



## **Local and regional actions for reduction of carbon footprint**

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## Introduction

### ***Challenges faced by the Atlantic regions***

Four main challenges that regions will have to face in the next decades were identified after reflecting on the future of the European cohesion namely; adaptation to globalisation, demographic change, climate change and the energy challenge.

Globalisation has stimulated increasing trade flows in recent years and these are expected to continue to do so in the future. Demographic change will transform the age and employment structures of our societies, and thus raise important issues of both economic efficiency and inter-generational equity. Migratory pressure will have a particularly strong effect on Europe, due to its proximity to some of the world's poorest regions and to those that are likely to be most affected by climate change and natural resource constraints. Climate change has now become a major concern for the future of Europe. This applies not only to efforts geared towards mitigating increased greenhouse gas emissions and climate change but also towards measures to adapt to the impacts of climate change. The need for secure, sustainable and competitive energy represents one of society's main challenges. Limited supply, increased global demand and the imperative to cut emissions have led to a new realisation of the need to move towards a low-carbon economy in Europe.

These challenges will jointly impact the development of Europe's economies and societies in the coming years. However the different regions of the Atlantic Area will not respond homogeneously to these challenges due to the wide diversity of productive structures across the Atlantic Area: higher sectoral specialisations in the southern countries and greater diversification in the northern countries.

The Atlantic Area is likely to be more vulnerable to climate change than other European regions. Apart from the consequences of climate change, the transfer of population towards coastal zones, unemployment rates and economic issues will directly affect transport organisation and mobility demand. The range of direct and indirect impacts of transport on such population movement and agricultural production changes in the Atlantic Area is likely to be quite large due to the eventual reduction of available land and increased risks of flooding. A two-fold strategy should therefore be implemented in order to face these challenges: A) reduction of greenhouse gas emissions from the transport system and from the production sector, and B) adaptation of the Atlantic regions to the short-term impacts of climate change.

### ***Climate change as a basis for a common strategy in the Atlantic Area***

All countries in the Atlantic Area are now aiming to reduce greenhouse gas emissions in response to the threat of climate change. The key EU and International strategies developed to tackle climate change are: The United Nations Framework Convention on Climate Change, the EU's Sustainable Development Strategy (formerly the Gothenburg Agenda) and the Europe 2020 strategy.

The objectives of the Europe 2020 strategy depend not only on EU policies but also on national policies, which are implemented through national climate change plans: The UK Climate Change Act, the Portuguese National Climate Change Strategy (PNAC), the Irish National Climate Change Strategy 2007-12 and the Spanish Climate Change and Clean Energy Strategy are examples of this open coordination approach. Additionally, the Covenant of Mayors initiative, a movement involving local and regional authorities that have committed themselves to increasing energy efficiency and to use renewable energy in their territories, aims at contributing to the European Union's 20% CO<sub>2</sub> reduction objective by 2020.

The policies targeted at tackling climate change, when viewed from the perspective of the Atlantic Area and of the development priorities of an emerging macro-region, are beyond the simple status of a climate change policy tool. Climate change in the Atlantic Area should therefore be a focus of policy intervention along terms that are applicable to the entire European space. In fact, the phenomena and trends that the climate change strategy wants to tackle affect the European territory as a whole, independent of regional and local diversities. The climate change strategy and policies represent a true opportunity for designing and implementing a new growth and development model for the Atlantic Area.

The climate change approach should be an instrument to help build an Atlantic macro-region with a double vocation, namely; maritime and territorial. Reduction of Greenhouse Gas (GHG) emissions, dissemination of renewable energies, new patterns of mobility and accessibility targeted at reducing the carbon footprint, all require a combination of maritime and land interventions, which explore the close proximity of the maritime façade and the excellence of inland territories. A new competitiveness model for the Atlantic Area can be built without mimicking the priorities and innovation trends of the core European regions. Climate change policies will then become a key instrument to transform diversity in Europe into a growth factor.

### ***The carbon footprint of the Atlantic Area***

Of the five countries with regional participants in the CLIMATLANTIC project, greenhouse gas emissions per person in 2008 were found to be the highest in Ireland, mainly due to its land use practices (Fig. 1). The U.K., with the highest population density, had the highest emissions per unit area.

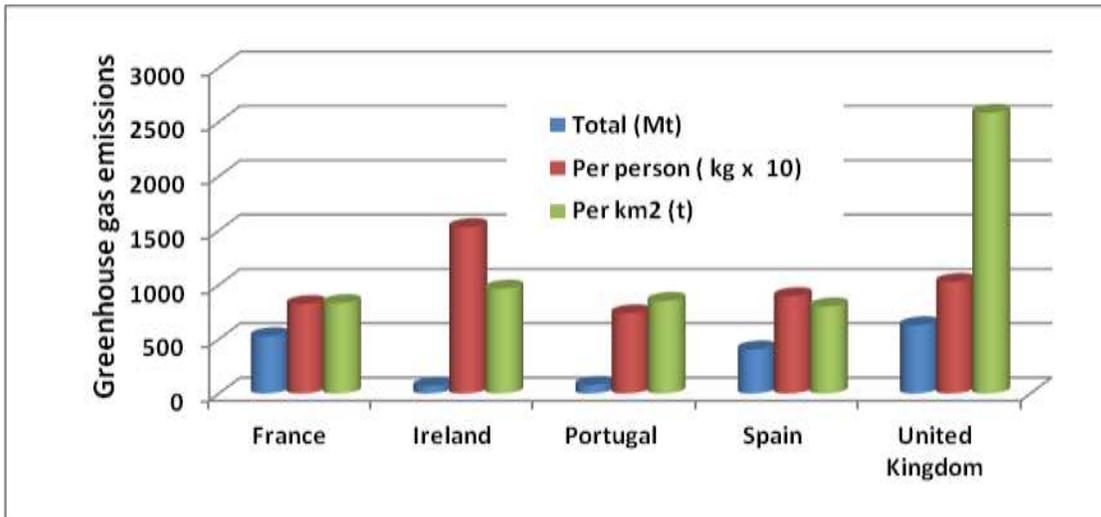


Fig. 1: Greenhouse gas emissions in 2008 per person and per unit area in the countries of the five participating regions.

