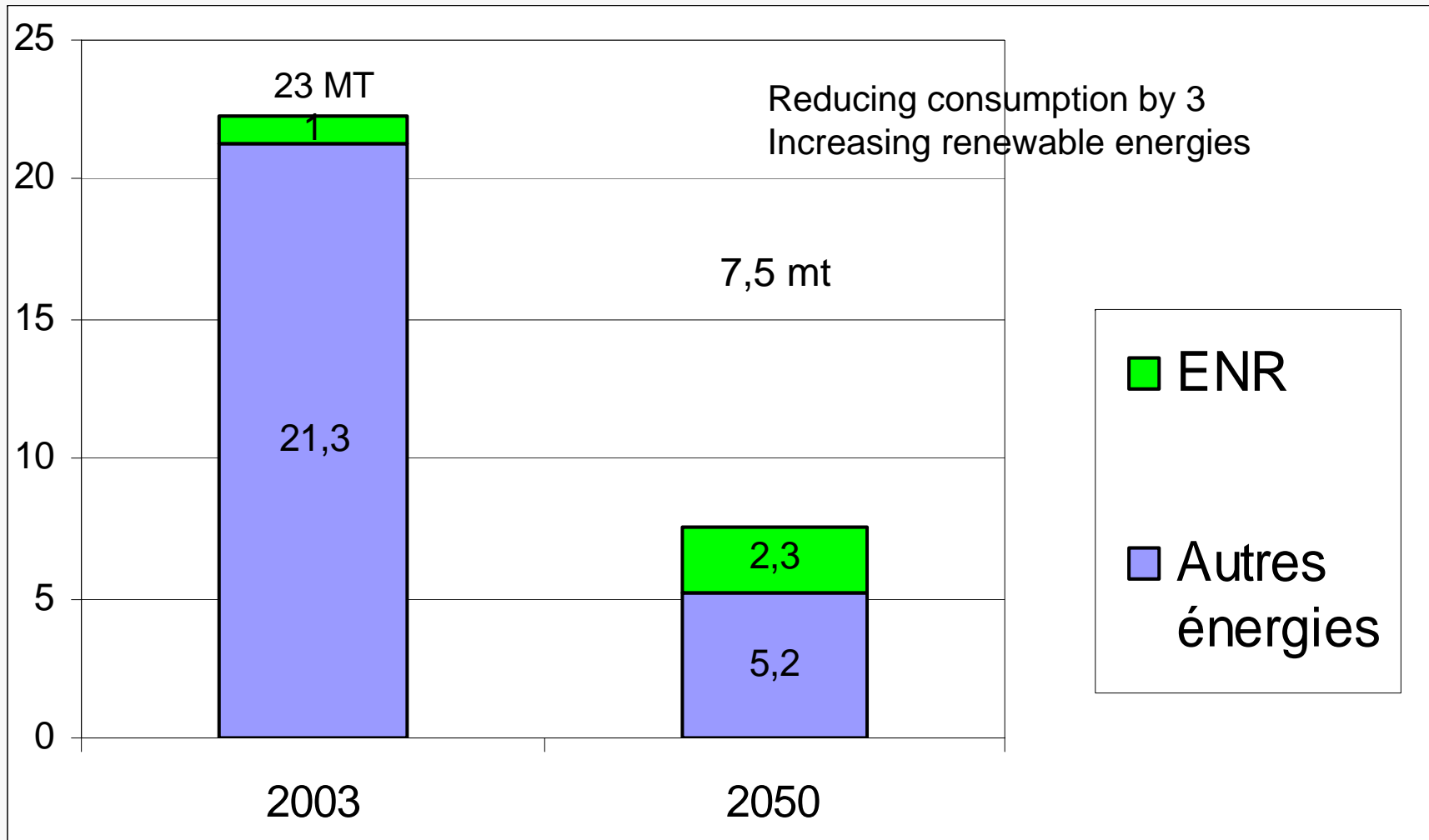
What do people are ready to do



Towards a New vision of life

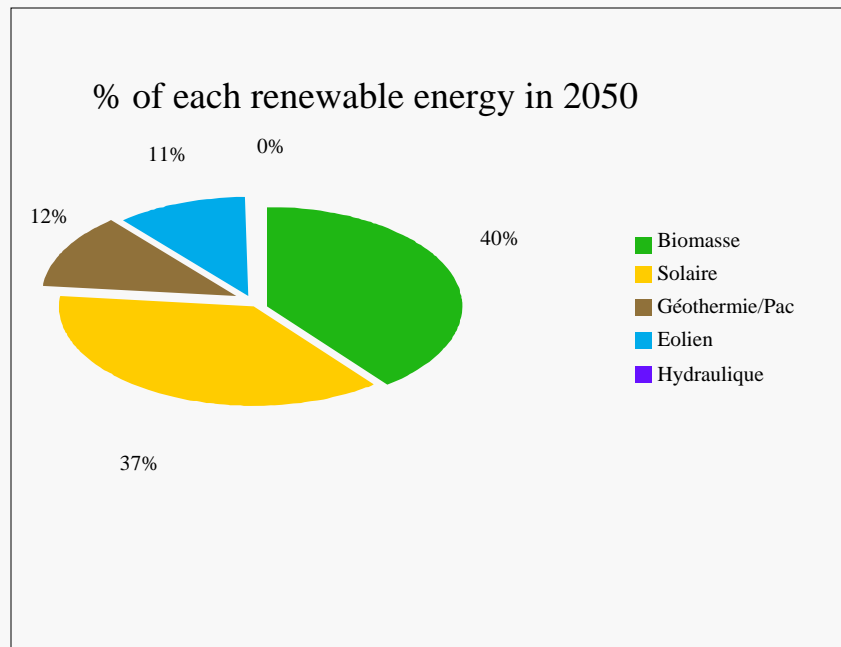
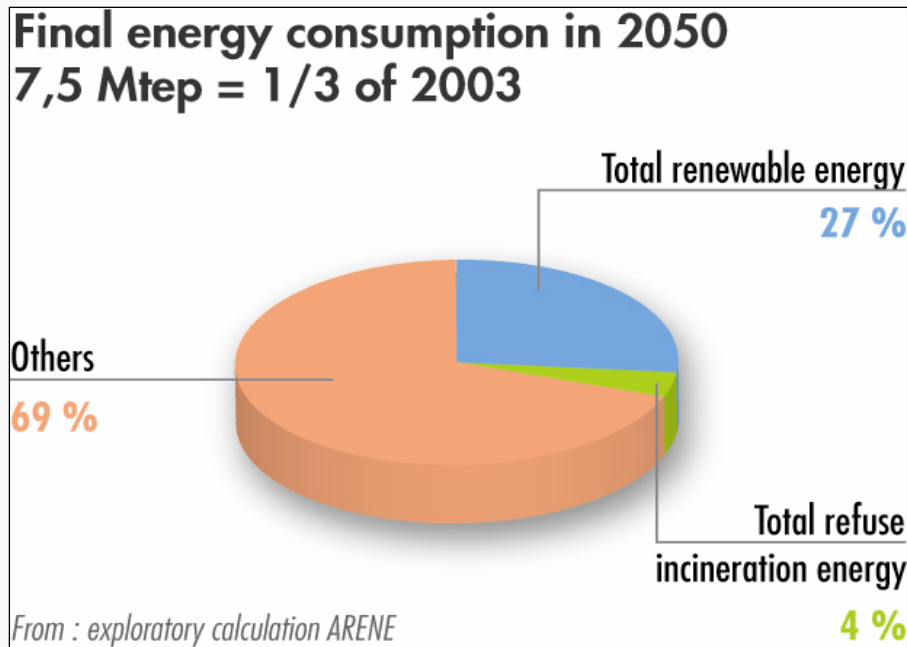
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4.1. Factor 4: How to do it in Paris Region Ademe-Arene scenarios of renewable energy in 2050



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4.2. Ademe Arene- Scenarios of renewable energy in 2050



- Région
- Départements : 8
- Municipalities : Paris , 2 million & 1281 other communes
- Eco-districts

5.The main actions supported by the Regional Council

- Permanent actions conducted by its Agencies for Energy (Arene) and for Economic Development (ARD) in the field of renewable energies
- High schools
- Priority to public transportations
- Energy plan
- The new Ile de France Region Master Plan (SDRIF)

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Reducing energy consumption in high schools

