

METREX the network of European Metropolitan Regions and Areas



First US – European Conference of Metropolitan Regions and Areas
Sharing Knowledge and Developing Joint Action to Address Climate Change

Day 1 and Day 2 issues



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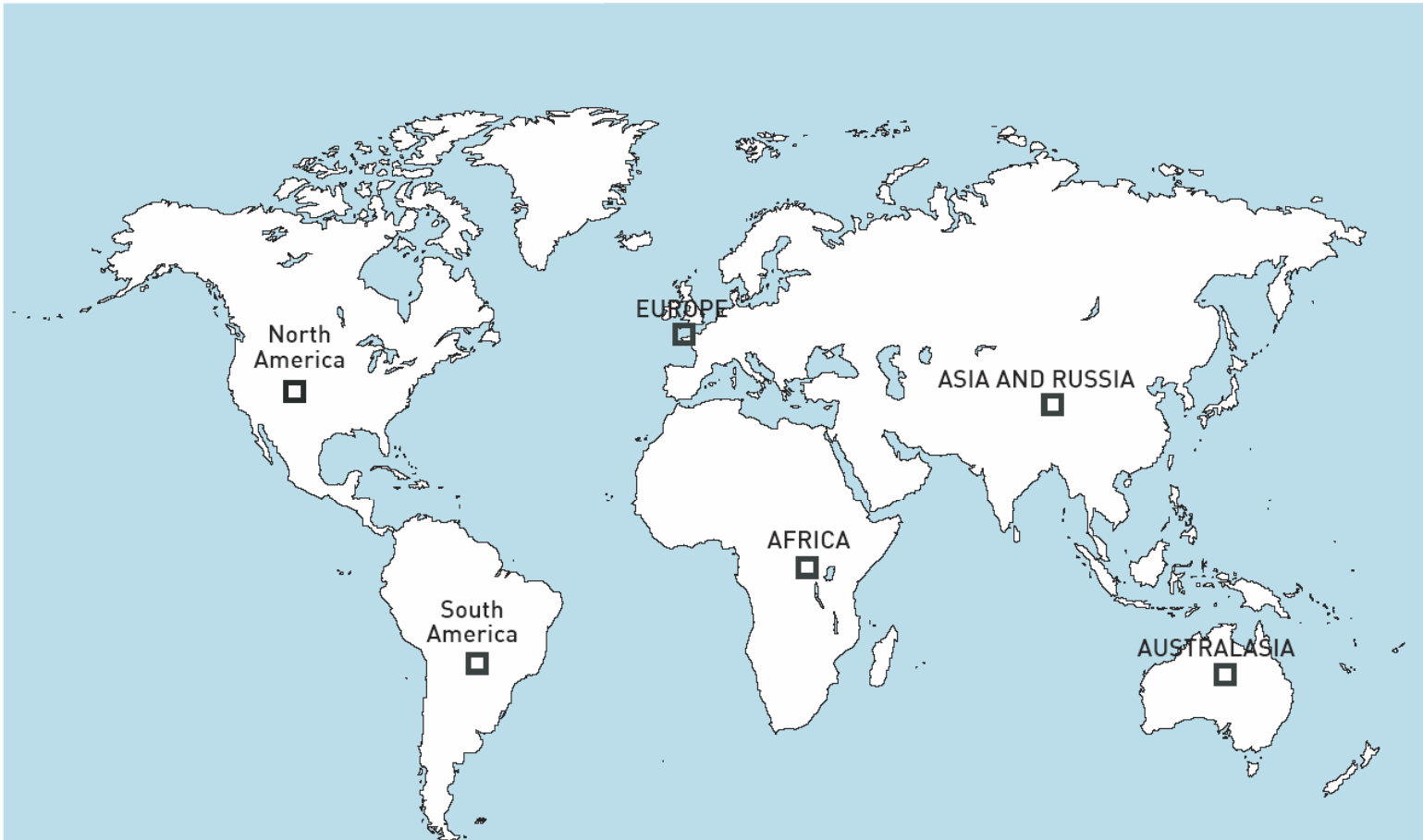
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Context