The U.K.'s large energy industry sector accounts for over 40% of its emissions. The transport sector in France is the biggest emitter. In Ireland, agriculture is responsible for almost one-third of GHG emissions, due largely to its high cattle numbers, poorly forested area and large peatland area. In Spain and Portugal, energy, other industries and transport, account for most of the emissions (Fig. 2).

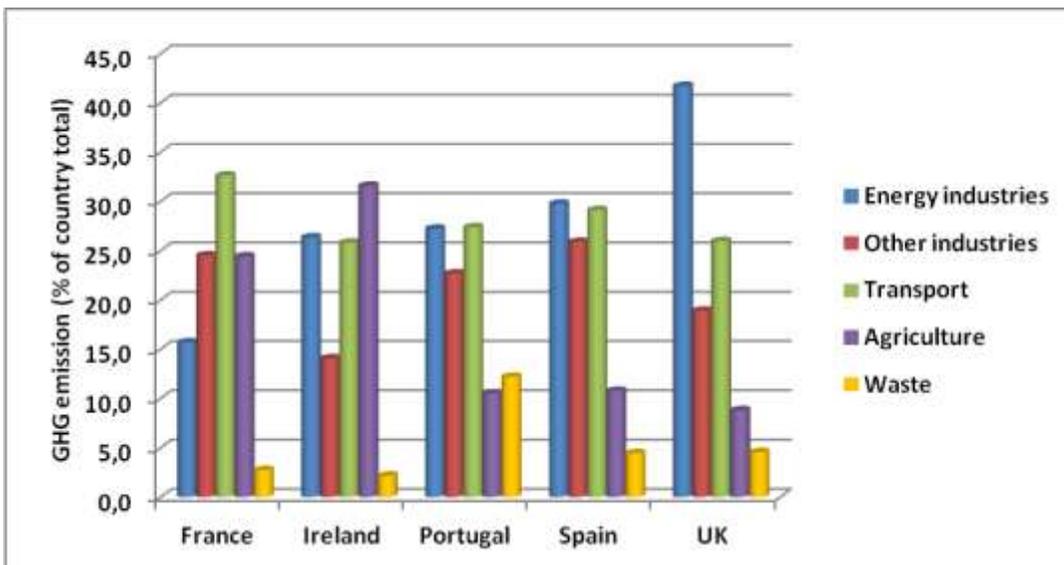


Fig. 2: A breakdown by source of greenhouse gas emissions from countries of the five participating regions.

### ***Aims of the Climatlantic project***

The overall aim of the CLIMATLANTIC project is to foster development of regional and local strategies aimed at reducing the carbon footprint in the European Atlantic Area. The carbon footprint refers to the total amount of greenhouse gases produced directly or indirectly in a given territory to support human activities. It is usually expressed in equivalent tons of carbon dioxide (CO<sub>2</sub>).

Carbon footprint reduction was initially achieved by setting up think-tanks drawn from participating regions, to develop a list of proposals for strategic actions and policy changes. Other actions included drawing up a list of pilot projects to be planned, executed and evaluated in one or more regions. The strategic analyses delivered by the Climatlantic think-tanks were mainly conceived as helpful instruments for key decision makers at the local, regional and European levels.

The CLIMATLANTIC project set up four thematic think-tanks to address key topics where substantial reductions of the carbon footprint of the European Atlantic Area are envisaged. They are a) Energy and b) Mobility, focussed directly on ways of reducing their associated GHG emissions, c) Spatial Planning and d) Social Behaviour, which examine how urban development plans, transport systems and public attitudes may be modified in ways that would lead to GHG reductions. There is a fifth think-tank aimed at developing a strategy for reducing the carbon footprint of the European Atlantic Area using the diagnosis and recommendations defined in the four thematic think-tanks. We are aware that the series of actions and recommendations that arise from the four main topics addressed by Climatlantic should be complemented by further initiatives such as the role of information communication technologies in the reduction of the carbon footprint of the Atlantic Area.

Each of the five think-tanks was coordinated by experts in the field and fed by the corresponding pillar working groups formed by experts who were nominated by the different partner organizations in CLIMATLANTIC.

## **A strategy to reduce the carbon footprint of the European Atlantic Area**

### ***Rationale of the strategy***

The aim of the strategy is to reduce carbon footprint in the Atlantic regions and at the same time increase competitiveness of the productive sectors in them, and thus contribute to economic growth and employment. This strategy, therefore stresses the role of carbon footprint reduction in the territory, as a reliable way to increase the competitive advantage of the European Atlantic regions.

The strategy to reduce the carbon footprint in the Atlantic regions is seen as an opportunity to transform these regions into a competitive growth space, thereby enhancing the socio-economic value of relevant endogenous resources and building a new development trajectory. The synergies and complementarities of this strategy with the Maritime Strategy for the Atlantic Ocean Area proposed by the EC significantly increase its intrinsic value as an opportunity to restore the status of growth space. From this perspective, the strategy proposed in CLIMATLANTIC will strongly enhance the accuracy of the Atlantic macro-region approach which is under preparation.

The carbon footprint approach is also a post-crisis new rationale to guide the integration of territorial public policies. It can further develop the sustainable development approach, by introducing a metric and an operative way to explore synergies and complementarities between the different public policies. Monitoring of the integrated impacts of these different policies will be facilitated through the adoption of the carbon footprint metric.

Additionally, the strategy proposed here should be seen as a leverage factor for a new cycle of co-operation projects between the Atlantic regions. The strategy aims at placing reduction of carbon footprint as a priority intervention axis in all co-operation programmes to which the different co-operation fields should contribute.

### ***Priorities of the strategy***

The priorities of this strategy were derived from the analysis performed by the CLIMATLANTIC think-tanks. They identified ways to improve policies for reducing the carbon footprint in various sectors within the Atlantic Area: public spaces and buildings, residential sector, transport, spatial planning, energy and social behaviour.

In line with the 2020 EU strategy, CLIMATLANTIC identified a global indicator to assess the achievement of the proposed strategy objectives. This indicator was the comparison of the reduction of greenhouse gas emissions in the Atlantic Area from 1990 to 2020.

The seven priorities identified in this strategy are as follows:

1. To increase the use of renewable energy and promote energy efficiency;
2. To improve mobility patterns within the Atlantic Area;
3. To control urban and rural sprawl;
4. To enhance the role of the Atlantic Façade to reduce greenhouse gas emissions at the EU level;
5. To develop education and communication campaigns in order to disseminate the carbon footprint reduction approach of the Atlantic Regions;
6. To foster research and development in order to generate the scientific and technological foundations needed for carbon footprint reduction;
7. To include carbon-footprint-reduction-based projects as a new priority axis in transnational, interregional and cross-border cooperation programmes.