- 470 high schools
 - 30% of french high school students (400,000)
 - 6 million square metres
 - Consumption : 70 kilo-tonnes of equivalent oil per year, (10% of the Region's domestic consumption)
 - Carbon footprint corresponding to 21,000 domestic residents
- 10% renovated or built every year
- Since 2004, all of the major renovation and construction operations have an eco-building approach : HQE & certification
- 50 operations performed with formation of the users
 - Extra cost : 10%
 - Energy saving 35% to 50%
- New objective : buildings zero energy & low consumption

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➤ Encouraging energy saving in social housing and tertiary buildings:

Concept of « owner/landlord plans »

Social housing :

• 24% of region dwellings
(1,1 Million on 4,9)

• 150 companies

1st results (june 2001- november 2007)

- **23 000** eq dwellings, belonging to **9** local governments or social owners : avoid emission of 21 000 t CO₂/Year. (mainly geothermic)
- On Study : **23** owners of **13 000** eq/ dw , avoiding 11 000 t de CO₂/y
- plan 2006
 - 120 studies
 - on work : solar thermal panels, photovoltaic installations , extension of the networks of heat geothermic or connected to factories of incineration (like Creteil: 8 000 residences equivalents, allowing to save 5 200 tons of CO₂ per y,

More ambitious projects in study (boiler rooms connected to networks of heat)

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An exemple : OPAC de la Ville de Paris

Building owner: OPAC of Paris

Program European LIFE.

Description: This pile supplied with natural gas from the public network will produce electricity with direct sale at EDF and recoverable thermal energy for the heating of the residences.

Financing

Région : 28%

LIFE : 23%

Etat -ADEME : 9%

OPAC: 39%

5610 éq. Residences = 9% OPAC residence stock.

- replacement of the obsolete boilers
- installation of solar collectors for the production of domestic hot water,
- connection with the network of urban heating (CPCU)
- installation of 5 power stations of small - cogeneration of which a fuel cell (experimental operation thermal angers



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the Energy plan

2 deliberations of 2001 & 2006

Subsidies for :

- energy consumption reduction
- renewable & local energy : surveys, diagnostics, and work



Objectives 2006-2010

- 35 000 m² / year of solar panels
- 30 000 more dwellings connected to the networks of heat (geothermics, biogaz , refuse incineration)
- Wood : objective : 300,000 tonnes of wood
- Green electricity : 30 installations (wind, cogeneration, photovoltaic) and 100 private individuals (photovoltaic)
- Subsidies to vegetalized roofs

Ressources et exploitation de la géothermie dans le coeur d'agglomération

Géothermie profonde

Exploitableté de l'aquifère du Dogger

- très favorable
- favorable
- défavorable
- sillons marneux

Exploitation actuelle

- exploitation de l'aquifère du Dogger (géothermie profonde)
- périmètre de protection
- projet de forage géothermique

Géothermie de surface

Pompe à chaleur sur aquifères (PAC)

- PAC pour résidentiel / tertiaire (chauffage et climatisation)