- 450 ppm GHG levels/2 degrees Celsius warming?
- 80% reduction in 1990 EU GHG levels by 2050
- Longer-term move away from the stored energy of fossil fuels to renewable energy
- Mitigation through demand reduction and supply alternatives to fossil fuels
- Demand reduction through efficiency measures and behavioural change
- Transition measures to reduce fossil fuel impact, such as carbon capture
- Supply alternatives include the daily solar sources of energy (radiant heat, wind/wave /currents from temperature differentials, biomass), geothermal, nuclear
- Collection, storage, transmission issues
- Electricity and hydrogen future?
- “Wedges” approach to mitigation using a spectrum of measures with the necessary collective effect

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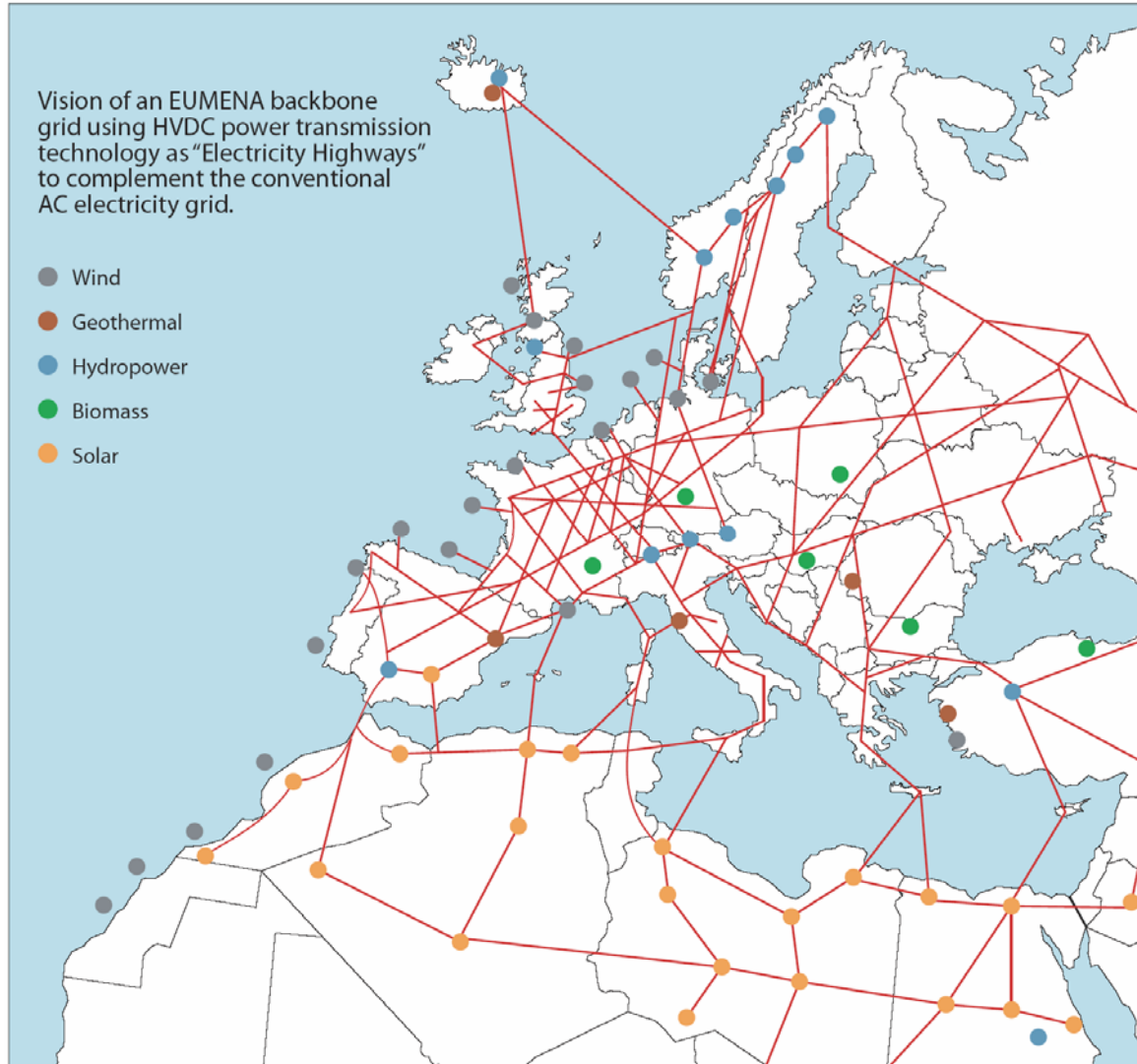
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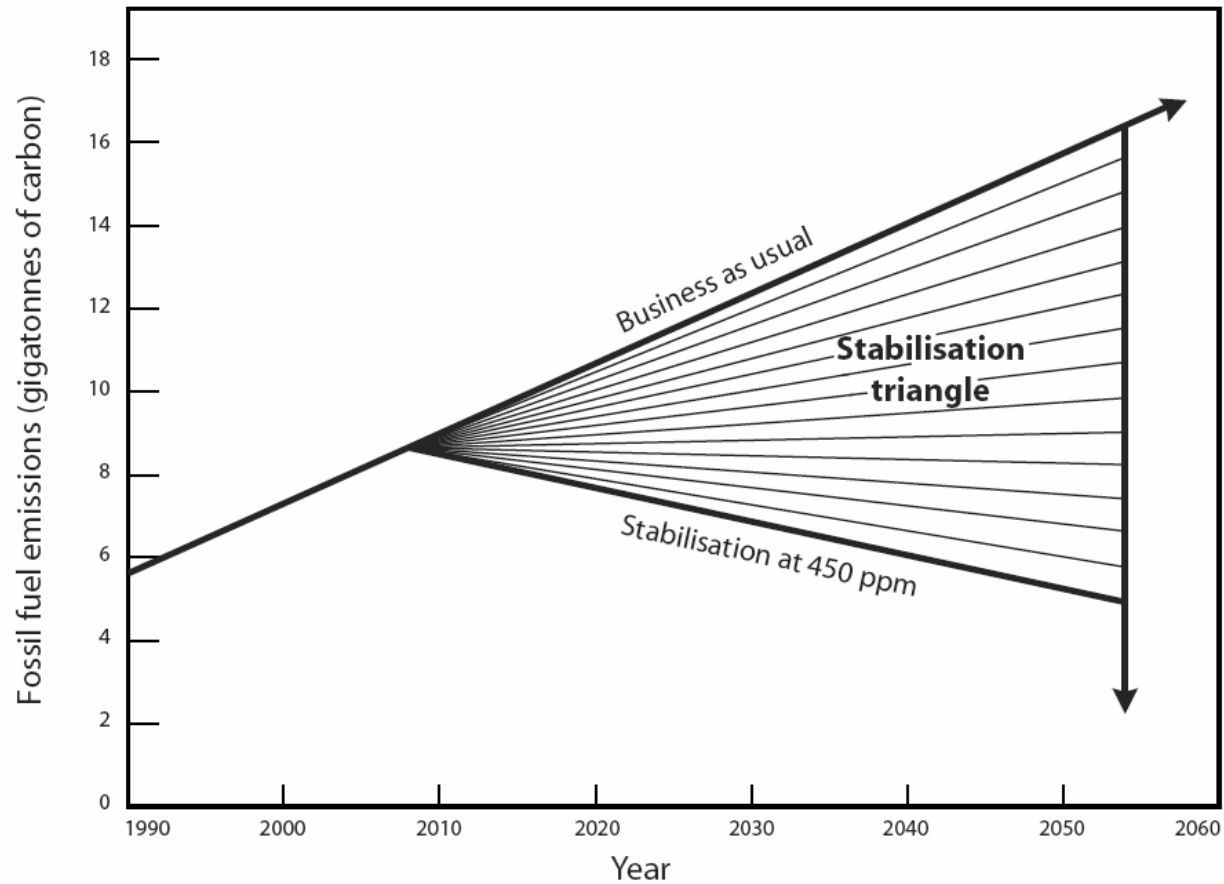