## **PRIORITY 1: TO INCREASE THE USE OF RENEWABLE ENERGY AND PROMOTE ENERGY EFFICIENCY**

The CLIMATLANTIC strategy reinforces the need to design public policies that are focused on saving fossil fuels, enhancing energy efficiency and increasing the use of renewable energy. This priority is in line with the EC 2020 Energy Plan (January 2008) and with the EU Directive 2009/28/EC.

The main producer of GHG emissions in the CLIMATLANTIC regions is the transport infrastructure. Energy use is also significant in homes, commercial/public buildings and industries; emissions from agricultural operations are small except in some rural regions and they are not closely related to energy use.

Regional and local authorities play a direct and indirect central role in promotion and use of renewable energies and energy efficiency measures in their areas of influence. They have direct responsibility for energy use in public buildings, transport fleets, water and waste treatment services, public lighting, etc. and also for opportunities to generate renewable electricity on public sites. They are directly responsible for enforcing planning guidelines and regulations that can facilitate development of renewable energy production activities and the construction of low-energy or carbon-neutral buildings. Indirectly they can promote public adoption of low-GHG practices through demonstrations and can furthermore lobby national government agencies to introduce measures to support renewable energies and efficient energy use. They can also play a part in carrying out resource assessments of the more promising renewable energy technologies in their territory. Given the predominance of GHG emissions from the transport sector, the reduction of these emissions should be the main focus of the strategy.

Another short-term objective for regional bodies should be to maximise efficiency of energy use in buildings, installations and fleets under their control. This would entail a programme of energy use monitoring in every aspect of their operations, followed by planning, implementation and evaluation of energy efficiency measures.

The longer-term strategy of authorities should be to increase their use of renewable energies for heat and electricity production. This needs to be planned carefully to ensure that the most environmentally beneficial technologies are selected and that their installation makes economic sense and would serve as a basis for a demonstration programme.

Authorities should also examine the possibility of using land sites and buildings under their control to generate renewable energy for their own or other use. This may require the development of new structures such as public-private partnerships where the existing mandates of authorities preclude such activity or where financial constraints would be a limitation. With regard to specific renewable technologies that require planning permission, the authorities should examine whether in their role as planners they could further streamline planning and zoning processes to facilitate the development of such technologies. This applies in particular to on-shore and off-shore wind farms, and will also become an issue for ocean technologies when they reach the stage of commercial development. Biomass combustion units also raise issues in relation to controls and limits on their emissions. These technologies are, or will become, important in all Atlantic regions.

Regional authorities should also consider looking into the need for any further studies towards the potential development of specific renewable resources in their region. Much information is already available, but themes such as wave and tidal energy, geo-thermal and solar are reaching a stage of development that may justify further resource evaluation.

In as far as the saving and efficiency modalities are concerned, the priorities of the strategy are:

- to stabilise a set of transparent, sound and feasible fiscal incentives (positive and negative);
- to promote energy mix as the more feasible alternative to ensure orderly transition to a low-carbon economy and a better use of available resources;
- to use the public sector as a benchmark of good practices.

The priorities regarding the intensification of renewable energy use are:

- to explore distributed generation as an alternative for generating new energy resources, reducing energy dependency and fostering citizens' responsibility and environmental education;
- to support the different forms of intelligent regional specialization by opening new opportunities for endogenous development and by creating new jobs based on the exploitation of renewable energy resources;
- to disseminate the renewable energies as a key topic to transform a peripheral territory into a core one through economic development based on wind and marine energies.

The following recommendations are proposed to implement this priority:

- Reduction of energy consumption by 20-30% in 2020 by public authorities, in public buildings, lighting in public spaces, transport, heating and other consumptions;
- Introduction of energy efficiency binding measures in building regulations;
- Implementation of forestry policies to facilitate reduction of GHG emissions through decrease in forest fires;
- Eco-lending, with a low or zero interest rate to rehabilitate buildings subject to energy efficiency norms;
- Temporary compensatory measures in tax policy to renovate houses that incorporate energy efficiency criteria;
- Negative fiscal incentives for houses that have not been adapted to energy efficiency criteria after 2030;
- Compensatory measures in fiscal policy depending upon their contribution to distributed generation;

- Positive and progressive fiscal incentives for firms that have reduced energy consumption by more than 10% through exportable innovations without penalising their productivity;
- Positive fiscal incentives for public and private universities and research centres, for registering patents with a demonstrated transfer and for applied research results in the energy efficiency domain;
- CO<sub>2</sub> and pollutant emissions standards for vehicles and transport activities must be the same in all territories;
- Encouragement of business-based GHG certification schemes and utilisation of common EU standards in order to estimate the carbon footprint of each passenger and freight journey, to allow for better choices of cleaner transport solutions;
- Use of marine renewable energies at least in all the sea terminals;
- Development of energy neutral buildings and equipments using appropriate material and supervision systems to monitor the life of the infrastructure.

The following indicators are suggested to assess the achievement of the priority 1 objectives:

- Percentage of electricity generated from renewable energy sources in the regions of the Atlantic Area
- Energy consumption in public buildings and lighting in public spaces in the Atlantic Area
- Share of renewable energy in transport fuel consumption.

## **PRIORITY 2: TO IMPROVE MOBILITY PATTERNS WITHIN THE ATLANTIC AREA**

The future prosperity of our continent will depend on the ability of all of its regions to remain fully and competitively integrated in the world economy. Efficient transport is vital in making this happen. As the Atlantic Area is the interface between Europe and a large part of the world, transport represents a challenge and an important concern for the AA regions.

The EU-27's greenhouse gas (GHG) emissions from transport have been increasing and this trend is projected to continue. If no action is taken to reduce these emissions, then the growth rate of GHG emissions from transport will have the potential to undermine the EU's efforts to meet its long-term GHG emission reduction targets. It is estimated that GHG emissions from domestic transport in the EU-27 will increase by 24% between 2000 and 2050; emissions from road transport are projected to increase by 19% and those from domestic aviation by 45% (JRC 2008).