Réseau de chaleur Eau Surchauffée

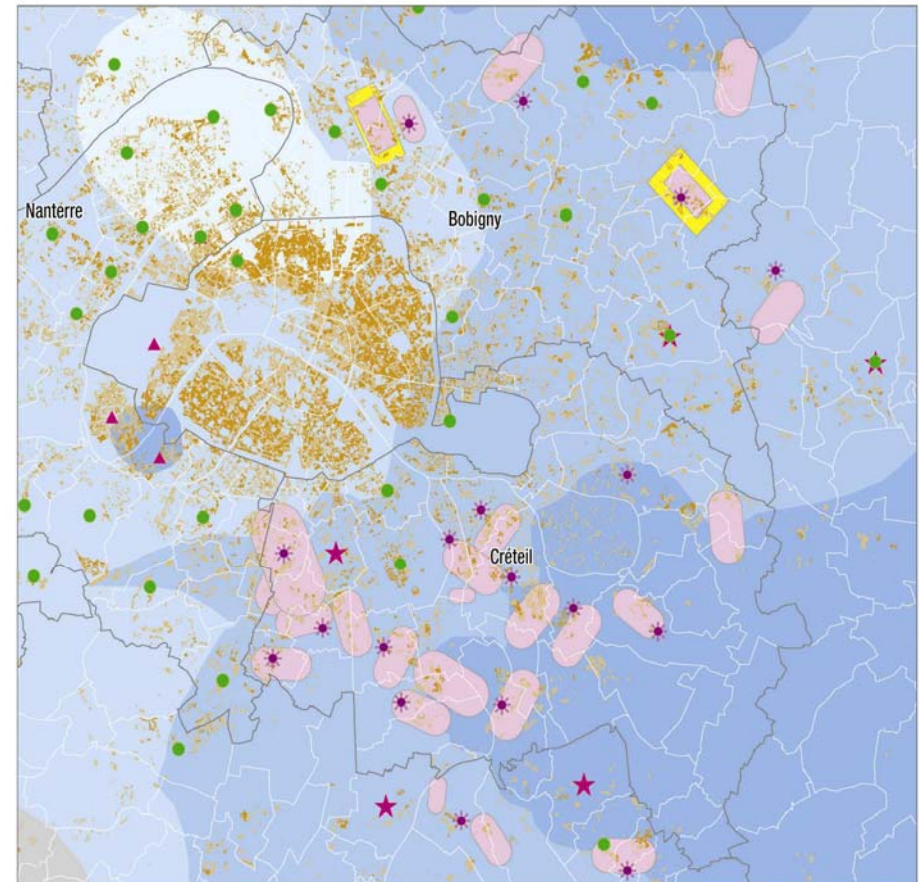
- réseau de géothermie
- autre réseau de chaleur

Densité de population à l'îlot*

- de 250 à 500 hab./ha
- supérieure à 500 hab./ha



Sources : DIRE - IDF situation janvier 2006.
ARENE, ADEME, BRGM, * Not MOS 2003.
Exploitation Iaurif.
© IAU - 2006



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First assessment

750 individual installations funded

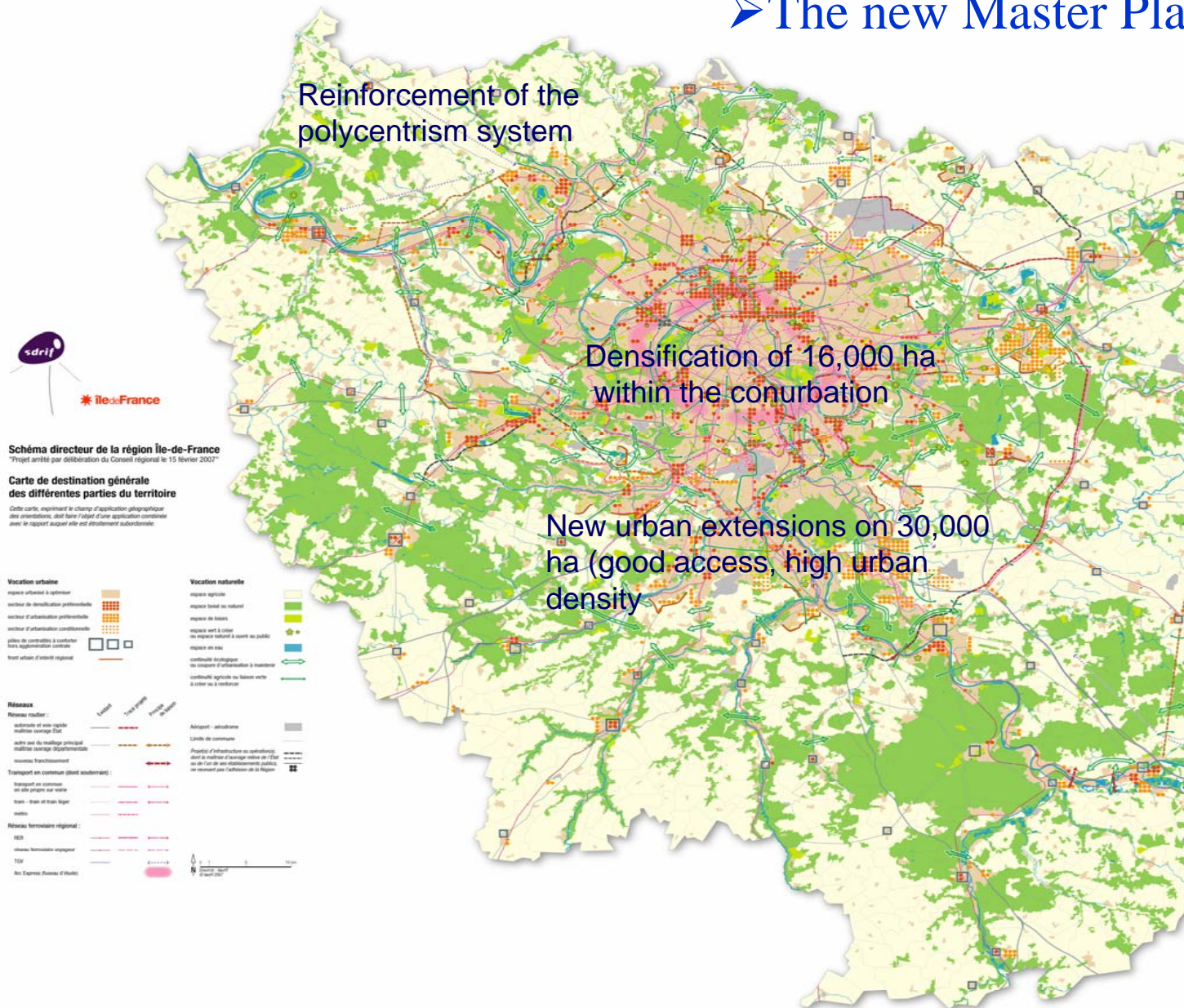
- 34 photovoltaic
- 363 individual solar-fired heaters,
- 277 geothermal heat pumps,
- 30 vegetalized roofs
- 77 solar systems compounds.