If all the sunlight falling on each of the areas inside these six squares could be completely harvested, that would supply the entire world's energy needs. (Source: Nathan Lewis)

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The 'wedges' strategy for reducing future greenhouse emissions from the 'business as usual' path to stabilisation at 450 ppm of carbon dioxide. (Multiply by 3.67 to convert gigatonnes of carbon to gigatonnes of carbon dioxide)

Source: Walker & King, 'The Hot Topic 2008'



The wedges strategy for GHG reduction

Source David King - *The Hot Topic* (taken from *Stabilisation wedges - solving the the climate problem for the next 50 year with current technologies* - Pacala and Socolow, Princeton University USA)

International dimension

- 1 Double the fuel economy of 2 billion cars
- 2 Halve the annual average distance travelled by 2 billion cars
- 3 Cut carbon emissions from buildings and appliances by a quarter
- 4 Capture and store carbon dioxide from 800 gigawatts of coal power plants
- 5 Capture and store carbon dioxide from 1600 gigawatts of natural gas power plants
- 6 Build 2 million¹ megawatt wind turbines (about 50 times what we have today)
Note that 12 megawatt turbines are under development.
- 7 Stop felling of tropical forests and plant 300 million hectares of new trees in the tropics
- 8 Double the current amount of nuclear power
- 9 Quadruple the amount of natural gas used to generate electricity by converting coal fired power stations (since gas produces fewer GHG emissions than coal)
- 10 Increase the use of bio-fuels in vehicles by 50 times today's level
- 11 Use low-tillage farming methods on all the world's cropland
- 12 Increase the global area of solar panels by a factor of 700



EUCO2 80/50 Interreg IVC project - European metropolitan climate change/urban change

Mitigation measures and subsidiarity

International - metropolitan advocacy

Foresight

- 1 UN Framework Convention on Climate Change (Kyoto Protocol+)
- 2 EU Carbon Trading Scheme
- 3 Contraction and Convergence

Supply

- 1 Carbon capture and sequestration research and development
- 2 Clean coal technology and development (EU project)
- 3 Hydrogen economy research and development
- 4 Fusion/fission research
- 5 Bio-fuels (carbon-neutral biomass)

Demand

- 1 Carbon pricing - the EU CTS (Carbon Trading Scheme)
- 2 Industry and commerce in the EU CTS
- 3 Surface transport in the EU CTS
- 4 Aviation in the EU CTS
- 5 Maritime transport in the EU CTS
- 6 Product standards - emissions, efficiency and recycling
- 7 EU vehicle manufacture fuel efficiency/emission agreements
- 8 Short haul aviation (under 400km) to high speed trains
- 9 Carbon off setting?



National - metropolitan advocacy and action

Foresight

- 1 EU Carbon Trading Scheme
- 2 EU Energy and Climate Change targets
- 3 National climate change strategies - mitigation and adaption
- 4 Support for process specific mitigation technologies for GHG emitting industries (for example, cement, ammonia, iron and aluminium)
- 5 Support for crop and grazing land management to increase soil carbon storage and minimise emissions
- 6 Support for peat soil restoration
- 7 Support for forestation, reforestation and forest management
- 8 Support for dedicated energy crops (for example, forestry)

Supply

- 1 Energy supply and distribution efficiency (for example, electricity grids)
- 2 Support for the development of renewable energy sources - wind, solar, geothermal, hydro
- 3 Renewables obligations for suppliers (UK 20%)
- 4 Support for of micro-renewable energy sources
- 5 Support for carbon capture and storage (CCS)
- 6 Support for a hydrogen energy supply system - using gas or electrolysis (hydrogen gas supply system for heating and transport)
- 7 Substitute natural gas for coal in power stations
- 8 Consider nuclear power

Demand

- 1 Feed-in tariffs for renewable energy
- 2 Taxes on fossil fuels
- 3 Building Regulations - energy and water efficiency
- 4 Building Regulations - CO2 zero homes and buildings
- 5 Energy efficiency - improved metering and billing
- 6 Home insulation programmes
- 7 Short haul aviation (under 400km) to high speed trains
- 8 Renewable transport fuel obligations (RFTO) - bio-fuels/hydrogen
- 9 Public transport powered from renewable energy sources
- 10 Vehicle taxation to promote emission reductions
- 11 Traffic management and road pricing
- 12 Personal carbon rationing
- 13 Public procurement policies (awareness raising)



Metropolitan - action

Foresight

- 1 Metropolitan vulnerability to climate change - adaptation
- 2 Metropolitan contribution to climate change - mitigation
- 3 Green house gas emissions assessments and inventories
- 4 Green house gas emission reduction scenarios
- 5 Low or zero carbon metropolitan vision
- 6 Integrated metropolitan strategy - including adaption and mitigation
- 7 Awareness raising and stakeholder involvement

Supply

- 1 Renewable energy supply sources
- 2 Micro-renewable energy sources - hydrogen fuel cells and CHP
- 3 Combined heat and power (CHP) - developer obligations
- 4 Micro-renewable energy sources - solar and wind
- 5 Waste to heat and power generation