New low carbon-based mobility patterns are needed within the Atlantic Area to significantly increase the contribution of these territories to reduce the carbon footprint of the European territory. This change of paradigm in mobility patterns should be combined with the generalised view that the Atlantic regions should not only minimise their peripherality and marginalisation regarding the more dynamic centres of the European territory, but also increase the flow of people and goods along the Atlantic façade.

This is a challenging combination, requiring the contribution of EU (the Trans-European networks), national (priorities for transports system and degree of coverage of all the territory), and regional and local (through the integration with priority 3 regarding spatial and urban planning) policies.

In order to tackle this priority, different approaches should be adopted according to the territorial development typologies identified within the Atlantic Area: predominantly urban areas, cities and their satellites and polycentric networks of small and mid-size urban centres. Despite these differences, the strategy considers that maritime transport seems to be a common asset for all the Atlantic regions. Maritime transport issues are a true opportunity for the Atlantic regions in order to recover their centrality vis-a-vis United States, Latin and Central America and, through the new Panama Channel Pacific regions.

To implement this priority we recommend the following actions:

- Setting-up of strategic and planning guidelines for public transport and mobility policies inspired by carbon footprint-based land use criteria;
- Design of new guidelines and rules for tourism and leisure facilities and infrastructures to monitor and reduce their GHG emission impacts;
- Increase efficiency of European gates (harbours, stations & airports) mainly through the optimisation of the various technical components, fostering the use of marine energies and supporting the development of new maritime routes;
- Ensure dissemination of similar CO<sub>2</sub> and pollutant emissions standards for vehicles or transport activities in all territories;
- Agree on interface standards for infrastructure-to-infrastructure, vehicle-to-infrastructure, and vehicle-to-vehicle communications;
- Setting-up of homogeneous and efficient payment policies for the utilisation of transport facilities. Transport charges and taxes must be restructured in the direction of a wider application of the "polluter-pays" and "user-pays" principle and must include the internalisation of external costs and infrastructure use charges. The cost of local externalities such as land, air or sea pollution, noise and congestion could be internalised by charging for the use of infrastructure or resources depending on local authorities;
- Look for diversification of both public and private finance sources; innovative financial instruments have to be designed at the local level to widen the possibilities of improvement;

- Carry out tendering process, project assessment and various authorisations according to sustainable criteria and more specifically include life cycle assessment studies, medium- and long-term impact analysis, noise and local pollution costs, etc.;
- Implement intelligent infrastructure (both land and space-based) to ensure maximum monitoring and inter-operability of the different forms of transport and communication between infrastructure and vehicles;
- Improve the disseminated use of information technologies within the transport domain, mainly by facilitating informational accessibility to transport services, by generalising electronic booking and payment of several travel related services, by ensuring interoperability between stakeholders and by guaranteeing optimisation of flows between them and the external world;
- Develop the use of intelligent systems for interoperable and multimodal scheduling, information, online reservation systems and smart ticketing;
- Develop and implement efficient decision aid tools to monitor the evolution of mobility (passengers and goods) in each AA territory, to develop perspectives related to Atlantic Area situations according to recent and specific changes and to consolidate global requirements. Mobility observatories are too few in the Atlantic Area and current forecast surveys and models are too generic and too "mirror oriented" to provide any help for local decision making concerning transport developments;
- Improve connections between long distance and local/regional transport for both passengers and freight. This involves the localisation of hubs, logistics platforms, and the optimisation of their role as decoupling external and internal flow links within Spatial Planning. Although reloading might be considered sometimes as a source of increasing costs and times, the development of optimised intermodality as well as a global cost/benefit analysis including all externalities should be carried on to determine local and regional strategies and the best hierarchised organisation of these interchange spots;
- Aim at minimising carbon footprint levels of transport infrastructures for building or renovation activities. This means that local authorities should encourage localisation in suitable areas to look for the best compromise between minimisation of global impact and maximisation of efficiency regarding transport demand;
- Improve multimodal intercity travel and transport inside the Atlantic Area. Attractive frequencies, comfort, easy access, reliability of services, and inter-modal integration are the main characteristics of service quality. These are part of the measures needed for integrating different passenger and goods transport modes to provide seamless multimodal travel;
- Consider urban transportation as an easier way for introducing friendlier carbon footprint-based solutions from the point of view of regional and local intervention. At urban level, accessibility and mobility modalities should be wisely combined: better accessibility conditions, increasing the proximity of people to services and equipments, will tend to better accommodate mobility needs.

The following indicators are suggested to assess the achievement of the priority 2 objectives:

At the local level:

- Number of Community Transport passengers/ total population in the area corresponding to the Community Transport network (bus, tram, metro...)
- Average speed of vehicles in city centres.

At the national and regional levels:

- Number of purchased clean vehicles/ total number of purchased vehicles (per type of buyers: citizens, companies, local authorities...)
- Volume (tons) of fuel/ total no. of vehicles or Volume (tons) of fuel/ number of people  
People \*Km per transport mode.

### **PRIORITY 3: TO CONTROL URBAN AND RURAL SPRAWL**

Spatial Planning is a key factor to achieve a low carbon emission society. Land use regulation is a useful tool to reduce CO<sub>2</sub> emissions as the spatial structure of urban systems is closely related to greenhouse gas emissions.

The growing dissociation from the place of residence, work/studies, leisure, shopping, etc. has led to increases in mobility needs that double every few years across all European countries. This uncoupling tends to involve greater distances, owing to better roads and a denser network of motorways, leading to faster travel and associated increase in fuel consumption and GHG emissions.

The growth of the so-called urban sprawl also implies an increasing consumption of space, which in turn has a significant carbon footprint impact. In the case of the European Atlantic territories, a cultural trend towards dispersal related to the atavistic value of land and the sociological attachment to the homeland needs also to be taken into consideration. This cultural trend implies a different way of understanding and using the territory that leads to higher habitat dispersal rates than in other European areas.

One of CLIMATLANTIC's main goals was to develop a global indicator that would allow planners to evaluate urban developments in terms of their GHG potential emissions, and thus develop more sustainable urban strategies. To this aim, a global suitability index was developed which allows definition of a) urban areas where urban expansion has a high potential carbon footprint and b) those areas where urban re-use and densification policies should be promoted.

