

PURPLE TOPIC PAPER Number 1

Climate Change and peri-urban areas

Introduction:

Peri-urban development is one of the fastest growing land uses in the EU. The objectives of multi-functional land use and social cohesion need to be fitted to the objectives of climate adaptation **and** mitigation.

In this short paper, PURPLE members have highlighted a number of ways in which peri-urban regions are likely to be particularly vulnerable to climate change. We have also developed an adaptation strategy agenda specific to peri-urban regions, as well as exploring linkages between adaptation and mitigation. We conclude that the nature of the climate change challenge in peri-urban areas requires more effective policy integration which takes account of economic, political, social and cultural issues.

Peri-urban areas accommodate a rich mix of economic activity and functions – food production, service and logistical industries, residential development, landscape for recreation. These functions are all important for ensuring future economic success and quality of life, but their juxtaposition poses a particular challenge for planners and policy makers in the development of appropriate climate adaptations.

Many of the pressures (social, economic, political and cultural) and responses for peri-urban areas identified in this paper are in conflict or trade-off.

We also pose some specific questions for policy makers.

We recognise this is a huge and complex topic. PURPLE therefore proposes to develop an on-line resource using our website www.purple-eu.org where we can present the arguments in more detail, share experience, showcase current initiatives and innovative project work, and develop new strategies and solutions.

1. Climate impacts in peri-urban areas include:

- **Urban pressure:** encroachment and expansion of urban populations is a feature of peri-urban areas and results in more soil sealing, growing demand for resources (e.g. water), expansion of transport, waste and other infrastructure. These already have negative impacts on quality of life, health and the natural environment.
- **Lack of space:** peri-urban areas are crowded in terms of settlements, industry, economic activity and infrastructure. Climate Change impacts will increase the pressure on available space with the need to accommodate necessary adaptation and mitigation measures (such as water retention, sustainable energy and increasing green surfaces).
- **Agriculture and food production:** climate change will impact on food production and food security and supply. Peri-urban regions, close to large populations will have a particularly important role to play in the future in feeding Europe's growing urban populations.
- **Droughts and extreme heat periods:** the urban heat island effect will overlap physically into peri-urban areas, impacting upon the ecology of soils, freshwater, vegetation and habitats. The effects

of the urban heat island are predicted to drive housing, employment and leisure use out of cities into peri-urban areas.

- **Flooding and extreme weather events:** flood plains and water retention areas for cities are traditionally sited in peri-urban areas. High land values and pressure for development cause such areas to be built on and artificially surfaced, thus increasing the vulnerability to floods and storms.
- **Sea level rise & salt water incursion:** impacts upon coastal or estuarial areas, which are often peri-urban and in close proximity to high quality farmland, industrial plants, or urban infrastructure.
- **Soil erosion and landscape structure degradation:** experience from some Mediterranean areas shows that urban pressures can speed the abandonment of traditional farming means, and the collapse of historic drainage and irrigation systems. The result is that many landscapes, sometimes directly adjacent to urban areas, can collapse into dust in just a few years.
- **Invasive species and habitat decline or fragmentation:** this is linked to all of the above: it is particularly pertinent in peri-urban areas that are often cut through by roads and under pressure from housing, industry and infrastructure.

2. An adaptation agenda for peri-urban areas

Adaptation measures should become part of regional policy, incorporating the specifics of the cities and the surrounding peri-urban areas within one whole integrated strategy covering inter-connected areas across the whole city region. This is both a policy and governance issue. The principle of *integrated catchment management* which crosses policy and economic boundaries has now been accepted in the EU Water Framework Directive. To respond fully to the climate adaptation agenda, we need to extend this to an *'integrated climate management'* approach – including topics such as green infrastructure, soils, habitats, landscape management, localised agricultural practice, local energy and waste management, and so on. Specifically, in peri-urban areas we need to look at:

- **Redesign of the built environment** towards a more responsive, low impact pattern of buildings and spaces. This applies at various levels from individual house to city-region.
- **Protection of critical infrastructure against flood and other extreme events:** many major infrastructure functions – transport, water, energy, waste, minerals, forestry and heavy industry – are sited in peri-urban areas. Protection strategies will need an ecological approach as much as heavy engineering.
- **Avoidance of high flood risk areas:** taking a focused approach to flood risk management, and following an 'ecosystems services' approach. This demands an integrated form of cross-boundary governance and fiscal structure, which in peri-urban areas often needs to be strengthened.
- **Green infrastructure:** open space design, multi-functional land use, and ecological connectivity in the urban and peri-urban environment. This includes 'breeze pathways', non-motorized transport routes and freshwater resilience planning.
- **Sustaining peri-urban agriculture and food production:** it will be necessary to test and develop new crops and production methods, to promote the sustainable



management of resources, including soils, shorter supply chains and cradle to cradle systems.