Demand

- 1 Reducing the need to travel - centres and multi purpose journeys
- 2 Reducing the need to travel - location and linkage of traffic generators
- 3 Reducing the need to travel - higher density, mixed use urban form
- 4 Enabling walking and cycling - metropolitan networks
- 5 Integrated public transport - connectivity and accessibility
- 6 Integrated freight transport - connectivity and accessibility
- 7 Traffic management and road pricing
- 8 Public transport management and dedicated routes
- 9 Public transport powered from renewable energy sources
- 10 Water supply powered from hydro, solar and wind energy sources
- 11 Waste treatment powered from biogas sources
- 12 Waste minimisation, recovery and recycling
- 13 Waste energy recovery (for example, landfill methane)
- 14 Micro climate management - Reducing the urban heat island effect
- 15 Passive and active solar design for heating and cooling
- 16 Public procurement policies (awareness raising)



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Metropolitan dimension

- Global/EU/nation state context
- Metropolitan Greenhouse Gas (GHG) emission assessments (sources/significance)
- Effective mitigation measures at the metropolitan level
- Metropolitan mitigation scenarios, with stakeholder interests (energy, economic and social affairs, environmental, transportation, spatial planning etc.)
- Metropolitan mitigation strategy - relationships to other corporate strategies
- Measurement of the effectiveness of mitigation measures
- Monitoring and review processes
- Transatlantic Metropolitan Mitigation Benchmark - what to do.
- How to do it will be for individual metropolitan areas and tailored to their circumstances

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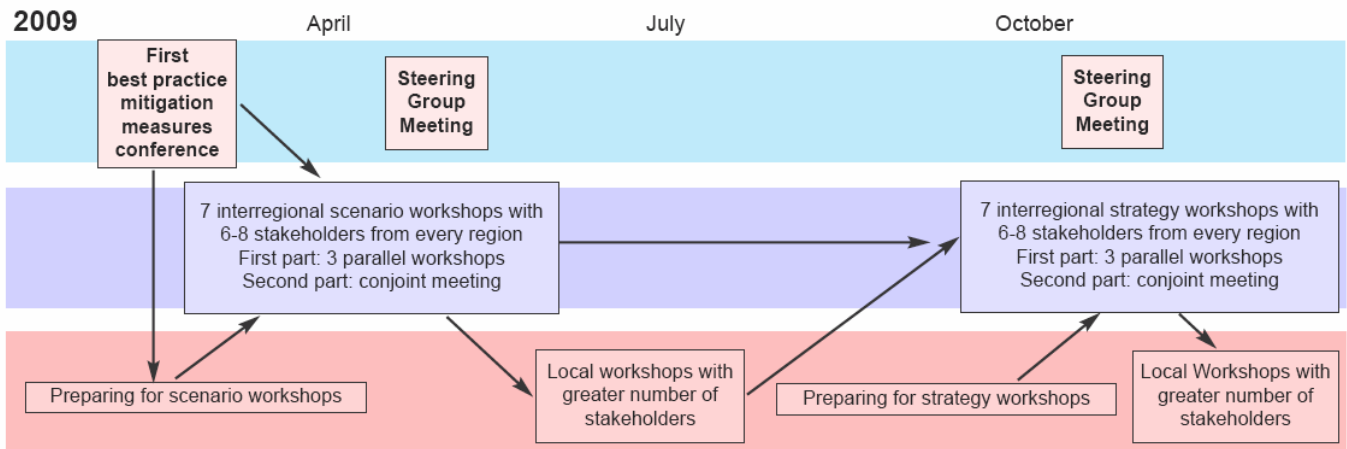
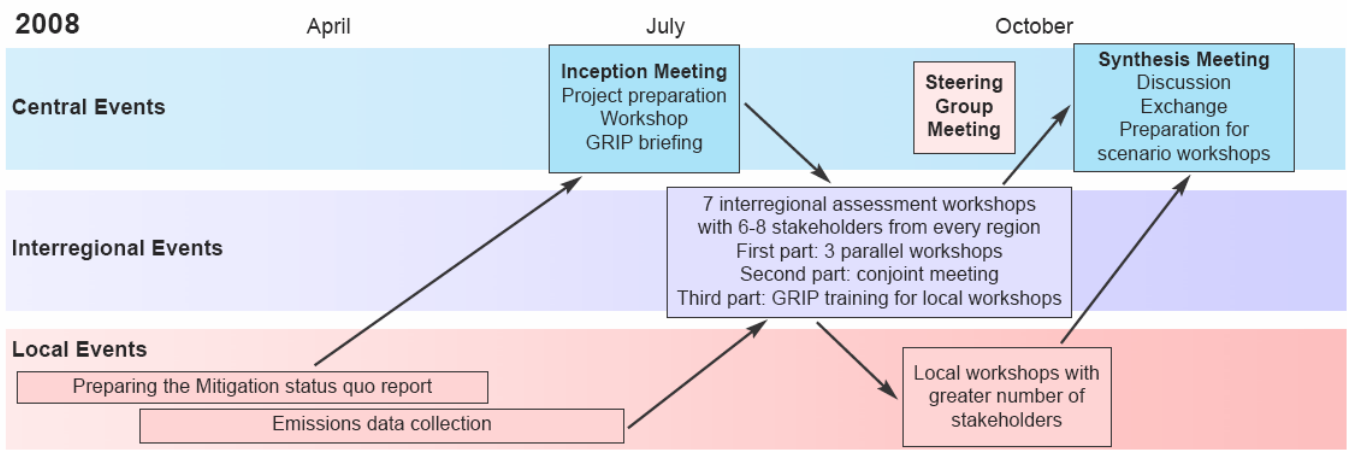