The global sustainability index was obtained by combining values from four major groups of suitability indices (Mobility, Public Infrastructures, Energy and Land Use) in which several criteria

were considered, and by making use of a GIS system combined with a multi-criteria decision making method (MCDM), namely the Analytic Hierarchy Process (AHP).

Figure 3 presents the final results from the multicriteria spatial decision system. The global suitability index maps allow local authorities to evaluate new urban developments in terms of potential GHG emissions impact, and to determine which areas are preferable for urban development and/or densification, thereby defining effective urban development strategies for carbon footprint reduction.

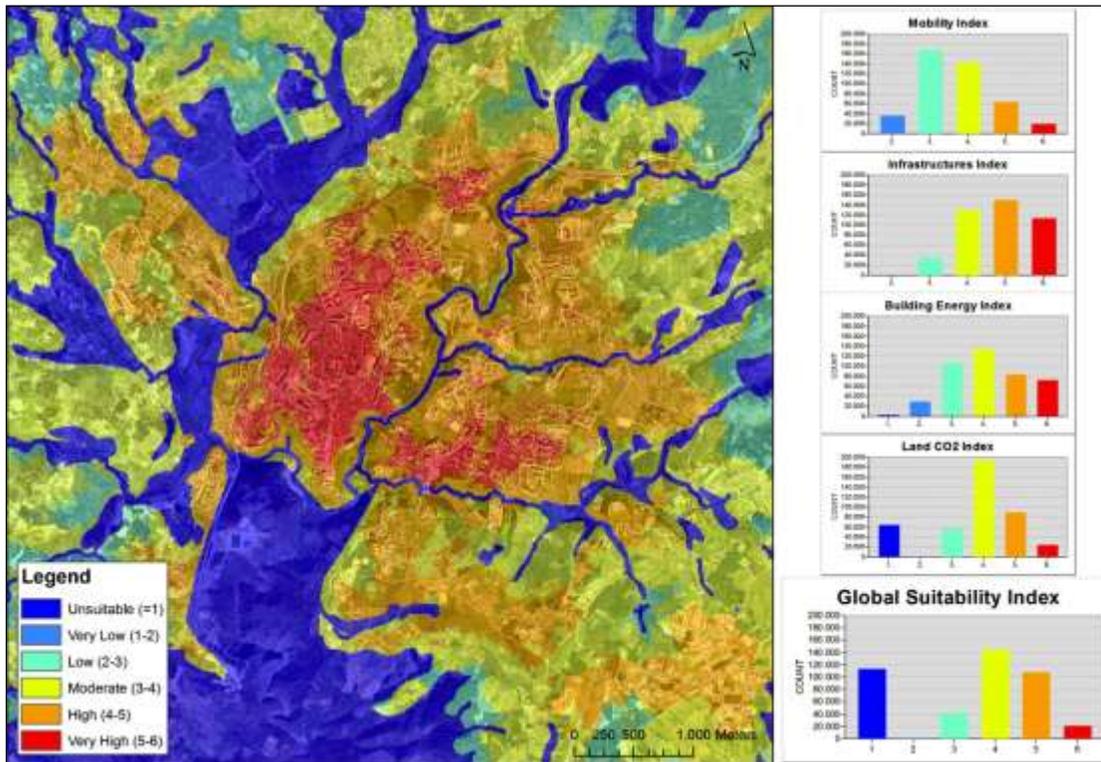


Figure 3. Global Suitability Index of Vila Real

The methodology developed herein can also be used to evaluate which current urban consolidated areas have the highest and the lowest suitability values, thus allowing decision-makers to identify current problems and implement corrective measures.

The CLIMATLANTIC strategy sees spatial and urban planning as key intervention fields for spatial planning, and one of the more effective instruments to achieve a low carbon emission society at regional and local level. The effectiveness of these instruments is based on the fact that they strongly depend upon the decision making capacity of regional and local authorities. The enforcement of spatial and urban planning orientations and rules depends ultimately on private and market reactions. But spatial and urban planning are mainly regional and local competences make a big difference in as far as the feasibility of the carbon footprint reduction strategy is concerned.

The strategy underlines the role played by green and other environmentally-valuable areas in less-developed and inner regions of the Atlantic territory by absorbing GHG emissions (carbon sequestration), and they are therefore a key element of territorial equity that allows for monetary compensations and funding oriented towards territorial cohesion objectives.

To implement this priority we recommend the following set of proposals:

- Disseminate more compact forms of urban settlements;
- Set-up strategic and planning guidelines for public transport and mobility policies inspired by carbon footprint-based land use criteria;
- Manage land use in rural areas, by countering residential dispersion and trying to enhance already existing situations of sprawl;
- Design new guidelines and rules for tourism and leisure facilities and infrastructures to monitor and reduce their GHG emission impacts;
- Generate cooperation practices between Atlantic regions by fully respecting their planning institutional and political contexts and by implementing experimental joint planning actions;
- Increase the participation of Atlantic regions in research projects generated within the framework of the ESDP, by combining planning strategies with a more intensive incorporation of scientific knowledge in these processes;
- Implement forestry policies to facilitate the reduction of GHG emissions through decrease in forest fires;
- Facilitate eco-lending, with a low or zero interest rate to rehabilitate buildings subjected to energy efficiency norms;
- Provide temporary compensatory fiscal policy measures to renovate houses that incorporate energy efficiency criteria.

The following indicators are suggested to assess the achievement of the priority 3 objectives:

At the local and regional level:

- Percentage of discontinuous artificialized urban area
- Artificialized land area per capita
- Artificialized land area per dwelling
- Ratio of population weighted density to standard density.