Plan for a sustainable region by 2030

- **the concept of a robust region.**

- **An overall response: a city compact, thrifty in terms of resources, particularly space and energy; and a means: densification**

➤ The new Master Plan



Regional call for tender for "New Urban Districts (high density, access, HEQ, low energy & water consumption)

What is realistic ambitious



Paris: 2 million Inhabitants
9,5km*11 km



Paris climate plan

<http://www.paris.fr/portail/Environnement>

The objectives

The Town of Paris engages on a step of factor 4 from here 2050 (compared to 2004).

1.Exemplarity on its own competences

- 30% of reduction of the power consumptions of the municipal park and the street lighting
- 30% of its power consumption coming from renewable energies.

2.The territory :

- 25% of energy reduction of consumption
- 25% of power consumption coming from renewable energies.

Paris

First step : : Budget 2008

215 M€ for the implementation of the Climate plan.

- **Parisian properties** : plan of renewal of the boiler rooms , replacement of the luminous points, divide by three the power consumption of the 660 schools of Paris.
- **Social housing** : rehabilitation to reduce the power consumptions
- **Renewable energies** : Study for the development of solar and the éolien in Paris
- **Eco-districts** : ZAC of Rungis (13è district) , ZAC Batignolles (17e district)
- **Municipal transport**: reduction of 10% of the fleet of municipal vehicles over three years and acquisition of hybrid vehicles and with weak emission
- **Public Transport** :prolongation of Météor, additional cycle & bus tracks , extension of the tram
- **Public purchases eco-responsible & generalization of the biological food in the canteens**
- **Management of waste**: objective of reduction of waste of **5% in 5 years and 15% from here at 2020**; increase in the performances of recycling
- Development of a pole éco-industry
- Adaptation to the climatic changes: **continuation of the plan of vegetalisation of Paris** : creation of Green the Balcon garden (Paris 10th) , the garden on the cover of the ring road , new operations of vertical vegetalisation, plantation of more than 300 new trees in the streets of Paris in 2008
- **Communication and sensitizing**: creation of a Parisian Agency of the Climate ,information campaigns of the public



Under development : Regional climate plan

IAURIF Partnership research program

- Regional partnership : Observatory of energy (ARENE)
- Partnership with State :
 - The residence rehabilitation and the resources of Franciliens (PREBAT)
 - Economic and new energies (PREBAT)
 - Management of space and energy (PREBAT)
 - The regional assessment carbone® regional (Ademe)
- EU: The EUCO2 80/50 project (METREX)



Thank you for your attention

Geneviève Danchin, Project manager

Metrex Washington conference on climate change April 9th-12th 2008