3. Linking adaptation and emissions mitigation in the peri-urban environment:

- **New forms of renewable energy and distribution:** while much can be sited in remote rural areas, this often creates conflicts with landscape and nature conservation. Energy plants can be community owned or controlled as part of a decentralised energy system, and there will be demand for peri-urban locations as a result. There are also **other forms of “clean” energy** that need less space, like *solar energy* - there is still huge potential roof surface that could be used; *biomass energy* - bio-fuel of the 2nd generation uses the ‘waste’ parts of biomass production to generate energy; *wind-energy* - smart combinations of land use on ‘brown’ land can reduce the demand for additional space.
- As oil prices rise, and carbon policies strengthen, there will be increased policy pressures for **higher urban densities and clustered settlements**. Populations in peri-urban areas, closer to urban services and employment, are projected to continue to grow, bringing increased pressures to find the most sustainable settlement and transport patterns to accommodate this.
- At the same time, there is public demand and a desire on the part of policy-makers to create **attractive and high quality urban communities**, to avoid outward migration: much of this effort will focus on the peri-urban areas, where large populations already live by choice.
- **Carbon neutral transport and mobility:** there is a need for infrastructure and strategies which enable more sustainable mobility patterns in peri-urban areas for commuters and businesses etc.
- Protection of **carbon sinks and storage capacity**. While the majority of this can be quite remote, there will be a demand for peri-urban landscapes to contribute to carbon conservation.

4. The capacity of peri-urban areas to adapt to climate change: a positive message

Peri-urban areas contain both urban and rural characteristics and are thus vulnerable to climate change impacts of both types. Is this all bad? Not necessarily, because these same areas are ideal locations for innovation and experiment in terms of adaptation and mitigation. They are:

- Dynamic (many are economically very successful)
- The locations for valuable resources which can be recognised and can be ‘priced’ due to the vicinity of dense populations
- Well-resourced (people, skills, infrastructure, knowledge centres), and so well-placed for development of new strategies and new markets
- Well-placed to work with cities in practical mitigation and adaptation strategies (eg short food chains, recycling, renewable energy, initiating ‘circles’ of economic activity)

Well-placed and well-resourced to find climate ‘wins’ – opportunities for new entrepreneurs, maximising potential of local food supplies and locally produced goods and services, technical innovation, smarter use of resources (eg water retention areas for recreation).

5. Some questions for policy makers

- ❖ Do we need an integrated energy/mitigation/adaptation strategy for each peri-urban area?
- ❖ Where should this be managed - at local, city, city-region, or regional level?
- ❖ Does this need financial investment from the public sector? Or can it be delivered solely by the private sector (water, energy, waste, transport, housing, landowners, etc)?
- ❖ Do we need territorial carbon markets to help bridge the gap between investment and return?
- ❖ Can we use the model of the Water Framework Directive, which aims for policy integration?
- ❖ Can this be done mainly through land use planning?
- ❖ How best can we retrofit areas which are already in some kind of 'urban sprawl'?
- ❖ Should EU Cohesion Funds be conditional on climate change policy criteria?



6. Next steps

The PURPLE network wishes to promote debate and facilitate the exchange of best practice on this topic.

We would like to hear from other regions, networks and organisations working on climate change strategies in a peri-urban context.

We have made a start by uploading relevant examples, projects, initiatives, and policy and research documents on to our website at:

<http://www.purple-eu.org/publications>

This paper has been produced by the PURPLE network which is working to raise awareness of peri-urban regions in the EU and the issues they are facing.

PURPLE Member Regions: Catalonia, Dublin, Flanders, Frankfurt Rhein-Main, Ile-de-France, Mazovia, MHAL (Maastricht/Heerlen, Hasselt, Aachen, and Liège), Nord-Pas-de-Calais, Randstad, Rhône-Alpes, South-East England, Stockholm, West Midlands and ZealandDenmark.

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Further PURPLE Topic Papers will be available shortly.