#### **PRIORITY 4: TO ENHANCE THE ROLE OF THE ATLANTIC FAÇADE TO REDUCE GHG EMISSIONS AT THE EU LEVEL**

Atlantic regions should take advantage of their geographical position as gates that connect the EU with other parts of the world. The priority 4 calls for enhancing the role of the Atlantic façade as a very relevant space to allow the EU territory as a whole to have a better performance in reducing GHG emissions and improving quality of life through new modalities of transport networks, information systems-based logistics, inter-operability and inter-modal transport operations, principally between maritime and train networks. The development of the Atlantic freight corridor project can provide a relevant contribution to this objective. This priority is compatible with the need to open up these regions and to reduce their marginalisation relative to the more dynamic regions of the centre of Europe. In this sense we recommend the following set of measures:

- Complete Atlantic priority projects under TEN-T policy, and especially the North-South connection along the Atlantic seaboard;
- Promote a West-East link to connect the Atlantic façade with the main centres of Europe;
- Increase the number of short shipping routes and motorways of the sea that connect the Atlantic façade with the main European hub ports;
- Facilitate interoperability of travelling and routing information systems and especially journey planners. Information must be made available for all European customers and service providers, who can then transfer/transform these data to their own customers in order to facilitate movement of people and goods. All development should be realised within the European Integrated Multimodal Information and Management Plan;
- Create logistics organisation to inland Europe in order to facilitate transit to/from the gates and the related hubs and platforms, and implement multimodal terminals at sea and river ports and city logistic consolidation centres;
- Ensure that regulations and conditions to access these gates meet the minimum quality standards and provide quality services (homogeneous in all AA gates) for all types of actors in all types of gates (stations, port, airport) irrespective of gate size and for all type of services (information on travellers, freight handling, etc.);
- Introduce taxes and pricing policies to increase the attractiveness and competitiveness of Atlantic ports.

In order to assess the achievement of priority 4 objectives, the following indicators are suggested:

- Percentage share of freight transported by sea motorways versus the total freight transportation from and to the Atlantic façade ports;
- Percentage share of freight transported by sea motorways versus the total freight transportation connecting ports from the Atlantic façade with the European hub ports.

#### **PRIORITY 5: TO DEVELOP EDUCATION AND COMMUNICATION CAMPAIGNS TO DISSEMINATE THE CARBON FOOTPRINT REDUCTION APPROACH OF THE ATLANTIC REGIONS**

The implementation of successful actions to combat climate change relies on successfully motivating behavioural changes at all levels within society. People generally change their behaviour when motivated by tangible benefits - for example the cost savings associated with reduced energy consumption or the health benefits resulting from changing travel choice. Campaigns and policies to encourage behavioural changes must therefore also highlight the benefits of such action to the individuals.

The public may also start to modify their behaviour as they become more aware of the need to act in order to mitigate global climate change by reducing carbon emissions, and as they become more educated about the potential actions they can undertake to make an impact on greenhouse gas emissions.

Communication campaigns addressed to different targets of public and proactive education are key conditions for disseminating the carbon footprint reduction strategy in the Atlantic regions. At regional and local levels, schools should be supported for developing specific awareness raising projects on carbon footprint issues among the youth population. A benchmarking analysis should be carried out in each region to identify the gaps and the opportunities for training, campaigns and actions.

In order to implement this priority we recommend the following set of proposals:

- Develop citizens awareness campaigns and school campaigns focused on energy consumption saving;
- Create award of prizes and distinctions to local authorities that have achieved high energy efficiency results as a consequence of good exportable transferable practices;
- Create living labs to experiment and demonstrate new energy efficiency practices to citizens;
- Improve energy efficiency training programs for professional stakeholders;
- Develop campaigns for Regional Authorities and fleet managers in the region– e.g. public transport operators, freight/logistics operators, taxi drivers - to provide information about alternative fuels;
- Implement training programs on fuel efficiency measures, fuel monitoring and eco-driving for fleet managers and fleet procurement officers within the Local or Regional Authorities;
- Develop energy efficiency campaigns in public buildings on how to identify and implement improvements to reduce energy consumption;

- Develop campaigns to improve alternative energy generation;
- Develop campaigns to promote the use of public transport and the development of car clubs and car sharing;
- Develop campaigns to raise awareness about the environmental impacts of urban sprawl, including a badge for planning applications with “Excellent” environmental evaluation, for public display on new developments. This will raise public awareness and provide an incentive for developers to take an extra step forward;
- Develop campaigns to encourage people to respect and comply with environmental legislation with a view to increasing acceptance and compliance with environmentally motivated legislation;
- Produce educative materials to provide information on actions that tend to increase awareness of actions that individuals can take to reduce their carbon emissions.

The analysis of all CLIMATLANTIC recommendations to reduce the carbon footprint of the Atlantic Area enabled the identification of where there may be a need for campaigns at the regional level and the types of campaigns needed. Much of what can be done is focused on influencing others to take up best practice approaches, i.e. focused on providing training to 1<sup>st</sup> tier stakeholders.

As a result of this analysis, 11 campaigns were defined by CLIMATLANTIC. These are focussed on the following topics:

- Alternative Fuels Information Exchange
- Training sessions/Information pack on fuel efficiency measures, fuel monitoring and eco-driving
- Energy efficiency in existing buildings and installations
- Promotion of alternative energy generation
- Promotion of public transport
- Promotion of alternatives to travel
- Awareness of the environmental impacts of urban sprawl
- Encourage polycentrism through public campaigns about local business and economies
- Encourage the development and use of car clubs/car sharing
- Creation of a regular networking event/group for stakeholders involved in the regional response to climate change to discuss a range of sustainability issues
- Campaign to encourage people to respect or comply with environmental legislation.

The following indicators are suggested to assess the achievement of the priority 5 objectives:

- Number of people participating in education and communication campaigns by target audience (students, professional stakeholders, people in general).

## **PRIORITY 6: TO FOSTER R&D TO GENERATE THE SCIENTIFIC AND TECHNOLOGICAL FOUNDATIONS FOR CARBON FOOTPRINT REDUCTIONS**

Improvement of the role of knowledge in designing sound scientific and technical foundations for carbon footprint reduction policies is a major opportunity to increase the role and participation of Atlantic research centres and companies in knowledge-based European projects and to reinforce the cooperation networks between them. The close association between the enhancement of knowledge and the quality of monitoring should also be improved. Research and development in carbon footprint is a cross-cutting issue. It involves the four pillars of the present project and crosses themes such as energy efficiency, production of renewable energies, mobility and urban and spatial planning.