EUCO2 80/50

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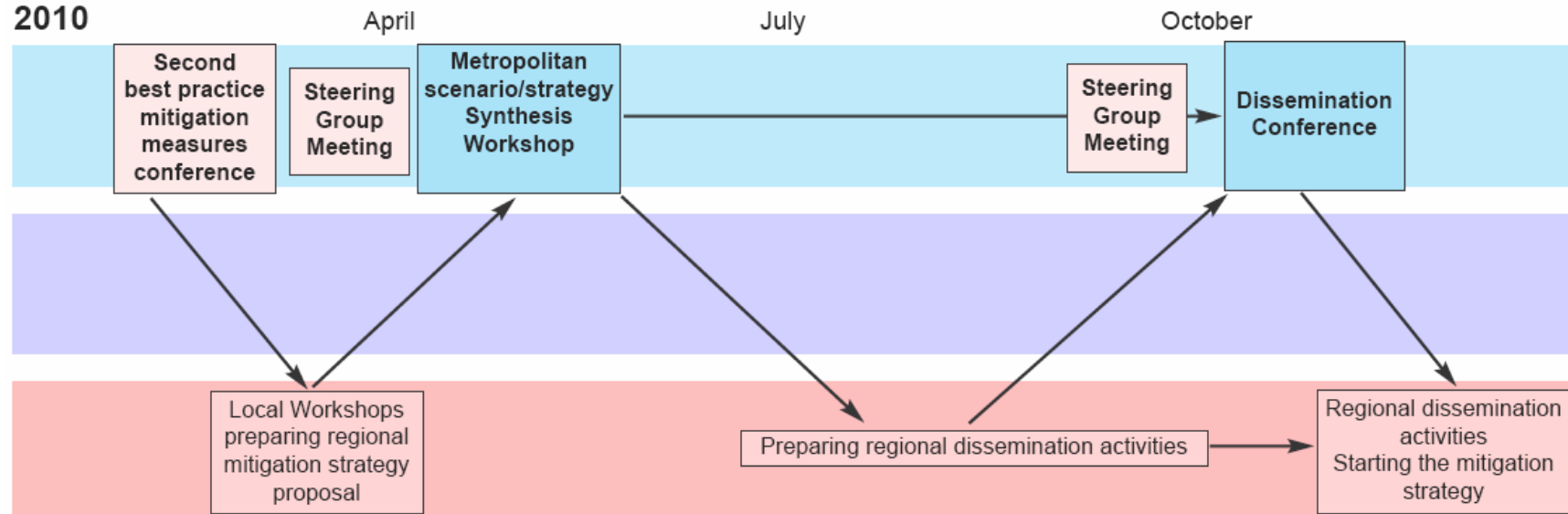
Project Timetable and Mitigation Groups



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2010



Seven mitigation areas represented in the steering group together with Hamburg, METREX and Practice partners Stuttgart and Helsinki

North	West	Central West	Central	Central South I	Central South II	South
Stockholm Helsinki Oslo	Rotterdam SCM Porto	Paris Frankfurt Stuttgart	Glasgow Bruxelles Hamburg	Veneto Torino Ljubljana	Emilia-Rom. Nürnberg Genova	Madrid Napoli Athens

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