The following set of proposals is recommended in order to implement the present priority:

- Increase the participation of Atlantic R&D centres and companies in research projects generated within the EU framework programmes for research and technological development, in order to stimulate the carbon footprint approach and increase the participation of regions within the ESDP framework by combining planning strategies with a more intensive incorporation of scientific knowledge in carbon footprint matters;
- Foster the carbon footprint priority within the science and technology regional and national policies in the Atlantic Area;
- Provide economic support through R&D regional and national programmes for projects focused on energy efficiency, with a 20% funding depending upon the transfer of results;
- Implement positive fiscal incentives to public and private universities and research centres, for registered patents with a demonstrated transfer and for applied research results in the energy efficiency domain;
- Foster research into renewable energy storage, removal of interconnection barriers and generation of high power turbines;
- Foster research into marine energy, particularly in the fields of corrosion resistant materials technology, offshore wind power production technology in deep sea floating platforms and technology improvements to explore power from waves and marine currents;
- Set up effective coordination of all research projects which intend to reduce the carbon footprint in the Atlantic Area by creating a research network in this field. This begins with the definition of coordinated and clear orientations for research organizations, in order to include support and/or incentive to develop and promote local competences for dealing with these specific problems. It requires real management of the cooperation between all stakeholders;
- Support the SMEs which propose innovative approaches in carbon footprint research.

The following indicators are suggested for assessing the achievement of the priority 6 objectives:

- Total amount of economic resources mobilized in research projects aimed at reducing the carbon footprint and financed within the R&D regional, national and European programmes;
- Number of companies involved in developing the carbon footprint R&D projects;
- Number of patents registered in carbon footprint reduction.

### **PRIORITY 7: TO INCLUDE CARBON FOOTPRINT REDUCTION-BASED PROJECTS AS A NEW PRIORITY AXIS WITHIN TRANSNATIONAL, INTER-REGIONAL AND CROSS-BORDER COOPERATION PROGRAMMES**

The cooperation strategy between the Atlantic regions should obviously be adapted to the Europe 2020 guidelines for the next programming period. The carbon footprint approach will be at the heart of a new cycle of cooperation projects and initiatives, which cover at least two of the three main dimensions of the Europe 2020 strategy, namely; smart growth and sustainability. The call for carbon footprint reduction-based projects should be seen as a new priority axis in the new cycle of transnational, interregional and transborder cooperation programmes that cover the Atlantic territory and involve several fields of intervention such as energy, transport, spatial and urban planning, and R&D. Cooperation projects will be a main instrument in order to disseminate experiences and policies in the Atlantic territories, that are targeted at tackling climate change and generating shared knowledge on these issues.

To implement the present priority we recommend the following set of proposals:

- Negotiate with the EU, national and regional authorities to create a new priority axis in transnational, interregional and cross-border cooperation programmes for carbon footprint-based cooperation strategies;
- The same for urban cooperation networks;
- Generate cooperation practices between the Atlantic regions focused on fostering low carbon activities in full respect for their planning institutional and political contexts and furthermore to implement experimental joint planning actions;
- Increase cooperation among harbours, sharing knowledge on optimisation models, energy saving-based logistics, integration of transport modes, monitoring and regulation of environmental impacts, marine energies, etc.;
- Increase cooperation among R&D partners focused on establishing the carbon footprint research field as a multi-disciplinary convergence of different sciences: climate,

economics, energy, spatial and urban planning, sociology, transports, information systems, biotechnology, etc.;

- Cooperate with public-private partnerships, to enhance exchange of experiences between the different governance models.

The following indicators are suggested to assess the achievement of the priority 7 objectives:

- Total amount of economic resources mobilized in cross-border and interregional cooperation carbon footprint projects within the Atlantic Area;
- Number of partners from the Atlantic Area involved in cross-border and transnational cooperation carbon footprint projects.

## Projects to develop the strategy

Climatlantic identifies five strategic projects derived from the priorities mentioned above. These projects are to be implemented to reduce the carbon footprint of the Atlantic Area.

### ***Project 1: Strategy for the reduction of fossil energy consumption by local authorities***

**Objective:** To devise, evaluate and where possible demonstrate strategies for reducing energy consumption by local authorities

The Energy Plan for 2020 presented by the Commission in January 2008 contained a target to save 20% of energy use by public bodies. Preliminary results from the Climatlantic Pilot Action “Assessment and demonstration of measures to reduce electricity consumption by local authorities” are indicating that it will be very difficult for public bodies to achieve this target, and that new strategies will be needed. Every option should be considered and better information should be made available to local/regional authorities in order to help decrease the carbon footprint of local authorities in buildings and in service provision.

**Deliverables:**

- Current energy usage report
- Preliminary evaluation report
- Evaluation of high-priority options
- Development of implementation strategy
- Route to compliance with energy reduction targets.

**Activities:**

- Assessment of current energy usage by local authorities
- Preliminary evaluation (from existing experience and installations) and ranking of options for energy reduction
- More comprehensive trial and evaluation of high-priority options
- Develop strategy/micro local action plans for rolling out and implementing selected measures.

## **Project 2: Integrated Atlantic Area mobility**

**Objective:** To increase the use of collective transport in the Atlantic Area

Several cities and regions of the European Atlantic Area have set up projects to improve passengers and goods mobility. Solutions and results concern mainly local travellers and city logistics and are rarely specific to maritime issues. This project aims at building up a holistic approach based on experiences resulting from these previously developed relevant projects.

When travelling in the Atlantic Area, two main barriers regarding the usage of collective transport are identified: a) the lack of knowledge of the potential users on the multimodal collective transport facilities at local or Atlantic Area levels and on the ways to use them most efficiently and b) the area covered by collective transport and the various solutions developed to satisfy travellers' demands.

The global aim of the project is to overcome these barriers and to increase usage of collective transport by 20% among Atlantic Area travellers, by promoting a minimum quality level of transport services provided by cities to their visitors. Results must facilitate the mobility of passengers and goods at the Atlantic Area level right from travel preparation to return to origin.

### **Deliverables:**

- Collaborative website on travel facilities in the Atlantic Area
- Quality brand for mobility information services at the cities level and association to control quality levels
- Guidelines/methodologies for local mobility Community Transport improvements based on real case studies, adapted to the characteristics of the Atlantic Area
- Specific demonstrations for the Atlantic Area.

### **Activities:**

The project may be structured into three types of technical activities and two monitoring ones:

1. Information systems
  - Development of a website (cf. for instance INTEGRA Interreg project)
  - Development of standardised street information for interregional connections (from/to city gates).
2. Mono ticketing strategies
  - Promotion/validation of the utilisation of common standards for all mobility software among local authorities and their interrelated stakeholders
  - Development of mono ticketing applications for interregional travels.
3. Improvements of local/regional travels
  - Development of capillarity facilities at regional level (car sharing, TER, etc.)
  - Development of rapid clean sea collective transport (electric or hybrid)
  - Low carbon infrastructures and stations
  - Elaboration of mobility guidelines.

4. Management
  - Design and development of an association to be in charge of ensuring quality level, monitoring the development of the common tools, and facilitating the construction of projects between members
  - Development of audit procedures for cities in order to help them reach or maintain the quality level.
5. Evaluation and transferability analysis

### **Project 3: Atlantic Area efficient harbour of the future**

#### **Objective:**

In as far as reduction of the carbon footprint is concerned, an efficient harbour is characterized by a) the integration within a network of mass transports and port services that are integrated into sustainable logistic chains, b) the development of eco-design of port planning and services, c) the improvement of the energy performance, and d) the intelligent relationship between city and port and its integration in spatial planning and territorial economy.

Atlantic ports have been a focus of many European level projects in recent years and several aspects of port life have been studied. Their experiences have been pooled to improve efficiency, use of renewal energies, environmental impacts, connection with the hinterland and their position with respect to the city.

The objective of this project will be to design, develop and experiment actions to reduce the carbon footprint of ports in the future, thereby permitting coexistence of economic development activities and environmental protection.

Although most actions are guided by general principles, solutions may however differ according to the nature, size and location of the port. The project will concentrate mainly on medium/small ports for which very few projects have been launched. This approach fits in with the development of coastal economy promoted by the CAAC & the CRPM.

#### **Deliverables:**

- Demonstration of actions regarding CO<sub>2</sub> reduction and RE production/use in ports
- Decision making aid tools for optimising flows in and out of ports
- Website on best practices
- Training and information material.

#### **Activities:**

- Detailed state-of-the-art information on: a) actions aiming to reduce CO<sub>2</sub> footprint in different types of harbours and b) technologies for marine energies (sea, sun, wind) connected to ports, based on previous EU and national projects.
- Cartography of the ports, of their activities (based on existing data) and identification of port activities with impact on the carbon footprint (from transport to waste management) and of the key variables to reduce these impacts.
- Design of a holistic conceptual approach of port activities and their relationship to the carbon footprint.

- Definition of types of actions which can be undertaken in the field of: a) RE production/use in ports, b) waste optimisation, c) optimization of flows in and out of ports, d) general port management, e) building improvement, f) maintenance, renovation and repairing of infrastructure and boats.
- Development of a website to describe best practices, case studies, examples, etc., directed towards the main stakeholders.
- Definition and implementation of actions at demonstration sites.
- Evaluation and transferability analysis.

**Project 4: Knowledge generation for sustainable spatial planning of low-density, highly dispersed habitats**

**Objective:**

The ultimate goal of this project is to train local/regional technicians to implement the global sustainability index for reducing carbon footprint in low-density highly dispersed habitats. This will be implemented through advanced training courses in Geographic Information System (GIS) analysis for local and regional civil technicians. Courses will allow technicians to acquire technical skills in GIS multicriteria analysis to calculate the global sustainability index (resulting from the pilot project of this pillar) at the local level. One of the major problems for the success of the proposed methodology is the scarcity of technicians with sufficient skills in local planning teams. This is especially relevant in low-density areas where the size of the municipalities is small, and the weakness of the technical team is more conspicuous. These spaces usually coincide with areas of highest dispersion and where the implementation of spatial planning procedures based on indicators is needed even more.

**Deliverables:**

- Training and information in GIS for municipalities, local entities and/or regions that have trained technicians to implement the global sustainability index in its urban planning and thus contribute in an effective way to reduce the carbon footprint.
- Web portal for the dissemination of the Living Lab experience results (Pilot Project improvements and application results in the AA urban areas) - mainly guidelines/methodologies for local urban planning, adapted to AA cities situation.

**Activities:**

The project is structured along two types of activities:

- Training would begin with a course of basic concepts in GIS (100 hours) in each of the countries involved in the project CLIMATLANTIC (Portugal, Spain, France, England and Ireland) for approximately 50 students per country. Existing structures such as Eixo Atlântico, and its Agency of Urban Ecology, could be used.
- After such training period, a Living Lab for GIS spatial planning should be created initially for one year but to last over time. Students (municipal and/or regional technicians) and the different actors (trainers, planners, academics, experts, politicians, etc.) will participate in Living Lab to implement the global sustainability index created within the framework of the Climatatlantic project.
- All local and/or regional entities interested in implementing the proposed indicator

may participate in Living Lab. Its main functions would be to continue the initial learning process online and to exchange experiences and/or improvements in the methodology as part of the experience.

- It would monitor the application of the index by the technicians involved in the process and encourage a continuous feedback to allow for changes and improve the model. And it would accelerate the adoption of standards on the methodology by always adapting to the differences between the territorial areas.
- Such increased training and specialization could result in a true interaction between universities and research centres, municipalities and technicians.

**Project 5: Transnational, multilingual master courses for local authorities, technicians and postgraduate students**

<p><b>Objective:</b> To develop a training course to address the key strategic topics for delivery across the Atlantic area, namely; to provide training to local authority officers and technicians and offer course modules for postgraduate students</p>
<p><b>Deliverables:</b></p> <ul style="list-style-type: none"> <li>• Production of training materials for local authority officers and technicians in English, Spanish, Portuguese and French</li> <li>• Production of teaching materials for postgraduate course modules in English, Spanish, Portuguese and French.</li> </ul>
<p><b>Activities:</b></p> <p><u>Local authority master course</u></p> <ul style="list-style-type: none"> <li>• Review of strategic papers to identify the key strategic topics for inclusion in the master course;</li> <li>• Review and benchmarking of Atlantic Area cities to identify the key training needs of local authority officers and technicians across the key strategic topics;</li> <li>• Produce training materials – via a series of training modules - for local authority officers and technicians;</li> <li>• Review of benchmarking in each Atlantic Area city to identify which components of the master course should be delivered and specifically to whom;</li> <li>• Delivery of courses to local authority officers and technicians.</li> </ul> <p><u>Postgraduate course modules</u></p> <ul style="list-style-type: none"> <li>• Identification of courses offered within the Atlantic Area with some interest in the key strategic topics;</li> <li>• Consultation with relevant course providers to assess current course content, level of interest and potential partnership opportunities;</li> <li>• Identify the needs for specific course modules;</li> <li>• Production of materials for postgraduate course modules;</li> <li>• Inclusion and delivery of modules within postgraduate courses.</li> </ul>